TROY CREEK Pt-Pd-Au PROSPECT, NABBERU DISTRICT, WESTERN AUSTRALIA.

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LOCATION

The Troy Creek Prospect (Figure 1) is approximately 160 km NE of Wiluna at 25°24'18"S, 121°12'38"E; Nabberu 1:250 000 map sheet (SG51–05).

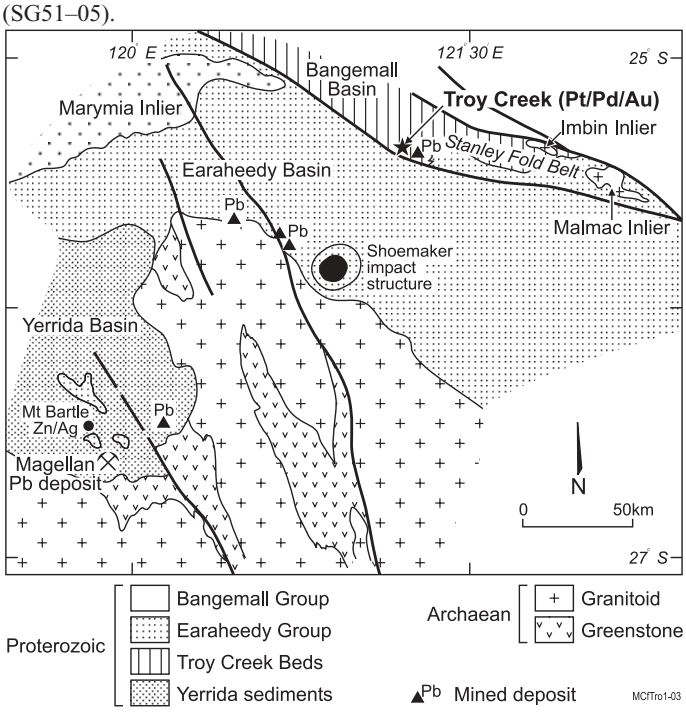

Figure 1. Location of the Troy Creek prospect and regional geology.

DISCOVERY HISTORY

Gossans within the Troy Creek Beds have been explored spasmodically since the early 1980s for sulphide-hosted Au and base metal (Cu-Pb-Zn) deposits. This work resulted in some minor intersections of low-grade Au and Cu mineralization in RAB drilling at the Main Gossan location (Figure 2). Immediately to the E of this occurrence, there is a series of gossanous stringers in shales that were known to contain some low-level Au mineralization. These Au-anomalous ferruginous stringers were the target of a shallow RAB drilling program carried out by Murrilla Exploration Pty Ltd in 1998; the results were generally inconclusive. Subsequently, the pulps of some of the original rock chip samples that contained anomalous Au, (up to 250 ppb) were re-assayed for PGE. These gave significantly anomalous results of up to 700 ppb Pt and 40 ppb Pd (Table, gossans 1-2). Further sampling during 2001 confirmed the results from the gossans and located other geochemically similar rocks in the weathered sediments but with greater Au and PGE concentrations up to 8.28 g/t Au, 455 ppb Pt and 100 ppb Pd (Table, gossans 3-5). Previous drill cuttings were resampled which showed the deeper saprolite to be rich in Au, Pt and Pd (Table, saprolites 5-13) than the shallower saprolite (Table, saprolites 1-4). Further rock chip sampling of the area of PGE-Au-Cu gossan was also anomalous (Table, gossans 6-11).

PHYSICAL ENVIRONMENT

The prospect lies just south of a major drainage divide between N flowing ephemeral streams draining into the Lake Burnside - Lake Disappointment system (Gibson Desert) and SE flowing ephemeral streams draining towards Lake Carnegie. To the W and SW are erosional terrains developed on early Proterozoic rocks of the Troy Creek Beds and the Earaheedy Group. Aprons of colluvium and sheets of aeolian sand surround these erosional areas to the NE and SE. Low-lying drainages are marked by massive calcrete (Bunting *et al.,* 1982). The topography on the prospect varies from low NW trending ridges in the N part to large, flat sheetwash areas in the S part of the property.

The climate is semi-arid with an average annual rainfall of 200-240 mm and the annual potential evaporation is 2400-2800 mm. Average minimum and maximum summer temperatures (January) are 23-38ºC, and for winter (July) 6-29ºC. Vegetation is sparse, with mainly low mulga scrub (*Acacia aneura*) on hills and low woodlands; spinifex (*Triodia*) dominates the sand plains and grasses cover the sheetwash plains (Bunting *et al.,* 1982).

GEOLOGICAL SETTING

The Troy Creek prospect (Figure 1) is located within the Early Proterozoic rocks of the Stanley Fold Belt (NE part of the Nabberu 1:250 000 map sheet) and near the edge of the Bangemall Basin. The Shoemaker Impact Structure lies about 60 km to the SW. The Stanley Fold Belt consists of metasediments, the Troy Creek Beds, which are of undetermined age and appear to be unconformably overlain by the Yelma Formation of the Early Proterozoic Earaheedy Group (Figure 2). The Yelma and Troy Creek rocks outcrop as inliers in a plain of Cainozoic colluvium consisting of quartz and rock fragments in loam with hardpan, aeolian sand sheets and alluvium, mainly clay and pebble deposits, in drainages and flood plains and calcrete in drainages.

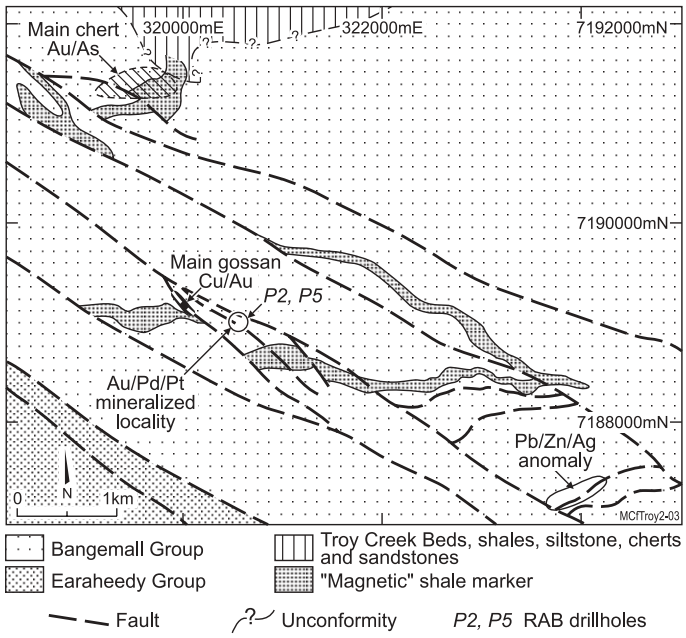

Figure 2. Geological map of the Troy Creek prospect.

REGOLITH

The area is a dissected laterite profile with much of the outcrop being pallid saprolite and some saprock. Generally, the base of oxidation occurs at about 30 m although, in sulphide-rich sections, it can reach 60 m. The known mineralized outcrops are surrounded by a complex mix of colluvial and alluvial material that, in general terms, appears to be relatively thin (<~3 m) and is largely comprised of red brown clays with numerous gibbers. The residual soil profile, in the limited areas where it is developed, appears to be very thin.

MINERALIZATION

There are two known mineralized occurrences, the first, known as the Main Gossan (Figure 2), is a stratiform sulphide lens that has been boudinaged by extensional deformation during metamorphism. Detailed aeromagnetic data indicate a moderate northerly dip, conformable with the dip of the sulphide lenses. Diamond drilling of one hole by Aztec Resources Ltd (TCD02) in 1992 tested the down dip extension of the surface gossan (Figure 2) and intersected 15.8 m of massive to semi-massive sulphides at 107.5 m down hole. Although core recovery through this zone was extremely poor, 1.5 m of core recovered between 108.9-110.4 m assayed 2.98% Cu and 0.12 g/t Au. Other drill holes failed to intersect this, due to the boudinaged form of the sulphide lens and failure to account for its shallow westerly plunge.

The other occurrence, which is the PGE-Au mineralization, lies slightly higher in the section and about 700 m ESE of the Au- and Cu-rich massive sulphide body described above (Figure 2). Interpretation of detailed aeromagnetic data suggests that subvertical shear zones, related to the metamorphic and structural events that formed the Stanley Fold Belt, control the location of the PGE-Au mineralization. In a regional geological sense, the PGE-Au mineralization is located below, but probably vertically close to the unconformity between the Troy Creek Beds with the overlying Bangemall Group sediments (Figure 3). At a 0.5 g/t Pt+Pd+Au cut off, there are at least 4 m (16-20 m) averaging 1.04 g/t Pt+Pd+Au in hole 002. As the following 4 m interval also contains significant PGE, the mineralized interval might be conservative. The 1 m interval from 18-19 m assayed 0.54 g/t Pt, 0.48 g/t Pd and 0.25 g/t Au in a white pelite. This clearly represents a significant PGE anomaly.

REGOLITH EXPRESSION

Gossan

At the 'Main Gossan' prospect (Figure 2), a gossan outcrops over a strike of 400 m attaining a maximum width of 4 m. This consists of colloform goethite and is anomalous with maxima of 185 ppb Au, 360 ppm Cu, 86 ppm Pb, 400 ppm Zn, 540 ppm As and 6 ppm Ag. Shallow RAB drilling (6 holes), showed that the surface gossan was developed over a 6-8 m wide ferruginous zone at the contact between pyritic, carbonaceous siltstone and a grey siltstone. Here, Cu reached a maximum of 2450 ppm, Zn 1300 ppm, Pb 81 ppm and Au 0.05 ppm over a 6 m interval from 45 m in hole TC49. The last 3 m (66-69m) of the same hole also contained 5300 ppm Cu within the footwall siltstone. The maximum of 3.2 g/t Au (19-20 m in hole TC51, 200 m west of TC49) was also from the footwall siltstone.

The outcropping PGE-Au mineralization, discovered by sampling ferruginous stringers, is located up the stratigraphic section and to the ESE of the main gossan horizon. The main PGE – Au mineralization discovered by the RAB drilling lacks any gossan development, as it is sulphide deficient. Typical assays of mineralized rocks are given in the Sample Medium Table.

Saprolite

The general PGE background appears to be about 10-20 ppb Pt and 10-30 ppb Pd. Base and precious metal contents of typical mineralized shallow saprolites (saprolites 1-4) and slightly deeper mineralized saprolites (5-13) are given in the Sample Medium Table. The saprolite and saprock containing the PGE-Au anomalous intervals are within white, oxidized sediments that lack quartz veining or Fe staining. They are S and As deficient but Se rich, implying that the mineralization is not S-associated (hence the lack of gossan developed over the PGE-Au mineralization E of the Main Gossan area) and that the PGEs probably occur as selenides.

Bedrock

The subcropping quartz-poor pelite host of the PGE mineralization is strongly leached. Rock chip sampling and the shallow intersection in RAB drill hole 05 all have low Pd concentrations compared with the deeper intersection in RAB drill hole 02 (Figure 2), which implies leaching near the surface. Consequently, Pt, Pd and Au concentrations in bedrock are expected to be greater.

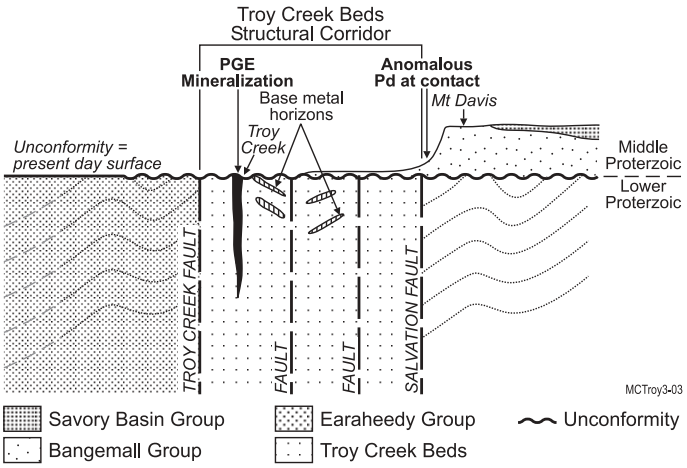

Figure 3. Mineralization model of the Troy Creek deposit.

Comparisons

The PGE-Au mineralization at Troy Creek is a sediment hosted S-deficient, Se-rich body that appears to be structurally controlled. It is similar to the S-deficient Coronation Hill Deposit (6.36 Mt @ 6.08 g/t Au, 1.12 g/t Pt+Pd for 1.5 Mozs of precious metal) of the NT (Carville *et al.,* 1990) and to the Serra Palada Deposit (remaining resource of 3.7 Mt at 15.2 g/t Au, 7.0 g/t Pt+Pd) of Brazil (Cabral. *et al*., 2002; Grainger *et al*., 2002).

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SAMPLE MEDIUM TABLE

Sample material	Depth (m)	Cu (ppm)	Pb (ppm)	Zn (ppm)	As (ppm)	Se (ppm)	Ag (ppm)	Au (ppb)	Pt (ppb)	Pd (ppb)	Pt+Pd+Au (ppb)
Detection Limit	-	1	1	1	0.5	1	0.5	1	5	5	-
Gossan 1	0	770	125	62	375	-	20	250	700	40	990
2	0	197	65	62	125	-	-	11	60	10	81
3	0	976	172	85	420	47	4	21	455	30	506
4	0	795	940	65	170	41	5	82	380	55	517
5	0	917	391	242	83	102	1	8	45	45	98
6	0	547	138	164	180	102	1	8	30	15	53
7	0	1430	99	386	32	44	2	54	150	100	304
8	0	845	676	250	620	212	2	17	75	50	142
9	0	499	73	83	1200	68	1	8280	115	60	8455
10	0	454	65	56	870	53	1	2130	90	35	2255
11	0	491	49	64	950	71	2	1770	85	20	1875
Saprolite 1	4.5	540	42	32	17	3	<0.5	33	30	30	93
2	5.5	468	151	22	6	2	<0.5	70	35	35	140
3	6.5	522	46	18	6	2	<0.5	339	275	70	684
4	7.5	556	72	23	15	10	0.5	201	400	80	681
5	12.5	231	66	41	9	7	0.5	95	60	55	210
6	13.5	269	60	37	7	4	<0.5	142	50	75	267
7	14.5	316	135	37	10	7	<0.5	302	35	75	412
8	15.5	283	97	32	5	3	<0.5	155	45	75	275
9	16.5	496	104	41	8	5	<0.5	443	275	160	878
10	17.5	494	112	41	5	3	<0.5	612	440	200	1252
11	18.5	556	198	61	9	2	<0.5	251	535	380	1166
12	19.5	669	190	46	8	4	1	207	275	290	772
13	22	391	10	24	-	-	1	153	210	265	628

- Not analysed