MINERAL EXPLORATION PARTIAL SURRENDER
REPORT BORROLOOLA PROJECT EL26587 Year 3

Tenement Holder: SANDFIRE RESOURCES NL
Operator: SANDFIRE RESOURCES NL
Reporting Period: 11 September 2008 to 10 September 2011

1:250,000: MT YOUNG (SD5315)
1:100,000: TOWNS(5867) MOUNT YOUNG (6067)
Commodities: Mn, Cu, Pb, Zn

Distribution: DoR Geoscience – Digital (EL26587_2011P)
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Author(s): Wynne, A.

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Borroloola Project

Mineral Exploration Partial Surrender Report Borroloola Project EL26587 Year 3

11 September 2008 to 10 September 2011

Wynne, A.

9 December 2011

MT YOUNG (SD5315)

TOWNS(5867) MOUNT YOUNG (6067)

MGA94 Zone 53

Mn, Cu, Pb, Zn

Airborne Magnetics-Radiometric, Airborne QUESTEM, Stream Sediments Geochemistry, Drilling, Orthophotography

List of Assays

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Location

Borroloola, NT

Geology

Middle Proterozoic sediments of the Tawallah, McArthur and Roper Groups of the McArthur Basin, the Scrutton Volcanics, and Cretaceous and Tertiary cover sediments.

Work done

Collation and review of historical exploration, including surface geochemistry and drilling datasets. Review of re--processed open-file Airborne Magnetics-Radiometric Survey, and of open-file Airborne QUESTEM Geophysical Survey datasets and images. Air Photographs and orthophotography.
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1. SUMMARY

This partial surrender report details mineral exploration conducted on five graticule blocks surrendered from Borroloola Project Exploration Licence EL26587 at the third anniversary 10th December 2011. Sandfire Resources NL applied for the tenement on 17th December 2007, and considered the geology of the area within the Batten Trough to have been prospective for base metals (copper, lead and zinc), and manganese. EL26587 was granted on 11th September 2008 over 25 graticule blocks. During the period of tenure up to the date of partial surrender of five blocks, exploration activities included the collation and review of historical surface geochemistry and drilling datasets, and use of historical airborne magnetics – radiometrics and EM surveys (Table 1).

<table>
<thead>
<tr>
<th>Exploration Activity on EL26953</th>
<th>Year</th>
<th>Activity Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review of historical surface geochemistry and drilling datasets, and re-processed airborne geophysics datasets utilising GIS</td>
<td>1 - 3</td>
<td>2008 - 2011</td>
</tr>
</tbody>
</table>

Table 1 Exploration Activities
2. LOCATION

The Borroloola Project is centred about 660 km southeast of Darwin in the “Gulf Country” of the Northern Territory, Australia. On the eastern boundary are the township of Borroloola and the McArthur River (HYC) Mine. To the south is Cape Crawford and to the northwest is Roper Bar. Figure 1 shows the project location and tenement status as at 5th August 2011.

Access is good to some parts via bitumen and unsealed roads. From Darwin access can be gained by travelling about 590 km southwards along the Stuart Highway to Daly Waters and then eastwards along Carpentaria Highway to Cape Crawford (270 km). The unsealed Nathan River Road and Ryan’s Bend road cross some tenements. Access deteriorates significantly in the northern parts of the project area.
Figure 1 Borroloola Project Tenements and Location Plan
3. STAKEHOLDERS AND NATIVE TITLE

The Borroloola project tenements lie across several pastoral leases and the proposed Limmen Bight National Park area, and several Native Title Claims have been scheduled and registered with the Federal Court. The distribution and extent of these is shown in Figures 2 and 2A.
Figure 2A  Borroloola Project Native Title
4. TENEMENTS

EL26587 was applied for on 17th December 2007 between the eastern margin of EL24402 and the western boundary of EL26599, and was granted on 11th September 2008 for a period of six years.

Seven Substitution Exploration Licenses SEL26831, SEL26833 SEL26835, SEL26836, SEL26837 SEL26938, and SEL26939 were granted on 9th June 2009 in lieu of twenty-eight Exploration Licenses, including EL24402, which was replaced with SEL26837. For reporting, these 28 contiguous Exploration Licenses, and EL24401, EL25591, EL26555 and EL26587, were previously incorporated into the Borroloola Project Reporting Group 068/09. Following the grant of the seven Substitution Exploration Licenses, and Exploration Licenses EL26908 and EL26909 on 9th June, and EL26953 on 12th June 2009, the Borroloola Project Combined Reporting Group 121/09 was created to include these tenements from 15th July 2009.

At the third anniversary of EL26587, 10th September 2011, a partial surrender of five (21) graticule blocks was submitted, as indicated on Figure 3. Table 2 summarises the current status of EL26587, and Appendix A contains details of the blocks surrendered and retained at the anniversary.

<table>
<thead>
<tr>
<th>Tenement</th>
<th>EL26587</th>
</tr>
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<tbody>
<tr>
<td>Application Date</td>
<td>17/12/2007</td>
</tr>
<tr>
<td>Date Granted</td>
<td>11/09/2008</td>
</tr>
<tr>
<td>Blocks Granted</td>
<td>25</td>
</tr>
<tr>
<td>Blocks Surrendered at Year 3 Anniversary 10/09/2011</td>
<td>5</td>
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<tr>
<td>Blocks Retained Year 4</td>
<td>20</td>
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</tbody>
</table>

Table 2 Tenement Status
Figure 3 EL26555 EL26587 Year3 Partial Surrender Blocks Previous Exploration Datasets
5. REGIONAL GEOLOGY

The McArthur Basin is a large sedimentary basin with an exposed area of about 180,000 km². Most of it lies within the northeastern Northern Territory, and it extends over the border into the state of Queensland. Thick marine and non-marine sedimentary rocks were deposited from the late Palaeoproterozoic to the early Mesoproterozoic (1800-1430 Ma). The basin also contains volcanic rocks and related intrusive igneous rocks and is a prime target area for SEDEX type economic sulphide deposits. This type of deposit holds 50% of the world’s zinc and lead reserves, and make up around 25% of world zinc and lead production. In particular the McArthur Basin hosts the world-class McArthur River (HYC) zinc-lead-silver deposits.

The geology of the Borroloola Project area consists of middle Proterozoic sediments of the Tawallah, McArthur and Roper Groups of the McArthur Basin, within the Batten Trough. On EL26953 these units are mapped on the MT YOUNG 1:250,000 Geological Sheet Area. Further north-east these units are unconformably overlain by Cretaceous arenaceous and argillaceous sediments containing fossils, and undifferentiated Cainozoic alluvial, colluvial and elluvial cover.

During the Cretaceous Period, the coastal areas along the Gulf of Carpentaria were inundated by a shallow sea in which Manganese accumulations were formed a series of episodes of deposition in embayments close to the shoreline. The largest of these is on Groote Eylandt, a large island located within the Gulf of Carpentaria, 130kms northeast of. Smaller occurrences occur on the mainland, e.g., at Rosie Creek Prospect on SEL26835, and the Brumby Prospect on SEL26837. This style of Manganese occurrence is the target of exploration in the northern tenements of the Sandfire Resources’ Borroloola Project tenements.
6. Exploration Undertaken on EL26587

As indicated in Table 1, Exploration work was carried out on the Borroloola Project, project-wide during the period 2004 to 2008, which covered the area subsequently applied for and granted as EL26587. This work included collation and interpretation of historical surface geochemistry and drilling datasets, re-processing of the historical airborne magnetics – radiometrics and EM surveys.

Exploration of the Borroloola Project, including EL26587 during the first three years since grant, is also reported in the Combined Tenement Group Reports: C068/09 Annual Mineral Exploration Report (Lewis et.al., 2009), C121/09 2010 Annual Mineral Exploration Report Jones et.al. (2010) and the 2011 Annual Mineral Exploration Report Lauricella et.al. (2011).

6.1 Geology and Previous Exploration Surface Geochemistry and Drilling

EL26587 lies over the Mt Young 1:250,000 Geological Sheet. Figure 3 indicates the locations for the stream sediment and drillholes derived from the digital open file NTGS Surface Geochemistry and Drillhole datasets from previous company exploration reports.

There were no drillholes from previous exploration by BHP during 1990s used to assess the manganese potential of the Cainozoic and Cretaceous stratigraphy in the part of EL26587 surrendered.

6.2 Previous Exploration Airborne Geophysical Surveys

The collation of open file airborne magnetics-radiometrics surveys is available as the Batten Trough Geophysical Survey CD (1989 Grids & Line Data) digital dataset from the NTGS.

During 2007, Fugro Airborne Surveys undertook re-processing of open file airborne EM survey data QuesTEM and GeoTEM digital data for the Borroloola Project area. The 1992 Mt Young 75Hz QuesTEM survey covers part of EL26555 and EL26587, as indicated on the flight line coverage Figure 3. The relevant re-processed digital data from Fugro Airborne Surveys Job#6000-101 is included with the comprehensive digital datasets as part of the 2009 Annual and Surrender Report, above, in Appendix E 2007-08 Airborne Geophysics \ 2007 FAS Reprocessed AEM \ J6000-101 \ MtYoung \.

6.3 Aerial Photography and Orthophotography

For the area of the Borroloola Project tenements, aerial photographs with a nominal scale of 1:40,000 captured in 2005 were scanned at high quality to create colour digital images. These were georeferenced to the published 1:50,000 scale topographic surveys using a softcopy photogrammetric system. Using terrain elevations stereoscopically measured across the area, orthophotographs and hill-shaded relief visualisations were produce as rectified compressed images and algorithms in MGA94 Zone 53 to aid geological and terrain landform interpretation across the tenements and general logistics including access, including over EL26587.
7. CONCLUSIONS AND RECOMMENDATIONS

Review of the previous exploration work carried out on EL26587 did not indicate potential for manganese mineralisation on the area of five graticule blocks surrendered at the third anniversary 10th September 2011.
8. **BIBLIOGRAPHY OF ANNUAL REPORTS**

Northern Territory Geological Survey Company Reports (unpublished)


Wynne, A., Hansen, A., Hawke, M., Jones, D., Lauricella, P., Evans, J., Lewis, T., and Marshall, T., 2009 Group Annual and Surrender Mineral Exploration Report C068/09 EL10121, EL24349, EL24373, EL24374, EL24402, EL24664, EL24700, EL24714, EL24778, EL24942, EL24943, EL24946, EL24996, EL24997, EL25070, EL25312, EL25528, EL25462, EL25590, EL25592, EL25647, EL26298, EL26361, EL26480, EL26481, EL26482, EL26486 and EL26637 Reporting Period 16 April 2004 to 9 June 2009 Sandfire Resources NL Report No. 2009NT04 (Submitted 14 July 2010).

9. **DIGITAL DATA**

Digital data for Appendix A is attached in .zip file format.
APPENDIX A:
Details of Tenement Graticule Blocks Surrendered and Retained