HISTORY OF DEVELOPMENT ON EL27151

A portion of the work done by Spectrum on EL27151 for this year consists of a literature review and data compilation. Previous exploration work done over EL27151 by other companies is presented below by historic tenements from the oldest to the most recent. Figure 1 displays the location of previous drilling and Figure 2 highlights significant areas of previous exploration. This compilation work is summarised in Tables 1, 2 and 3.

Most of the exploration work undertaken over EL27151 was from 1967 to 1995. Different companies have been successively looking for diamonds, base metals and gold. Diamonds were the most targeted commodity over the EL, however results have generally been unsuccessful.

The main target zone for base metal mineralisation is the Dorisvale Fault area. Very anomalous samples were discovered along this major structure and more precisely sitting on Skyfall radiometric anomaly. The mineralisation has been interpreted to be carbonate-hosted type of deposit. The geochemistry results obtained from the historical data compilation work are displayed in Figure 2. These values were up to up to 320ppm uranium, 800ppm copper, 19.3% lead and 1.65% zinc. Subsequently drilling has been done over the area first by Euralba Mining and then by Esso Australia.

AP1682 covered the northeast half of EL27151, but most of AP1682 was outside the tenure, extending to the northeast. IMC Development Corporation explored the AP for the phosphatic potential of limestone. Samples were qualitatively tested for phosphate in the field with ammonium molybdate solution, with selected samples sent for qualitative analysis. No anomalous radioactivity was associated with the phosphate. The best phosphate assay value of 0.75% P_2O_5 was obtained from the Ooloo Limestone outside of Spectrum's Stromberg tenement (EL25222). They concluded that though the base of the limestone was anomalously phosphatic, no occurrences of phosphate rock encouraged further research. (CR1967-0020)

AP1771 covered the southwest half of EL27151 (and the south half of Skyfall radiometric anomaly). There were two main exploration targets in the area. One consisted of two radioactive anomalies. The second was possible disseminated copper mineralisation in the Antrim basalts and also a slight possibility to find phosphate in Cretaceous sediments. None of the samples or scintillometer traverses returned any interesting values. (CR1968-0047)

AP2437 covered the southwest corner of EL27151, just below the Skyfall radiometric anomaly and extending to the southwest. CRA Exploration was prospecting for bauxite, but sampling highlighted no areas of interest and the area was relinquished. (CR1969-0064)

AP2545 covered the central part of EL27151, including Skyfall and Largo radiometric anomalies. Work done by Euralba Mining included a helicopter reconnaissance survey and scintillometer traverses. Locations where there was no apparent radiometric anomaly, some samples returned anomalous iron, lead and zinc values (up to 3% Pb). Mapping in the AP revealed that the Waterbag Creek Formation contained ferruginous and non-ferruginous beds at the time it was deposited and some syngenetic lead and zinc. However the lead appears to be restricted to a few favourable beds. Syngenetic zinc became concentrated in cavities in the ironstone. Some features of the lead bearing rock appear to show that syngenetic lead was being replaced by concretions of chert. (CR1970-0024)

EL574 covered the southwest corner of EL27151, just below Skyfall radiometric anomaly, and extend further south. Euralba Mining prospected for barite and base metals. Exploration for barite was unsuccessful but anomalous lead and zinc values were obtained from samples on the eastern side of Bamboo Creek. (CR1974-0042)

EL1768 covered most EL27151 and extend further north.

Work by Euralba Mining and Ashton Mining, in 1980, evaluated the base metal potential along the Dorisvale Fault. Rock-chip sampling returned anomalous copper, lead, zinc and uranium values (up to 320ppm U; 800ppm Cu; 19.3% Pb and 1.65% Zn). However most of the samples locations have been lost due to a helicopter accident (CR1980-0101).

In 1981, Ashton Mining identified a large number of U anomalies (with up to 448 ppm U) in the Bamboo Creek area, near the Dorisvale fault, associated with significant Pb-Zn values. The area is considered to hold potential for a McArthur River or Rammelsberg type deposit and possibility for a sandstone/siltstone U mineralization (CR1981-0089).

In 1982, Euralba Mining drilled 10 percussion and diamond holes over the Skyfall area (Figure 1). Drilling was prompted by anomalous zinc and lead values associated with the Dorisvale Fault. The drilling was initially designed to test unweathered rocks at depth, particularly those representing geochemically active horizons at the surface. The best uranium (only up to 47 ppm), lead (up to 20000 ppm) and zinc (up to 48000 ppm over an interval of approximately 45m thick) were below the oxidized zone in leached shale, mudstone and siltstone with chert beds near the base. The stronger anomalous values tend to be associated with nodular, fossiliferous limestone and chert nodule layers. The correlation between drill hole data and surface outcrop has established that the target stratigraphy belongs to the lower and possibly middle Tindall Limestone. The limestone contains a very porous matrix considered to represent a second phase impure carbonate component. The intergranular porosity was interpreted by Euralba Mining as a possible host rock for “Mississippi Valley type” ore deposit. They suggested that more exploration should be done both along strike and further into the Daly River Basin. (CR1982-0125).

In 1983, Esso Australia drilled three vertical diamond holes over the Skyfall area (Figure 1). They were exploring for massive sulphides with a focus on a geochemical NW-SE trend, delineated from previous Euralba drilling. They pointed out that sulphides were associated with sediment breccia, mainly as fractured filling and in porous or brecciated zones. The best values were 1000ppm lead, 220ppm copper and 7500ppm zinc. They suggested a carbonate-hosted epigenetic type of deposit. (CR1983-0043).

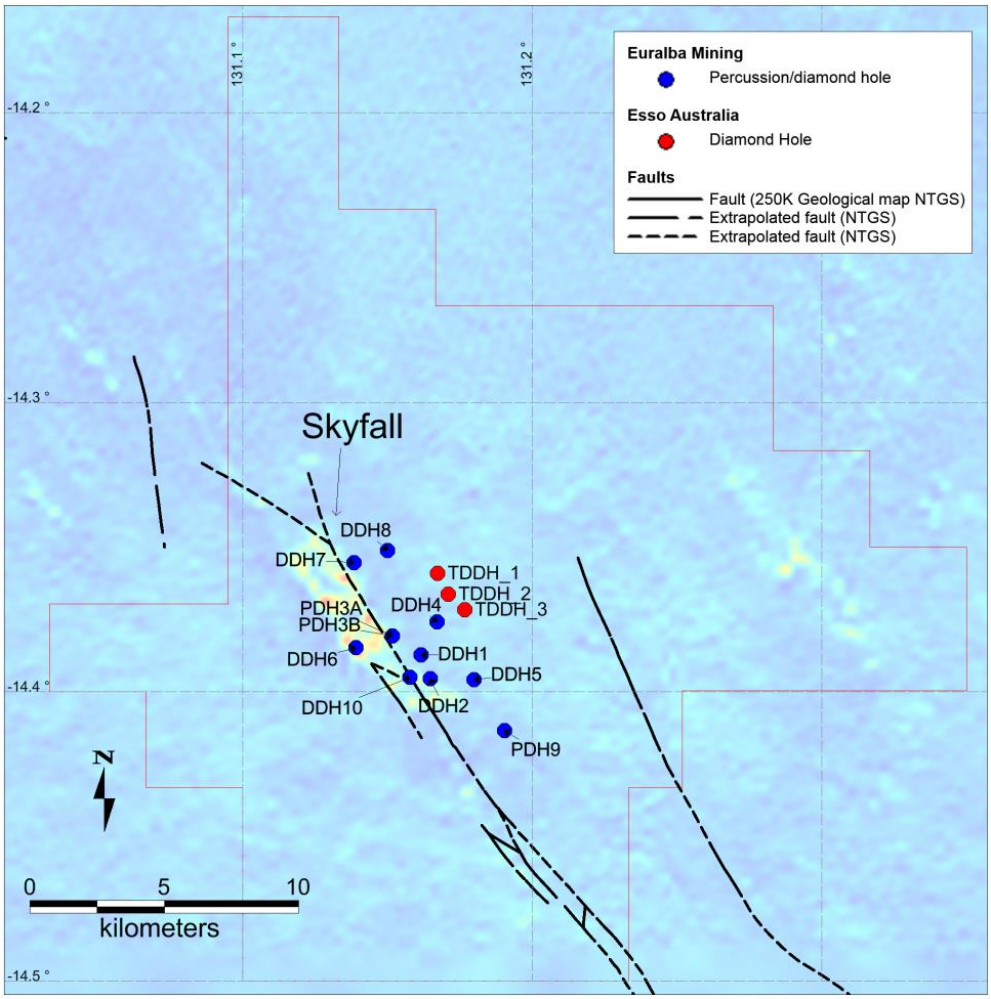

Figure 1: Euralba Mining and Esso Australia drilling location

EL3004 overlaps a portion of the eastern side of EL27151, nothing was done (CR1986-0124)

EL3507 overlaps a portion of Largo anomaly, nothing done (CR1986-0125).

EL4905/ EL4821 / EL4904 / EL5383

Overlaps part of the Skyfall anomaly. Seven State Mine conducted a study of past exploration work and undertook reconnaissance auger drilling in their search for gold. No anomalous values were obtained from the auger drilling (CR1987-0278).

EL4904 nothing was done (CR1988-0181).

EL4821 nothing was done (CR1988-255).

EL5383 covered the very north of Skyfall prospect and the northern, eastern and southern part of EL27151. Driffield Mining undertook a field reconnaissance program including an auger drilling traverse and preliminary mapping of the area. The results of the program downgraded the area's potential for gold, mercury and iron ore, however the program confirmed the area's potential for a "Mississippi type" carbonate hosted zinc/lead deposit (CR1988-0313).

EL7626 covered the central part of EL27151 and includes most of the Skyfall radiometric anomaly. Work on this tenement was conducted by Poseidon Exploration from 1993 to 1994. They were prospecting for shale and carbonate hosted lead/zinc mineralization as well as diamonds and epithermal Au. They sampled rock-chips and soil sediments and found elevated base metals values in the lower Tindall Limestone (generally restricted to the oxidised zone). They recorded anomalous stream geochemistry, along with a weak-moderate U radiometric response in the Whiskey Spring Creek where an E-W fault was interpreted. However no anomalous values for gold or diamond were recorded (CR1993-0143, CR1994-0444, and CR1994-0789).

EL7629 covered the north-eastern part of EL27151. The tenement was explored for diamonds by Stockdale Prospecting in 1993, 1994 and in 1995. They conducted heavy mineral stream sampling over the licence that confirmed the presence of chromite however the grains appear to be lamprophyritic rather than kimberlitic (CR1993-0497, CR1994-0320, CR1994-0577, CR1995-0212).

EL7672 covered the eastern part of EL27151. A diamond reconnaissance program was conducted by Stockdale Prospecting over the tenement in 1994 but failed to find any positive result (CR1994-0609).

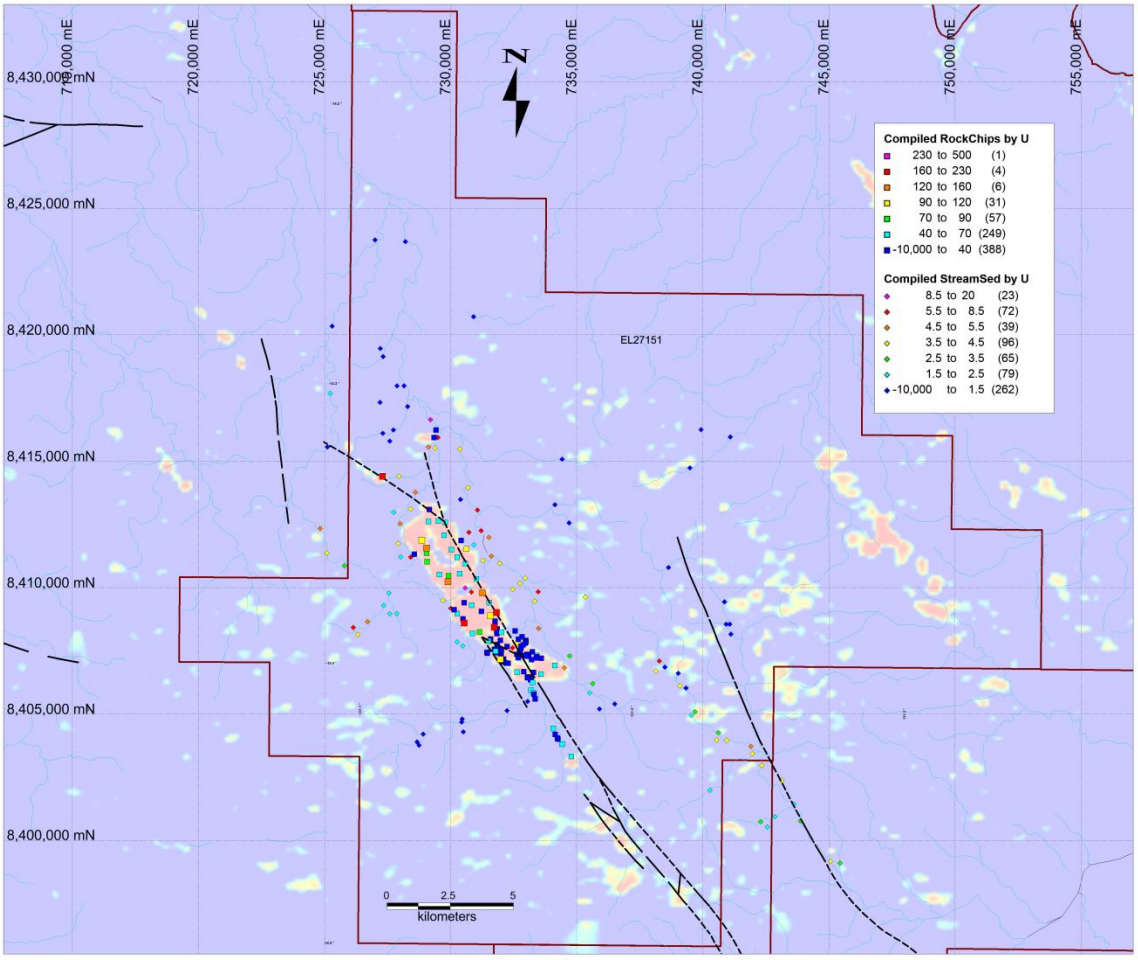

Figure 2: Uranium rock-chips and stream sediment historic results over EL27151.

Table 1: Geophysical data collected in Mineral Exploration reports over EL27151.

Survey Type	Report Number	Year	Size	Height	Line Spacing	Length	Company
EM	CR1980_0101	1980	82.80 km2	40m	1 km	6 km	A.O. Australia, Geoterrex
Airborne magnetic + radiometric	CR1993_0143	1992	106.7 km2	60m	200 m	9.5 km	Poseidon Exploration, Kevron Geophysics
Aeromagnetic	CR1993_0497	1992	2477 km2	60 m	200 m	35 and 52 km	Stockdale Prospecting, Kevron Geophysics
Aeromagnetic	CR1993_0497	1992	1110 km2	60 m	400 m	20 km	Stockdale Prospecting, Kevron Geophysics
Ground magnetic	CR1994_0106	1994	1.3 km2	ground	100m		Poseidon Exploration, ?
Airborne magnetic + radiometric	CR1993_0143	1992	351.6 km2	60m	400 m	19.5 km	Poseidon Exploration, Kevron Geophysics
IP Lines	CR1981_089	1981					Ashton Mining Ltd
Radiometric Lines	CR1984-0051	1984					CRA Exploration Pty Ltd

Table 2: Historic surface geochemistry done in EL27151.

Company	Report	Tenure	Commodity	Focus	Data available	Results of Exploration
A.O. (Australia)	CR1980-0101, 0102	EL1768,	Pb, Zn and Diamonds	Sulphide mineralisation along Dorisvale Fault and Kimberlite Pipes.	Stream, Gravel and Rock chip Geochemistry	Maximum geochemistry value in rock chips U: 320ppm, Cu: 800ppm, Pb: 19.3%, Zn: 1.65%, As: 1400ppm. Max values in Stream Sediments Cu: 50ppm, Pb: 130ppm, Zm: 220, U: 13ppm.
Baroid Australia	CR1981-0050	EL1847, EL1848, EL1850	Base metals	MVT or Sabkha type environnement.	Stream Sediments Geochemistry	Maximum geochemistry values are Cu: 50ppm, Ba: 2500ppm, Pb: 220ppm, Zn: 100ppm, Ni: 30 ppm and U: 4ppm.
Ashton Mining	CR1981-0089	EL1768	Base metals	McArthur River or Rammelsberg type deposit and possibly sandstone/siltstone U mineralisation.	Stream sediments, Rock chips	Large number of U anomalies (between 2 and 250ppm) in the Bamboo Creek area and significant Pb-Zn values. Max U anomaly of 448ppm. No kimberlite indicator.
Baroid Australia	CR1983-0026	EL1848, EL1847	Barite, Gold, Base metals and Diamonds	Vein deposit of barite, gold in carbonate rocks, Pb/Zn/Cu mineralization of the MVT type within dolomite of the Banyan Formation.	Stream sediments, Rock chips Geochemistry	Maximum geochemistry values are Cu: 70ppm, Pb: 220ppm, Zn: 190ppm, Ni: 30ppm and U: 5ppm.
Seventh State Mining NL & Driffield Mining	CR1988-0313	EL5383	Base metals	MVT deposit and epithermal gold	Rock chips	The results of the program downgraded the area's potential for gold, mercury and iron ore, however the program confirmed the area's potential for a MVT type carbonate hosted zinc/lead deposit.

Company	Report	Tenure	Commodity	Focus	Data available	Results of Exploration
Poseidon Exploration	CR1993-0143, CR1994-0444, CR1994-0789	EL7626	Pb, Zn, Au and Diamonds	Shale and carbonate hosted Pb/Zn mineralisation, diamonds and epithermal Au	Rock chips, Soils and Stream Sediments Geochemistry	Elevated base metals values are generally restricted to the oxidised zone. Low potential for epithermal Au. Area of interest is the Whiskey Spring Creek where an E-W fault is interpreted. Maximum rock chip geochemistry values: Zn: 11000ppm, Pb: 83000ppm, Cu: 769ppm, Fe: 51500ppm and Ba: 300ppm. No anomalous base metals or diamond were found in stream samples. Maximum soil geochemistry values Fe: 87000ppm and Zn: 740ppm.
Stockdale Prospecting	CR1993-0497, CR1994-0320	EL7629, EL7671, EL7673 & EL7796	Diamonds	Kimberlite	Gravel samples	Found two diamonds.
Poseidon Exploration	CR1994-0106	EL7939	Diamonds	Kimberlite	Gravel samples	No conclusive result.

Table 3: Historic drilling done in EL27151.

Report number	Tenure	Company	Commodity	Focus	Data available	Results of Exploration
CR1982-0125	EL1768	Euralba Mining	Zn, Pb	Base metals associated with Dorisvale Fault	10 percussion/diamond vertical holes with logs details	Best U/Pb/Zn values are below the oxidised zone in leached shale, mudstone and siltstone with chert beds near base (no U). Best values were up to 47 ppm for uranium, up to 20000 ppm for zinc and up to 48000 ppm for lead.
CR1983-0043	EL1768, EL1832	Esso Australia	Massive sulphide	NW-SE trend indicated by geochemical data from previous Euralba drilling (1 to 10)	3 vertical diamonds holes with logs details	Sulphides are associated with sediment breccia, mainly as fracture infill in porous or brecciated zones. Inferred carbonate-hosted epigenetic type deposit. The best values were 1000ppm lead, 220ppm copper and 7500ppm zinc.