HOMESTAKE GOLD OF AUSTRALIA LIMITED
(A.C.N. 008 143 137)

MT. PORTER SOUTH - EL 9265

FINAL ANNUAL REPORT

TO 24th OCTOBER, 1998

OPEN FILE

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SUMMARY

EL 9265 lies approximately 25km north of Pine Creek township and is easily accessed by well formed gravel road for most of the year, except following heavy rainfalls.

Rehabilitation of through site access to the adjacent Mt. Porter project was completed and reviewed by the Mines Department with approval.
1.0 INTRODUCTION

1.1 Access and Physiography

Exploration License (EL) 9265 lies approximately 25km by road north of Pine Creek township. Pine Creek is situated 230km south of Darwin along the Stuart Highway (Figure 1). From Pine Creek travelling 3km along the Kakadu Highway then turning north onto the well made Francis Creek road and covering 25km leads directly to the project area. All roads in the area are subject to closure or become impassable due to heavy seasonal rains between November and March.

Within the project area vehicle access is heavily restricted by steep sided hills and deeply incised creeks. Following the wet season long grass, 1-2m high, restricts both vehicle and pedestrian traffic away from the main road.

1.2 Tenure

EL 9265 of 1 sub-block was granted to Norman Sydney McCleary on 25th October, 1995. Homestake Gold of Australia Limited (HGAL) became a joint venture partner in the project on 15th March, 1996 and may earn 80% by taking the project to mining status.

The tenement abuts ERL 116 to the north and EL 8313 Mt. Francis South to the east (Figure 2).

2.0 PREVIOUS EXPLORATION AND MINING

Previous mining activity in the area has been restricted to the iron deposits to the northeast at Francis Creek. According to Ahmad et al (1993) these were discovered in 1962 and mined by the Francis Creek Iron Mining Corporation Pty Ltd between 1966-1974. A total of eight million tonnes grading 59% Fe were produced, the bulk (6.1 million tonnes) from the Helene No. 6 and 7 lodes within AN389. The iron ore occurred as a series of massive hematite lodes conformable within tight to open folded pyritic, carbonaceous shales near the base of the Wildman Siltstone. The ore consists of massive and micaceous hematite with included shale and quartz grains in varying proportions. Ahmad et al (1993) postulate that the ore developed by oxidation of a pyritic horizon though no drill holes have penetrated this unit in the primary zone to confirm this interpretation.

Homestake Gold of Australia Limited (HGAL) became a joint venture partner in this tenement which is part of the Mt Porter project. A total of $786,648 has been spent on the Mt Porter project since March 1996, the majority of which was for drilling of the Mt Porter gold mineralisation on ERL 116. Little of this was spent on EL 9265, the tenement being originally applied for in case a mining venture on ERL 116 should require more ground and access.
Pine Creek
Igneous and Structural Setting
Figure 1
3.0 GEOLOGICAL SETTING

EL 9265 covers early Proterozoic, intrusive Allamber Springs Granite, which is part of the Cullen Batholith. Immediately north of the tenement this granite is in passive contact with units of the early Proterozoic Pine Creek Geosyncline succession. Gold mineralisation is present in an antiformal portion of the Koolpin Formation on the Mt Porter prospect to the north.

The metasediments to the east largely belong to Wildman Siltstone and Mundogie Sandstone of the Mount Partridge Group. These unconformably overlie the Masson Formation of the Namoona Group in the southeast corner of AN389 and are unconformably (?) weak warping) overlain by the Koolpin Formation and Gerowie Tuff of the South Alligator Group along the western margin of AN389 and the northwestern corner of EL8313. Metadolerite sill of the syn-sedimentary Zamu Dolerite intrude the Koolpin Formation and the contact between the Koolpin Formation and underlying Wildman Siltstone.

According to the published 1:100,000 geological map of the area (Pine Creek) the Masson Formation consists mainly of carbonaceous phyllite, slate, silty phyllite and sandy siltstone with minor quartzite and massive ironstone and rate tremolite marble. The Mundogie Sandstone is comprised of coarse pebbly feldspathic quartzite, arkose and micaceous quartzite with minor chert and pebble conglomerate. The Wildman Siltstone is divisible into two units. The upper part consists dominantly of siltstone, phyllite, carbonaceous phyllite and minor laminated coarse sandstone whereas the lower part includes mainly pyritic carbonaceous phyllite, siltstone and pyritic carbonaceous shale breccia (massive hematite ironstone lenses on the surface). In the South Alligator Group, the Koolpin Formation consists mainly of ferruginous (pyritic and pyrrhotitic) and carbonaceous phyllite with horizons of laminated, lensoidal and nodular chert along with minor dolomite and marl. The Gerowie Tuff is comprised of grey siltstone interlayered with crystal tuff, lithic tuff and black cherty tuff as well as minor laminated chert.

The Zamu Dolerite sills are composed of chloritised quartz dolerite and amphibolite.

Adjacent to the contact with the sediment and dolerites, the Allamber Springs Granite is composed mostly of pink, coarse, equigranular and porphyritic, biotite granite while further from the contact, in the southern half of EL8313, pink-green coarse porphyritic hornblende-biotite granite and pink-grey fine to medium equigranular leucogranite and alkali feldspar granite sequentially dominate. Greisen stockwork is extensively developed within a kilometre or two of the contact.

The metasediments and metadolerite sills are in upright folds which plunge at a shallow angle to the north-northwest. Folding was accompanied by lower greenschist regional metamorphism. The folding and the regional metamorphism are overprinted by the effects of granite intrusion. The granite contact truncates the folded sequence in a passive manner and albite-
epidote hornfels and hornblende hornfels facies contact metamorphism progressively overprints the regional metamorphic assemblages closer to the contact. A distinctive feature of the contact metamorphism is the development of fine white andalusite (chiastolite) needles in the more aluminous black carbonaceous meta-mudstones of the Masson Formation, Wildman Siltstone and Koolpin Formation.

Flat-lying Mesozoic sandstone, siltstone and conglomerate unconformably overlie all of the early Proterozoic rocks in the area. Several remnant outliers of these rocks are present in the Francis Creek area and one of these is within the eastern part of AN389. They form flat topped mesa-like landforms above an elevation of 240m above sea level. According to Admad et al (1993) these sediments were originally mapped by Skwarko (1966) as Mullaman Beds, but were interpreted by Hughes (1978) as belonging to the Petrel Formation of Jurassic to Lower Cretaceous age and the Darwin Member of the Bathurst Island Formation of Lower to Upper Cretaceous age.

Finally Cainozoic alluvial and colluvial sand, silt clay and gravel are deposited across the area and as pointed out by Ahmad et al (1993) these are separated from the basement rocks by residual laterite in many areas.

Four main styles of gold mineralisation are known to occur through the region. These occur exclusively within the metasediments and metadolerites of the Pine Creek Geosyncline sequence and almost without exception above the stratigraphic level of the middle of the Koolpin Formation in the South Alligator Group.

Of prime interest is gold mineralisation of the Cosmo-Lowley/Golden Dyke style which is hosted by silicate-sulphide facies, cherty iron formations in the middle and upper levels of the Koolpin Formation. At the Golden Dyke Mine (and adjacent smaller deposits), 35km west of Francis Creek, the mineralisation occurs as a stratiform lens on the western side of the Golden Dyke Dome. At the Cosmo-Howley Mine, 50km west of Francis Creek, similar stratiform mineralisation occurs on the limbs and the crest of the Cosmo Anticline where it has been complicated by, and possibly remobilized and upgraded by, strong axial plane faulting and nearby granite intrusion. To date, no mineralisation of this type has been discovered below the iron formations in the Middle Koolpin Formation.

Of lesser importance in the Francis Creek titles, but of major importance elsewhere in the region, is gold mineralisation in sheeted and stockwork and saddle quartz-pyrite vein systems. This type of mineralisation is generally developed along the crest and limbs of major regional anticlines and is almost exclusively hosted by tuffaceous greywacke-siltstone sequences above the Koolpin Formation. Significant examples of stockwork-type gold mineralisation (as this type is collectively described) in the region include the Enterprise Mine at Pine Creek (1.3 million ounces of production and resources), the Batman deposit at Mt. Todd further to the south (2-3 million ounces of reserves and resources), and the Union Reef, Brocks Creek,
Rustlers Roost, Goodall and Woolwonga deposits. Lesser deposits include Chinese Howley, Big Howley, Spring Hill, Yam Creek, Fountain Head and Western Arm. Stratiform gold mineralisation hosted by pyritic chert and banded iron formation in the Gerowie Tuff is known at the Zapopan Mine and this may also be part of this group.

Stratiform polymetallic base metal mineralisation (with associated gold) occurs at Mt. Bonnie and Iron Blow, 30km west of Francis Creek and at Fenton (unpublished). In both cases it is hosted by the lower Mt. Bonnie Formation.

4.0 WORK COMPLETED

No exploration work was conducted on the tenement during the 1998 field season.

Rehabilitation of all through site access to the adjacent Mt. Porter project was completed with contouring and reseeding with native trees and grasses. The work was reviewed by the Mines Department staff and was met with a high degree of approval. Site examination in August showed that the surface of the earth works was settling well and should be readily colonized by vegetation during the wet season.

5.0 RESULTS AND DISCUSSION

The tenement has been recommended for relinquishment by the joint venture partner and this report is the final report for the tenement.

6.0 1998 EXPENDITURE - 12 MONTHS TO OCTOBER, 1998

Expenditure for the year is estimated at $ 2,200 and relates entirely to the rehabilitation work.

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7.0 REFERENCES