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| Data Analysis | Exploration Management:
Project Generation to Resource Definition

Liontown Resources Limited

Bynoe Project

Aeromagnetic Interpretation- Solid Geology and Regolith

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Date: 28th May 2017

Executive Summary

LithosX has completed a regolith and solid geology interpretation of a detailed aeromagnetic and radiometric survey covering Liontown Resources Limited's Bynoe Project area. The principal aim of the interpretation was to identify new potentially Li bearing pegmatites, or extensions to known pegmatites.

Magnetic susceptibility measurements of the pegmatites tested by drilling indicate the pegmatites have a weak (around 4 x background) positive magnetic anomaly. Analysis of the bulk of the known pegmatites, and in particular, the Sandra's pegmatite, indicates the magnetic signature appears to be of a remanently magnetised source. However, given the relatively low magnetic anomaly and thin sources, identifying these anomalies under magnetic regolith, or in areas with abundant cross-cutting dykes or fractures, is difficult.

Some pegmatites (for example, the Rindwood suite to the south of Liontown's leases) have a potassic signature, no pegmatites in Liontown's leases show a potassic signature unless there has been historic mine mullock dumps preserved. This suggests that there is a strong surface depletion of potassium in the weathering environment over LTR's leases.

87 discrete pegmatite targets are outlined. Target 51, the southern extension of the Sandra's pegmatite, is the highest priority target. However, the absence of a Target in an area does not indicate a pegmatite cannot be developed- the subtle magnetic signatures of the pegmatites are easily overprinted by the magnetic regolith and cross cutting structure in basement.

Three gold targets are outlined, based principally on potential magnetic alteration, or one area of complex structure, covered under an unclassified regolithic cover sequence.

The regolith interpretation has outlined areas potentially amenable to surface sampling, and those where a potential transported regolith has been developed.

Basement lithology and structure has been identified in the Solid Geology interpretation.

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Attached Enclosures

Bynoe Regolith Interpretation- 3 x A0 sheets: North, Central and South

Bynoe Solid Geology Interpretation- 3 x A0 sheets: North, Central and South

Attached Digital Data Sets

BYN_Mag_Targets_20170505.TAB;

BYN_Mag_Gold_Targets_20170528.TAB;

BY_Alteration.TAB;

1 INTRODUCTION

1.1 Scope of work

LithosX Mineral Exploration Consultants have been requested by Lione Resources Limited (LTR) to complete a Solid Geology and Regolith Interpretation of the Bynoe Project area, based on a detailed aeromagnetic and radiometric survey. The project area is outlined in Figure One.

The aim of the interpretation is to produce a solid geology interpretation, and investigate whether the Li bearing pegmatites have a magnetic signature, and if so, can more pegmatites be identified in the data. In addition to the solid geology, a Regolith interpretation would be completed, to identify areas where soil sampling could be an effective exploration tool and radiometric data might identify pegmatites (perhaps through the K channel).

Requested products include fair hand drawn copies of the interpretation, and a brief report documenting the results. Digitisation of the maps will be considered at a later date.

Figure One. Project Location and tenements (shown in dark blue). Area of interpretation shown in red. Names refer to the 1:250,000 standard map sheets

1.2 Data Sources

Data used in the interpretation includes:

1. Detailed aeromagnetic and radiometric data, 50m line spacing, with images and contours produced by geophysicist John Caon;
2. Geological control provided by the NTGS 1:100,000 mapping, in digital form;
3. Pegmatite locations and outlines, drawn from either NTGS publications, or LTR in-house data;
4. Soil geochemical data provided by LTR; and
5. A drill hole database provided by LTR.

1.3 Deliverables

The interpretation is presented in:

1. Separate layers for Regolith and Solid Geology, presented on three AO sheets (North, Central and South) at 1:10,000 scale;

2. The plans are hand drawn, but suitable for digitising into a regolith layer, a solid geology layer, a structure layer, and a layer showing the extent of the magnetic duricrust;
3. A digital Target layer, outlining the interpreted pegmatites; and
4. This report, containing a brief summary of the work completed, the results of the interpretation, and the Targets.

2 WORK COMPLETED

2.1 Regolith Geology

The following regolith units are identified in the interpretation:

Unit Code	Description
W	Sea water or dams/ lakes on land
Qca	Mudflats, mapped as mud, clay and silt, mottled dark red radiometric signature
Qa	Alluvium, mottled blue- purple- dark pink radiometric signature
Qcl	Sand silt and clay- transported, NTGS mapped unit described as sand, silt and clay. Mottled dark purple to black radiometric signature
Q _{CLT}	Culture- generally mine mullock, with a coherent magnetic anomaly and/or K anomaly
Qs/ Cz1	Transported soil over an insitu magnetic duricrust. Mottled moderate to dark blue- green radiometric signature, developed over insitu magnetic duricrust. Locally flanking Qcl- possibly a palaeo- drainage.
Cz1	Ferruginous duricrust, commonly magnetic and Th, U anomalous
Cz	Unconsolidated sandy and gravelly soils, mapped by NTGS. Colluvium or residuals soils developed over a lateritic duricrust
Cz/Cz1	Soils developed over preserved magnetic duricrust, mottled moderate to pale blue signature- probably gradational to Cz and Qs/ Cz1
Cz1p	Undifferentiated unit with dark purple blue ternary colour; possible degraded duricrust or marine limestone, requires field checking
Cz1/ Pfb	Noisy magnetic material over an apparently residual soil profile in Pfb

Pfb	Shale, siltstone, sandstone and conglomerate. Undifferentiated Burrell Creek Formation of the Finnis River Group
Pfb1	Pfb with strong K, U, and Th radiometric signature. Pale pink to white radiometric character
Pfb3	Pfb with a weaker, more yellow- red mottled radiometric signature;
Pfb4	Pfb with strongly laminated/ bedded magnetic and radiometric character

The regolith is dominated by the ferruginous duricrust, which probably once formed a near continuous blanket over the area, and now flanks windows of exposed basement, typically with residual soils over Pfb preserved. The duricrust has an original preserved soil profile ("Cz/Czs"), and a subsequent transported soil (Qcl) is developed locally.

No subdivision of the basement regolith profiles (eg, upper saprolite, saprock, etc) was possible.

A second style of soil over duricrust ("Cz2") is developed over the Pfb4 west of Sandra's. Some unassigned regolith units have been identified, and both these and the Cz2 warrant field checking.

2.2 Solid Geology Interpretation

The solid geology stratigraphy comprises, from the east:

- Pfb1, undifferentiated generally non magnetic Burrell Creek Formation with a distinctive radiometric character. Discrete and continuous strike extensive weakly magnetic beds are developed locally, parallel to the regional strike at 035°;
- Pfb2, a broad, weakly magnetic unit within Pfb1, showing large scale tight to isoclinal folding;
- Pfb4, a metasediment package containing several discrete, strongly magnetic units, displaying prominent isoclinal folds. The magnetic units are restricted to the SW corner of the southern tenement, and do not extend into or repeat in the Central and Northern sheet areas;
- Pfb3, a non-magnetic package conformable with Pfb1 or Pfb2, but with a slightly different radiometric character to Pfb1. Some weak magnetic units, of short strike length, are developed within Pfb3, but no extensive continuous bedding is defined. Pfb1 and Pfb3 are separated by an interpreted major structure, which, in the Central Sheet, runs along a discrete magnetic unit developed on the contact between the Pfb1 and 3; and

- In the northern two thirds of the Project area, Pfb undifferentiated is inferred to the west of the Pfb3, again, probably separated by a major shear.

Intrusive units include:

- a) A large granite body, located just to the south west of the interpretation area;
- b) Pg1, discrete dyke like non magnetic bodies, identified as non magnetic breaks in moderately to strongly magnetic bodies. A prominent set is developed in the eastern fold closure of the Pfb4. Note that there may be significant non magnetic bodies developed in the generally non-magnetic Burrell Creek Formation, that will not be visible in the magnetics;
- c) Pegmatites, interpreted from their weak, remanently magnetised signature; and
- d) Numerous thin dykes, both positive and remanently magnetised, generally striking NNW or NE. There are significantly more of these structures than indicated in the interpretation .

Given the lack of outcrop and/ or extensive magnetic layering there is little structural information available. Structures visible in the interpretation include (and probably from earliest to latest in age):

- I. D1: Early folding and /or tilting of the Burrell Creek (so that subsequent folding produces the steeply plunging closures);
- II. D2: Large scale conformable strike extensive shear zones, strike 035°, forming the contacts between Pfb1 and 3, and Pfb3 and the undifferentiated Pfb unit to the west of the Pfb3;
- III. D2b: Isoclinal folding in the Pfb4, and probably Pfb2, with axial planes trending 035°, and steeply plunging hinges. The isoclinal folds will be sandwiched between coeval thrusts, better resolved in the Pfb4 units south of the Project area. This thrusting and folding is probably coeval with the D2 strike extensive shear zones;
- IV. Du: Numerous discrete generally NNW trending small scale fault offsets along the strongly magnetic units, many parallel to the thin dykes outlined above. No age attribution at this stage; and
- V. The Du structures possibly include a more significant NNW structure developed in the eastern fold closure of the Pfb4, where the entire closure appears to be repeated across a late fault, or a zone of significant width of demagnetisation. Given the fold closures appear to be steeply plunging, it does not appear to be a simple step up of a deeper plunging closure, and the age and style is unresolved.

Alteration anomalies are outlined in Mapinfo Table “BY_Alteration.TAB”. These include magnetic alteration, demagnetisation, magnetic alteration in a remanent field, and potassic alteration.

2.3 Exploration Targets

2.3.1 *Magnetic signatures of known pegmatites*

Magnetic susceptibility logging of LTR’s drilling indicates the bulk of the Li bearing pegmatites are weakly magnetic, with susceptibilities around 4 x background at 40×10^{-4} SI units. The Sandra’s pegmatite shows a weak magnetic anomaly, and given the drill indicated east dip and comparison between the Analytic Signal and RTP TMI images, appears remanently magnetised. A close look at the other known pegmatites, where they are developed in areas of lower noise, suggests that a number of other pegmatites are also remanently magnetised.

However, the Talmina 3 and 4 pegmatite appears to be positively magnetised, and the Martin’s and Turner pegmatites are non magnetic.

This remanent magnetic signature is the key criteria for targeting further Li bearing pegmatites. However, the overall amplitude of the magnetic anomalies are small, and are easily disrupted by regolith related magnetic noise, or close cross faulting and dyking through the pegmatites.

2.3.2 *Exploration Targets- Lithium*

Exploration Targets are outlined in the mapinfo layer “BYN_Mag_Targets_20170505.TAB”. Targets are either “thin” dykes (lines in the TAB file) or in some examples, larger bodies (polygons in the TAB file). Each target has been attributed with a confidence factor, ranging from 1 to 5, with 5 being high confidence.

While there are no easy mag signature to identify a pegmatite, I have looked for:

- Small amplitude remanently magnetised bodies;
- Low to non magnetic holes in stronger broad magnetic features; and
- Weak positive anomalies, but only where located along strike from a known positively magnetised pegmatite.

87 discrete pegmatite targets are outlined. Target 51, the southern extension of the Sandra’s pegmatite, is the highest priority target.

I looked at the K signature, but found most pegmatites do not have a K signature, unless there is some mining mullock. This suggests fresh

pegmatite may have a K signature (for example, the “Ringwood” pegmatites located south of Liontown’s tenure), but in Liontown ground there is probably a strong weathering profile developed, even in those areas mapped as outcropping Pfb.

Note that there are clearly surface geochemical anomalies, or anomalous samples, with no identifiable underlying magnetic character. The absence of a mag target does not mean there are no pegmatites in an area! Note also that the Sandra’s pegmatite has a very weak to negligible Li in surface soil anomaly, so absence of a surface soil signature is also not a conclusive indicator.

2.3.3 *Exploration Targets- Gold*

Three discrete gold targets have been outlined, and warrant follow up work. The targets are outlined in Mapinfo layer :

- The eastern fold closure in the Pfb4. This highly magnetic stratigraphy is faulted, and either intruded by non magnetic, possibly felsic porphyry dykes, or contains extensive demagnetised zones. There is no outcrop, with the closure covered by the “Cz2” regolith unit, and is therefore potentially blind to surface geochemistry;
- Gold in soil anomaly just north west of the Talmina 9 prospect. This soil anomaly is open to the north, runs under Cz1 cover to the south and west (so may not be effectively tested). The anomaly is hosted in Pfb1, but close to the folded contact with Pfb2 (under the laterite). Note that some culture is interpreted in the Regolith interp, but subsequent discussions with Ian Bamborough suggests there is NO culture visible on the surface, and the magnetic anomalism in this area is unexplained. One possible explanation is the “Qclt” is actually a window in the regolith layer; and
- The weak magnetic body located in an apparent fold closure in Pfb2 adjacent to the sheared contact with Pfb3, centred on 691600mE, 8581250mN. This is under Cz1 or Qa cover, and potentially blind to surface sampling.



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