To: Dr. Zoran Seat, Cassini Resources Limited
From: Grant "ROCKY" Osborne
Date: March 6th 2017
Subject: CZD0011 structural logging project

Executive Summary

Oriented structural measurements taken down the length of drill hole CZD0011 reveal that the intrusive rocks of the Giles Complex are dominated by dolerite with an average orientation of 62°/156° and foliation of 59°/198°. The core is dominated by sub-vertical fractures with an average orientation of 87°/345°.

Introduction

The current author was requested to provide Cassini Resources Limited (ASX:CZI) with a report detailing the structure observed in drill core from hole CZD0011 at the Succoth Copper Prospect within the larger West Musgrave Project located near the triple state border junction of Western Australia, South Australia and the Northern Territory. Drill hole CZD0011 was approved for co-funding by the DMP under the 2016 EIS in October 2015. Logging was carried out in Perth between Monday February 27th and Tuesday February 28th 2017.
CZD0011 targeted a zone 230m-590m vertically below the mineralization intersected in hole WMN4023 (1.96% Ni, 0.13%Cu, 1.2g/t Pt+Pd in late dolerite), some 260m-350m below the current maximum depth of downhole electromagnetic investigation. No significant mineralization was intersected, suggesting the mineralization in WMN4023 does not extend to depth.

Regional Geological Setting

The Succoth Copper Prospect is located within the Ngaanyatjarra Rift (NR) in the West Musgrave region of Western Australia (figure 1) and was discovered by BHPBilliton in 2009 via routine exploration following the discovery of the Nebo-Babel Nickel sulfide deposit by WMC Resources Limited in 2000 (Seat et al, 2007). The NR is identified as the principal component of the Warakurna Large Igneous Province (LIP) that extends throughout western and central Australia, and was originally interpreted to reflect a NeoProterozoic Mantle Plume impact (Wingate et al, 2004). This interpretation was recently challenged by Evins et al (2010), on the basis that the NR is too prolonged and involves a polyphase history including multiple phases of magmatism and deformation. Aitken et al (2013) propose that instead of a mantle plume origin, the voluminous magmatism of the NR could equally be driven by processes occurring within the shallow asthenosphere and/or the lithosphere as a response to magmatism-induced crustal thickening and the gravitational collapse of the crustal column (figure 1).
According to Aitken et al (2013, figure 1) the stress direction varies successively from NNE-SSW extension (Early Rift), NE-SW compression (Late Rift 1), NW-SE extension (Late Rift 2), to NW-SE compression (Late Rift 3 and 4). It is interpreted by these authors that the Succoth mineralization was emplaced during in Early Rift phase, and folded and cut by Alcurra dykes associated with sinistral movement along the Cavenagh Fault forming the ENE-trending Barrow Range Cavenagh Corridor in Late Rift phase 1 (Aitken et al, 2013).

Structural observations from CZD0011

A total of 95 structural observations (93 measurements) were obtained from the drill hole covering the 791.9m depth of the hole. The majority of the core was marked with an orientation line along

the top of the core, but orientation data was missing locally in zones of shears or faults where the orientation tool failed due to incompetent core.
Data was collected using the CoreMap orientation device which permits direct observation of planar and linear fabrics whilst the core is held in the exact orientation of the drill hole at each depth. Readings were taken as dip and dip direction, or plunge and plunge direction with respect to true north (GDA94z52S).

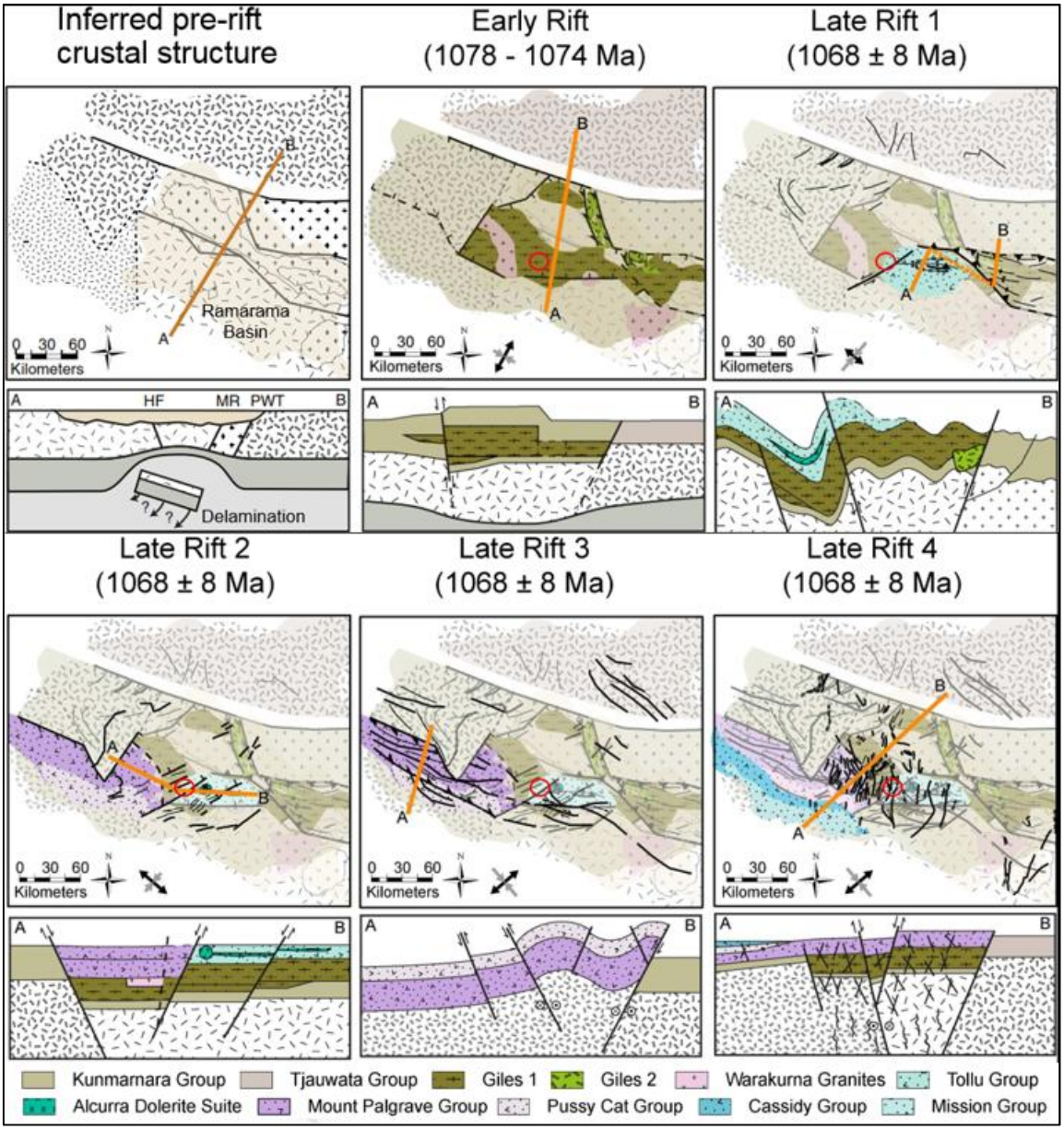

Figure 1: Tectonic cartoons of each stage of the evolution of the Ngaanyatjarra Rift in the Musgrave Ranges with corresponding maps and cross sections, from Aitken et al (2013). The red circle shows location of CZI Nebo-Babel to Succoth area.

All down hole structural measurements were assigned 3D coordinates using MapInfo GIS software. Data is presented in the accompanying text file (CZI_CZD0011_downhole_structure.txt) with the following legend.

Column 1: Project name = WMU
Column 2: HoleID=CZD0011
Column 3: mFrom = downhole depth of reading in metres. In the case of multiple readings from the same depth the readings are differentiated by addition of 1cm (0.01m) to successive readings to facilitate 3D data handling as some softwares do not accept duplicate depth values.

Column 4: X= GDA94z52S Easting in metres
Column 5: Y= GDA94z52S Northing in metres
Column 6: Z= AHD Elevation above MSL in metres
Column 7: Structure

- C=lithological contact 37 readings
- F=Foliation 27 readings
- FA=Fold Axis plunge (Linear observation) 1 reading
- Fr=Fracture 22 readings
- FZ=Fault Zone 1 reading
- SL=Slickenline (Linear observation) 2 readings
- SZ=Shear Zone 1 observation
- V=Vein 3 readings

Column 8: Dip (=plunge for linear fabric)
Column 9: Dip Direction (=plunge direction for linear fabric) with respect to GDA94z52S
Column 10: Sense=displacement sense
Column 11: Lithology. Where two lithologies are separated by a trace the first is the uphole unit and the second the downhole unit.
Column 12: Comments

Interpretation
Only the contact, foliation and fracture datasets contain enough readings to be statistically valid.

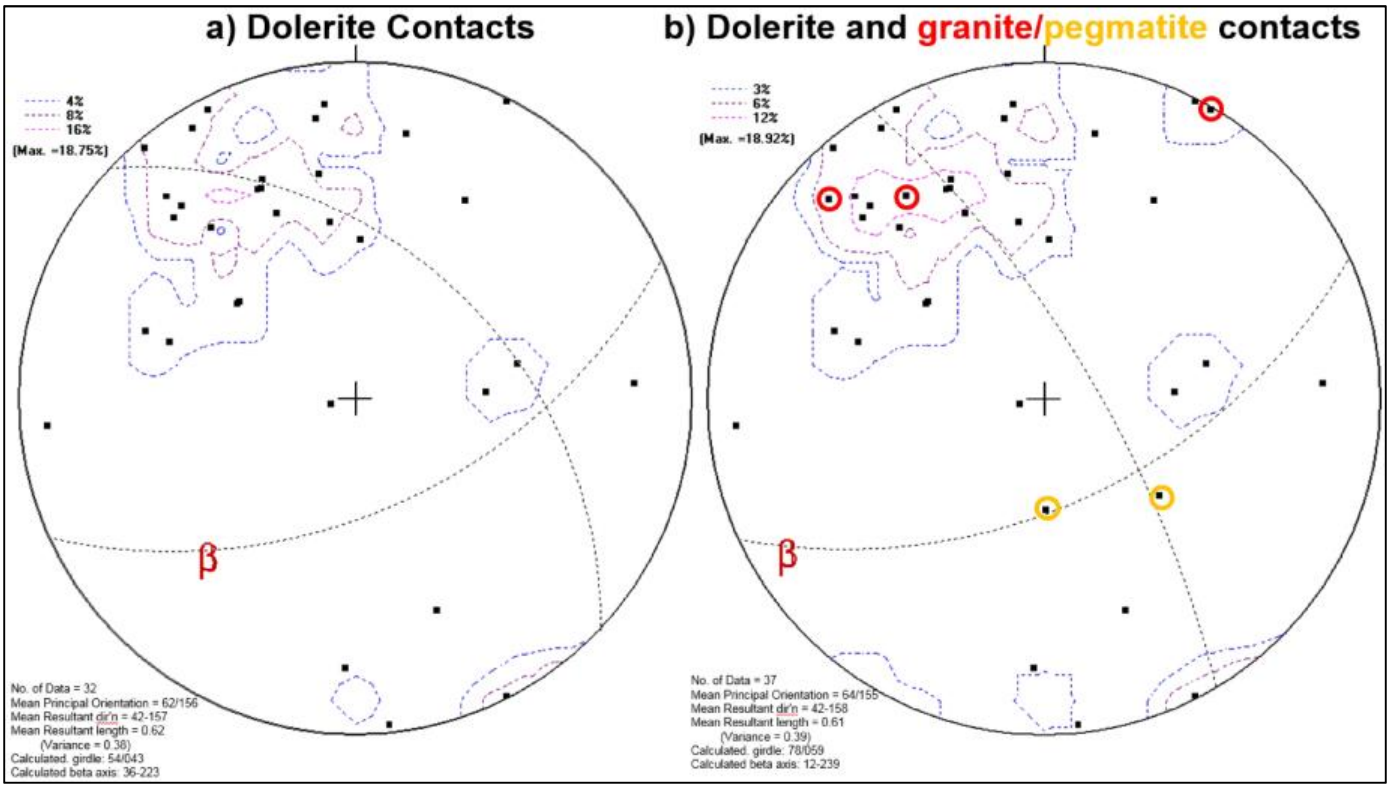

Figure 2: Lower hemisphere equal-angle stereonets showing the distribution of poles to contacts: a) Dolerite contacts only and b) dolerite contacts (32) plus 3 pegmatite (red circles) and 2 granite contacts (orange circles).

Contact data comprises two types; contacts between dolerites and other lithologies (n=32) and contacts between granite/pegmatite and other lithologies (5), with no contacts between granite/pegmatite and dolerite observed. The average dip of the dolerite is 62°/156°, and 2 of the 5 felsic intrusives (pegmatite) also have this orientation (figure 2a). The remaining felsic intrusives dip ca 30°/336° (2 granites) and 90°/210° (1 pegmatite), this orientation also occupied by a dolerite dyke- figure 2b). It may be, or not, significant that the dolerite and granite are orthogonal to each other (88° interplanar angle). The dolerite orientation is parallel to the Barrow Range Cavenagh

Corridor and this suggests it may have intruded parallel to the regional foliation of the pre-Giles Complex wall rocks which are also known to dip SE.

The majority of the 27 **foliation measurements** were taken in foliated Giles Intrusive Complex rocks as only 34m of the hole (4%) intersected wall rocks (felsic country rock or amphibolite). The average dip of the foliation is well constrained at 59°/198° (figure 3), at an angle of 56° to the orientation of drill hole CZD0011 (dipping 65° towards azimuth 022°- red star in figure 3).

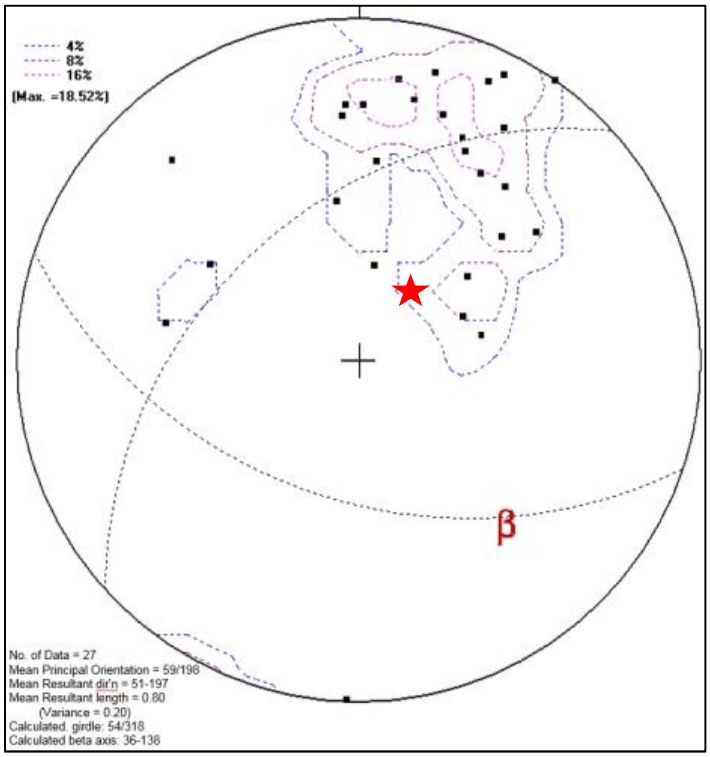

Figure 3: Lower hemisphere equal-angle stereonet showing the distribution of poles to foliation. The red star shows the orientation of CZD0011 plotted as a linear feature.

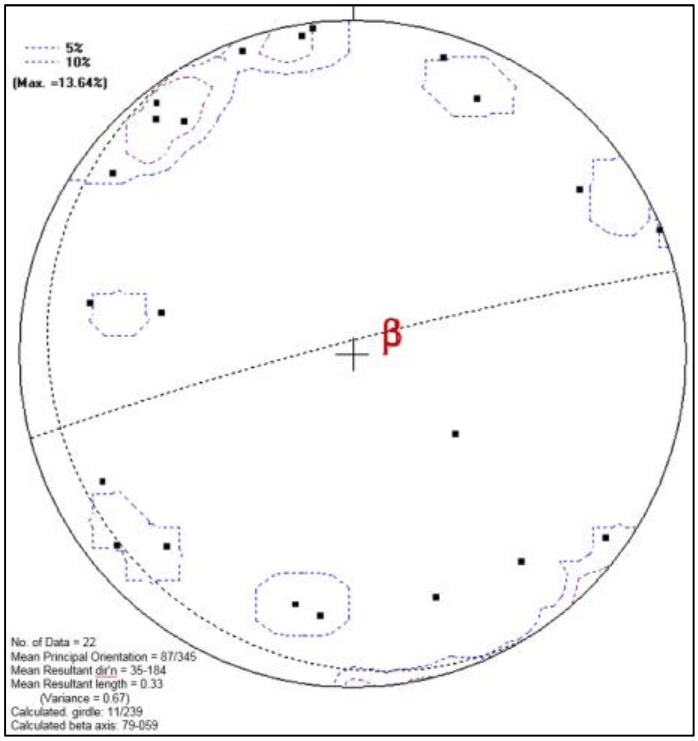

Figure 3: Lower hemisphere equal-angle stereonet showing the distribution of poles to fractures. With rare exceptions most readings have very steep dips.

The 22 **fracture measurements** are distributed around the margin of the stereonet with a mean orientation of 87°/345° (figure 4). Steep fracturing is common suggesting the fractures developed during an extensional phase, possibly related with relaxation along the Barrow Range Cavenagh Corridor during NW-SE extension (=Late Rift 2 stage of Aitken et al, 2013).

Kind regards,

Grant Alan "ROCKY" Osborne
Consultant Geologist

GEOSBORNE PTY LTD

References:

AITKEN, A.R.A., SMITHIES, R.H., DENTITH, M.C, JOLY, A., EVANS S, and HOWARD, H. M. 2013. Magmatism-dominated intracontinental rifting in the Mesoproterozoic: The Ngaanyatjarra Rift, central Australia. Gondwana Research, v24, pp886-901

EVINS, P.M., SMITHIES, R.H., HOWARD, H.M., KIRKLAND, C.L., WINGATE, M.T.D., BODORKOS, S., 2010. Devil in the detail; the 1150–1000 Ma magmatic and structural evolution of the Ngaanyatjarra Rift, west Musgrave Province, Central Australia. Precambrian Research 183, pp572–588.

SEAT, Z, BERESFORD, S.W., GRGURIC, B.A. WAUGH, R.S., HRONSKY, J.M.A., GEE, M.A.M., GROVES, D.I., and MATHINSON, C.I. 2007. Architecture and emplacement of the Nebo–Babel gabbronorite-hosted magmatic Ni–Cu–PGE sulphide deposit, West Musgrave, Western Australia. Mineralium Deposita, v42, pp551-581.

WINGATE, M.T.D., PIRAJNO, F, MORRIS, P.A. 2004. The Warakurna large igneous province: a new Mesoproterozoic large igneous province in west-central Australia. Geology v32, pp105–108.