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Hand Held Spectrometry and X- Ray Fluorescence (XRF) Tools - An Aid to Geological Exploration at Broughton Creek EPM 16209, NW Qld

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Executive Summary

CNW Pty Ltd (CNW), a Brisbane based junior exploration company was granted Exploration Permit for Minerals (EPM) 16209 totaling 19 sub blocks on 27th March 2008 for a period of 3 years. This EPM was given the project name of Broughton Creek and targeted exploration was focused on copper, gold, rare earths elements and uranium.

On 20th April 2009, CNW commenced an Industry Network Initiative (INI) funded project that combined a number of technologies to aid its geological exploration on EPM 16209. These technologies included:

i) GPS guided ground spectrometery for the location of target areas.

ii) Geological assessment, exploration and sample collection of these target areas using a field portable XRF system.

iii) Detailed ground spectrometry of selected locations where samples were collected and assayed.

iv) Laboratory analysis and geologist assessment of samples collected.

The resulting analytical and geophysical data was then been imported into a Common Earth GoCAD model that will be utilized for drill hole targeting.

The project took slightly longer than the allocated timeframe at a total cost of ~ $81 000

CNW believe that the INI project has been very successful in meeting its objectives in that it has combined “real time” quantitative geochemical analysis with geological and geophysical mapping in a very cost effective exploration campaign that will greatly assist drill hole targeting .

Details of Work Completed

The project was made of five individual components, which when amalgamated produced a thorough “greenfields” exploration campaign. Each component is summarized below. Further details of these stages are outlined in the related Appendices.

Phase 1 - Airborne Magnetic/Radiometric Survey

As outlined in the INI proposal submitted in March 2009, prior to commencing of the project, CNW was eager to complete a detailed aeromagnetic/radiometrics survey over the tenement that would allow areas of structural complexity and anomalous radiometrics/alteration to be prioritized.

This survey was carried out by UTS Geophysics in late May 2009 at 50 m line spacing and 20m altitude for a total of 1700 line kms. The data was delivered in mid June.

Whereas the airborne survey was not a direct component of the INI study, CNW considered it a very important precursor to the project.

The data from this airborne survey was compiled and integrated with all the previous open file and company geological, geochemistry and geophysics data. This was carried out “in house” and by Mira Geoscience utilizing GoCad. The resulting common earth model not only highlighted areas known to have anomalous surface geochemistry but also more subtle magnetic and radiometric features adjacent to structurally complex alteration/dilation zones. Using all this relevant information, the areas to be targeted for the INI study was established.

As mentioned above, the airborne survey was not part of the INI study and will therefore not be discussed in more detail in this report. However, data from the survey is presented within the GoCad project.

Phase 2 - Geological Exploration using Spectrometry and XRF.

The reconnaissance ground field work undertaken within the selected areas of EPM 16209 included:

i) GPS/hand held ground spectrometery
ii) Geological mapping
iii) Rock chip and XRF sampling

The handheld spectrometry was conducted using a GF Instruments Gamma Surveyor and a Garmin GPS60 GPS. The combination of this equipment proved very effective in ground truthing the anomalies highlighted in the airborne radiometrics. See Figure 1 below:

Figure 1 – GF Gamma Surveyor & GPS60

The geological mapping and XRF sampling was carried out by Dr. Brian Senior utilizing a Niton XL3t portable XRF system. This system incorporates both soils and mining mode analysis of elements and allows for “real time” analytical results to be obtained simultaneously to the geological observations and sample collection.

Figure 2 - Niton XL3t portable XRF

A comprehensive report authored by Brian Senior detailing this phase of the project is presented in Appendix 1

The complete specifications for both the Gamma Surveyor and the Nitron XRF system are found in Appendix 2

Phase 3 - Detailed Spectrometer Surveying.

Due to the significant presence of uranium and its associated rare earth element mineralization, it was considered a high resolution ground spectrometer survey over particular target areas would provide more insight to the continuity between the zones of anomolous rock chip mineralization.

The system utilized for the survey was the PGIS21 manufactured by Pico Envirotec of Canada. This system uses a larger volume detector and continuous 1 second sampling with GPS integration operating in much the same way as an airborne spectrometer at ground level- See Figure 3 below.

Figure 3 – Pico Envitotec PGIS21 Spectrometer

Detailed specification of this instrumentation is outlined in Appendix 2

Assessment of the different spectrometer channels can also provide insight into changing geological conditions containing higher thorium and or potassium.

The results from this survey successfully identified continuation of mineralization between geochemically anomalous zones highlighted by XRF and laboratory analysis. To this end, results of laboratory geochemical assaying and spectrometer uranium channel in cps or ppm units could potentially be correlated to provide an equivalent U contour map of surface mineralization.

A detailed analysis of this survey is presented in Appendix 3

Phase 4- Laboratory Analysis.

A total of 171 rock chip samples in three batches were subject to a full suite of geochemical analysis. The analytical methods utilized by each laboratory was as follows:

1. Genalysis (Townsville)
   Report – 6.3/0909591
   45 samples
   Method - FA25/AAS for Au
   Method - BT/OES/MS 59 element scan on all.

2. ALS (Mt Isa-Brisbane)
   Report - MI09119495
   68 Samples
   Method - Au-AA25 for Au
   Method - ME-MS81U multi element for all

3. ALS (Brisbane)
   Report - BR10002609 (Country Rock)
   Method - 58 Samples
   Method - ME-MS81U multi element for all
   Method – AU-AA23 for Au

Full results along with sample locations coordinates are given in Appendix 4

Phase 5 - Import of all suitable data in Gocad

Gocad was selected as a platform for import of all the relevant INI project data as it is considered to the most advanced 3D modelling and visualization technologies able to create a single, Common Earth Model (CEM) which utilises all available datasets.

In addition, it provides an environment for integrated interpretation facilitating data analysis, geological modelling and property modelling as well as providing 'links' to geophysical modelling packages.

An INI specific Gocad project has been created and supplied on the corresponding CD. This project includes the following:

i) Regional scale geology maps

ii) Historic geology & geochemistry

iii) GA Digital Terrain Model

iv) UTS detailed airborne (50m line spacing) – magnetics, radiometrics, DTM

v) Analytical geochemical assays

vi) Ground spectrometer surveys

This Gocad project has proved to be a valuable tool in integrating all available datasets and will now be continuously updated as more data becomes available.
The viewing of this model will provide a better appreciation of the overall scope of the INI project.

Costs & Timeframe

The project was commenced on 20th April 2009. Due to a number of factors including a delay in receiving data from the airborne survey and inclement weather the project took considerably longer than anticipated.

The total cost of the project was ~ $81 000 (ex GST).

Conclusion

CNW considers that the INI project successfully fulfilled its planned objectives.

As a result of the INI study, there exists significant mineralization for the targeted elements at surface but the vertical depth extension is unknown until drilling is planned. Further field work is required, however the results of this study and the role of the INI exploration method has significantly contributed to the success of identifying a potentially new region of economic mineralization.

The combination of technologies and geological expertise used in this INI study has resulted in the discovery of surface anomalous mineralization of gold, copper, rare earths and uranium. These are deposits that were previously unknown in a region of historically high exploration activity.

Our combination of technologies has been successfully applied in field applications for effective data collection. This report has examined the different methods and the results of the methods used.

Significant further study is required in some particular combinations of data sets. For instance the field XRF result comparison with laboratory methods could be further examined but it was not part of this study. We have determined that the XRF will identify particular elements that are present which can provide a pathfinder guide to economic minerals. We cannot conclude that the results of particular XRF readings match laboratory assays. The XRF was utilized as a technological advance in selective sample collection to reduce assay costs but improve the chance that selective samples will have economic bearing minerals.

The detailed spectrometer mapping/gridding with 2m line spacing or less could potentially be utilized for grade control mapping. If done in significant detail and by cross plotting known laboratory assaying, potentially eU contoured mapping could be used to estimate tonnage and value of Uranium/REE at surface. This concept would require significant further examination that was not part of the data collection process of the INI.

The purpose of this INI project, as being reported, is not to focus specifically on the individual methods used but the combination of the data collected forming the basis for cost effective decision making in the future.

CNW believe that the INI project has been successful in meeting its objectives in that it has combined “real time” quantitative geochemical analysis with geological and geophysical mapping in a very cost effective exploration campaign that will greatly assist drill hole targeting.