MELITA PROJECT - ULYSSES GOLD DEPOSIT, WESTERN AUSTRALIA

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LOCATION

The Ulysses Deposit is located 35 km S of Leonora-Gwalia, at 29°05'S, 121°20'E, straddling the Goldfields Highway; Melita 1:100 000 map sheet (SH51-5- 3039).

DISCOVERY HISTORY

Between 1970 and 1989, 30 companies reported on exploration activities on the Melita Project tenements, now held by Dalrymple Resources and Sons of Gwalia Ltd, including the Ulysses area. Conceptual studies undertaken by Dalrymple during 1989-1992 highlighted the Leonora-Kookynie district and the Melita Project was pegged in 1992.

Southeast from Ulysses (Figure 1) the Butterfly and Orient-Tampa high-grade underground gold operations were abandoned by prospectors early last century. Dalrymple considered Ulysses to be the most prospective, under-explored location on the westerly continuation of these gold camps.

Dalrymple geologists collated geochemical and geophysical data relating to Melita from the GSWA open file records [WAMEX]. Ulysses was also high on the list of six aeromagnetic targets chosen for follow-up from re-interpretation of historical aeromagnetic surveys.

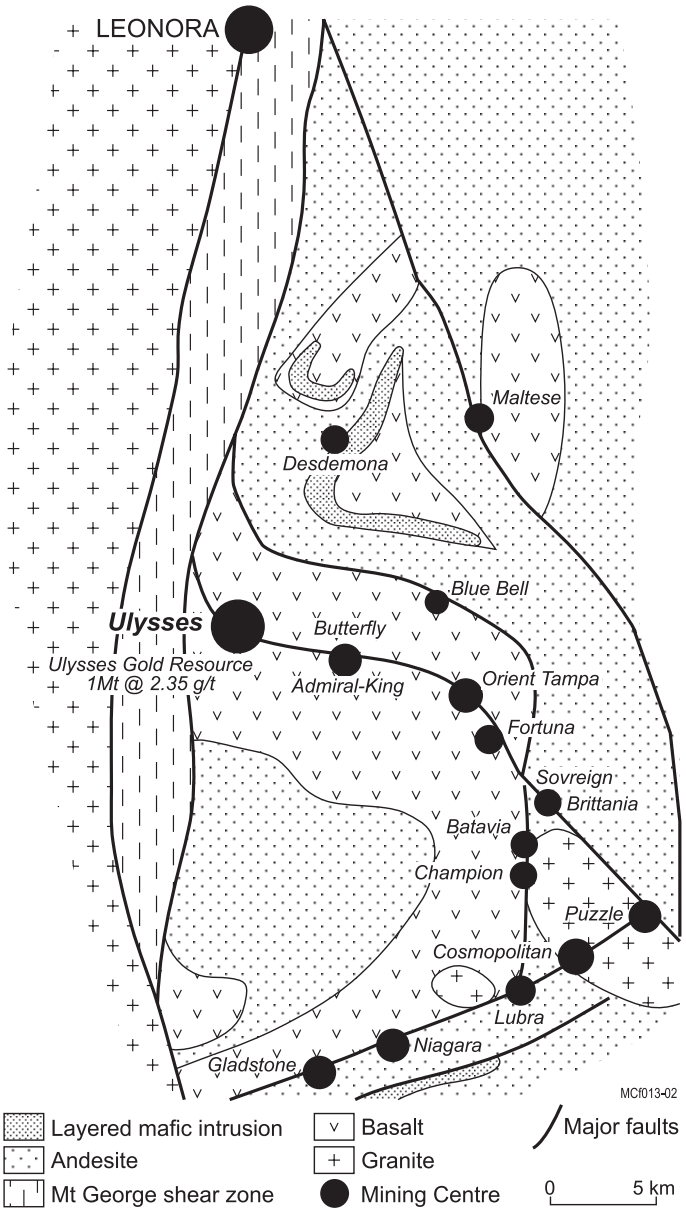

Figure 1. Location of the Ulysses Gold Deposit.

In 1994, the GSWA released the 1:100 000 scale Melita Sheet and explanatory notes (Witt, 1994). This provided a superior foundation for integrating the geology with known gold mineralization between Kookynie and Leonora-Gwalia.

During 1993-1994, regional ephemeral drainage and laterite nodule sampling was undertaken over much of the Melita Project tenements. The drainage samples were analyzed (Genalysis Laboratory Services) for gold by their BLEG cyanide leach method, using 2 kg samples, which were sieved to <2 mm in the field. Only one representative sample was collected from the vicinity of Ulysses. This sample returned 1.2 ppb gold in a series that ranged from 0.2 to 13 ppb gold, and was not considered anomalous. Thirteen samples of massive and pisolitic duricrust were collected from suitable terrane; all samples were prepared and analysed by Genalysis for gold (ppb; B/ETA method), W, Sn, Co (ppm; A/MS method) and Cu, Zn, As, Sb, Mo, Ag [ppm. A/AAS method]. Due to the small number of samples, an anomalous threshold could not be determined for gold, but three samples from the Ulysses area contained 7 to 9 ppb gold (top quartile of the data range), but did not show correspondingly high concentrations of other pathfinder elements.

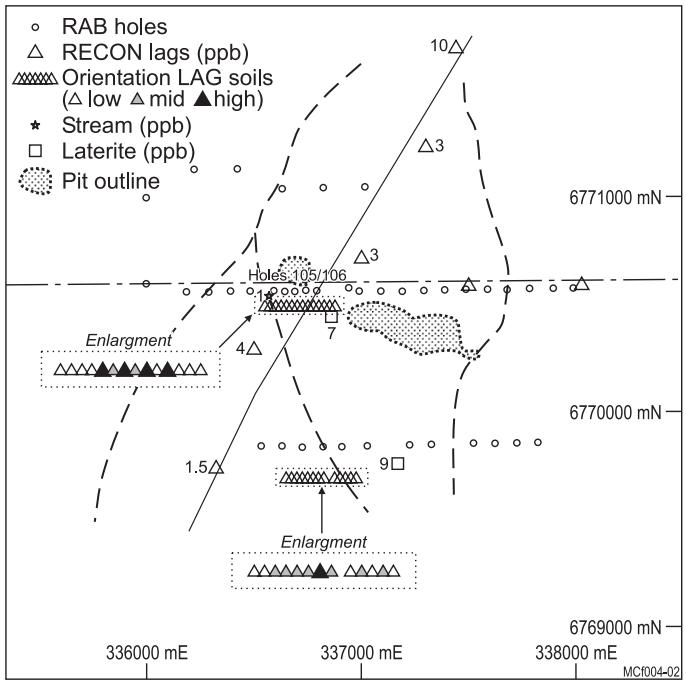

Figure 2. Ulysses Gold Deposit – early lag and laterite sampling.

In 1993-1994, 160 vertical RAB holes were drilled over the Ulysses prospect at 100 m E-W spacing on lines 200 m apart. Drilling to recognizable saprock or blade refusal provided information on regolith and bedrock lithologies and their geochemistry. Most of these holes covered an area well beyond the limits of the Ulysses deposit as it is defined today. Adjacent holes MVR105, drilled to 20 m, and MVR106, drilled to 48 m, both contained 0.1-1.5 ppm gold at the base of each hole. These were the only holes that actually intercepted Ulysses mineralization (Figure 2). By contrast, 90% of the samples from the remaining RAB holes showed gold concentrations of ≤50 ppb.

Five-metre composite samples of one-metre were collected for analysis. The average weight of each sample was 0.5 kg. Gold was analysed by Genalysis after an aqua regia acid digest using their B/ETA method and an AAS finish. Manganese, Fe, Ni, Cu, Zn, Ag and Pb were analysed by B/AAS from the same digest.

Detailed regolith mapping around both discovery RAB holes noted minor, partially weathered subcrop W of the Goldfields Highway, with SE foliation. The presence of subcrop suggested that surface geochemical sampling would be effective over parts of the prospect and

prompted an orientation lag sampling survey adjacent to the discovery RAB holes. A more detailed follow-up RAB program was also programmed and, when this commenced, local prospectors confided that although there were no historical workings at Ulysses, some small gold nuggets had been recovered from the area using metal detectors.

In 1995, Dalrymple drilled 285 RAB holes to outline the limits of the mineralization at Ulysses, and 5 wide-spaced diamond holes for geological control. This was followed by drilling of 30 angled RC holes along the 1500 m long mineralized zone E of the highway, which defined an inferred gold resource of approximately 1 Mt at 2.35 g/t (75 560 oz gold). Dalrymple also completed both a grid-based, ground magnetic survey and a detailed heliborne aeromagnetic survey over Ulysses however, in retrospect, neither survey would have isolated the gold mineralization as a drill target. In 2002, Ulyssses ore was mined from an optimised open pit and approximately 25 000 ounces were recovered from the Leonora treatment plant.

PHYSICAL ENVIRONMENT

The Ulysses Prospect has outcropping lateritic duricrust adjacent to the Goldfields Highway and slopes away gently to the E and S, where it has been quarried for main road foundation. To the N and W, the plateau surface persists beyond the prospect limits. The undisturbed vegetation is mulga scrubland. The climatic environment is the same as recorded for Leonora.

GEOLOGICAL SETTING

The regional geological setting is described by Witt (1994). Lateritic duricrust and later colluvium cover most of the Ulysses deposit and the local geology is best determined from drilling. Mafic units are abundant and include fine-grained massive basalt, vesicular basalt with flow-top breccias, hydraulically brecciated basalt and dolerite. Doleritic rocks are massive and partly magnetite-rich (3-5%); they commonly contain quartz ± pyrrhotite. Foliated schistose mafic rocks host shear zones that control the gold distribution. Intermediate rocks, including silica over-saturated mafic rock, occur in the centre of the prospect. All lithologies display minor epidote alteration and minor disseminated or vein-type pyrite mineralization.

The Ulysses deposit is characterized by a series of short, stacked veins, controlled by anastomosing, crosscutting shear structures that dip approximately 30° NE. The mineralized vein system forms a WNW trending mineralized envelope extending for at least 2 km. Seven mineralized shear structures have been identified on a section drilled to 130 m, but economic gold grades occur primarily where shears coalesce to form shoots. A moderate NW plunge for the mineralization has been postulated from grade contouring.

REGOLITH

Most of the Ulysses prospect is covered with silica-indurated colluvium (Wiluna Hardpan) and ferruginous duricrust. Where present, the thickness of the transported cover, which mainly comprises ferricrete, pisolitic gravels and ferruginous clays, varies from approximately 3 m in the W to 15 m in the E.

The residual regolith and the base of complete oxidation (i.e., base of clay zone) vary across the prospect. The base of weathering is approximately 35-70 m below surface. More intense weathering and ferruginization of mafic rocks occur to the S and increases in depth towards the E. The approximate vertical depth to base of complete oxidation varies from 5 to 66 m with the weathering profile tending to deepen towards the S. A mottled clay layer, up to 10 m thick, occurs near the surface. − Oxide weathering on joint surfaces below the depth of weathering was logged as weathering, but was taken to lie within fresh rock. The present water table is located approximately 20 m below surface, but flow is insufficient to service a pastoral station well.

MINERALIZATION

Gold mineralization occurs within moderately to intensely altered shear zones (Figure 3). The alteration is defined by fine-grained silica combined with carbonate, sulphide ± chlorite ± biotite. The sulphide is pyrite and/or pyrrhotite (up to 10%), and traces of chalcopyrite. Gold

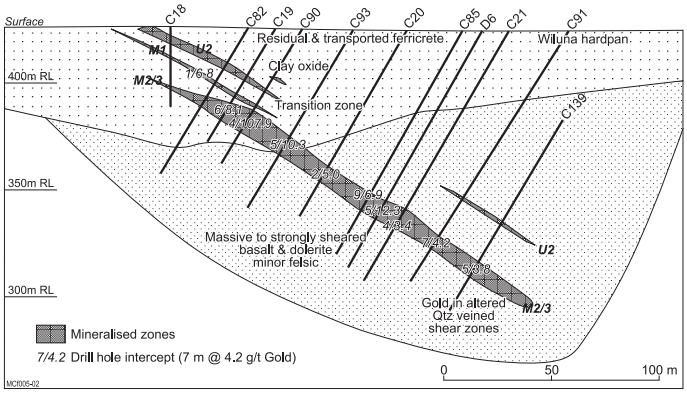

Figure 3. Ulysses Gold Deposit – cross section.

intercepts from shear zones include 4.4 m at 14.3 g/t from 90.8 m in drill hole UDH6, and 11.45 m at 6.86 g/t from 94.5 m in drill hole UDH9. Gold grades greater than 1 g/t also occur in late stage quartz veins that are hosted by the shear zones.

Some of the higher-grade mineralization in the centre of the deposit appears to coincide broadly with the intersection of the shear structures and the interpreted contacts of the so-called intermediate unit. In the supergene zone, vein quartz, iron oxides and foliation, where recognizable, are the visible indicators of mineralization. Supergene processes have concentrated gold around the shear structures in the oxide zone, but there is no significant lateral remobilization and deposition of gold into a 'supergene blanket' and there is insignificant near surface depletion.

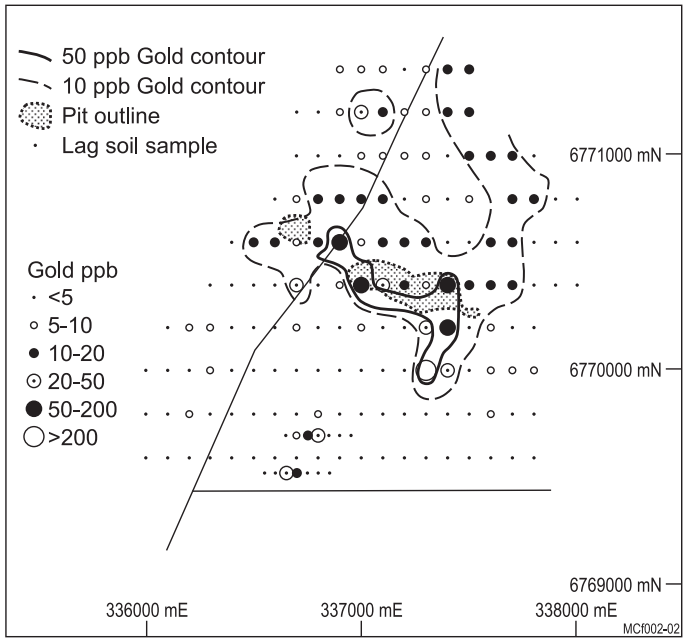

Figure 4. Ulysses Gold Deposit – Lag sampling surveys.

REGOLITH EXPRESSION

Twenty eight lag samples were collected along two lines 175 m apart. The 1 kg samples were composites of two samples collected 50 m apart for every 100 m of grid spacing. The samples were sieved in the field with the 2-6 mm fraction submitted to Genalysis for gold analysis by their B/ETA method following single stage mix and grind preparation. The samples were composed dominantly of fragments of ferruginous pisolitic duricrust.

The gold concentrations in lag ranged from 2 to 460 ppb, with 10 results exceeding 10 ppb. Follow-up lag sampling on the 200 m spaced grid (Figure 4) generated a coherent ≥10 ppb gold anomaly, confirming the initial lag results and the SE trend of the mineralization. Therefore, sampling of nodular-pisolitic residual lag would have identified the Ulysses prospect.

REFERENCES

Witt, W.K., 1994. Geology of the Melita 1:100 000 sheet: explanatory notes. Geological Survey of Western Australia, Department of Minerals and Energy, Perth, Western Australia.