4.2.13 Umin Tsagaan Nuu

Examples of data for the prospect area are shown in Figure 4.28. The area appears to consist of sedimentary units underlain and intruded by a complex mixture of igneous units. There is little to no apparent correlation of the distribution of magnetic units with the mapped surface geology and the area may benefit from a litho-magnetic interpretation. The area is extensively fractured and faulted, with the dominant strike approximately N - S. Apart from the close proximity to faults and the high K potassium response there is little information to further constrain the cause of mineralisation in this area.

Radiometric data appears to provide a different distribution of surface material to that proposed from the published mapping. Drainage provides a distinctive low response. Detailed analysis of the data may enable a more accurate litho-magnetic interpretation to be made.

Potassium enrichment is present between the main areas of mineralisation at Umin Tsagaan Nuu (347000mE 5407300mN) and Aguit (349400mE 5405400mN) as shown by the clpped 95 and 99% clipped data. The high K values may have a slight NNE elongate trend that may indicate an association with faults. However, a high response is also noted trending NNW that probably relates to locally derived colluvium and field verification is required to determine the significance of the radiometric response in this area. Of significance is that a high Potassium response (red) is noted around the Aguit mineralisation, but lost when the data is clipped. This emphasises the caution required to assess the radiometric data.

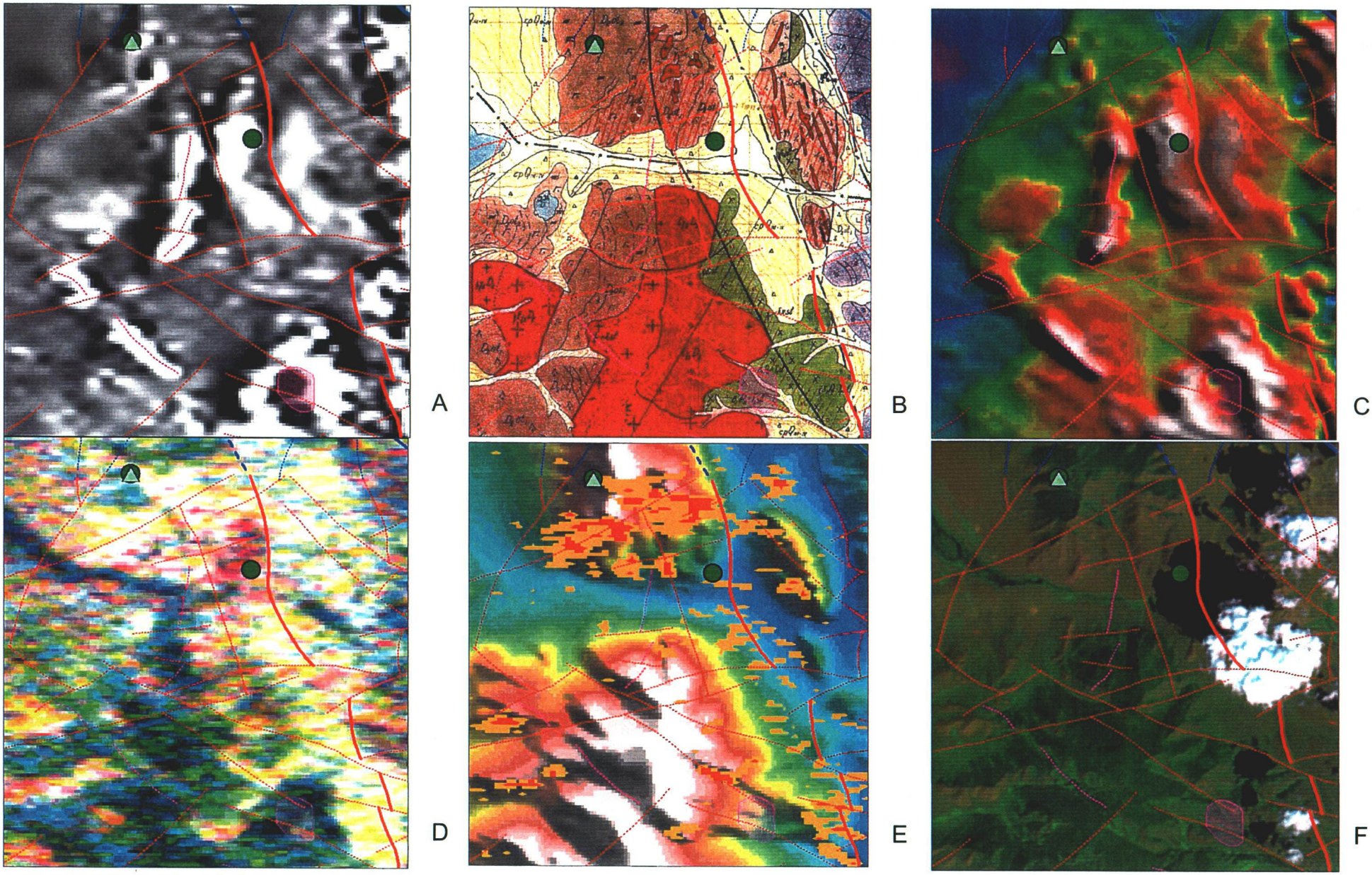

Figure 4.31: Characteristics of the Umin Tsagaan Nuu area.

4.2.14 Tsookhor Morit

A schematic summary of the geology for the prospect area is shown in Figure 4.32, while examples of data are shown in Figure 4.33. The area appears to consist of at least two major lithological units (with a shallow magnetic source) separated by a well-defined, arcuate fault zone, convex to the S. This fault zone has a relative low magnetic intensity and may be associated with magnetite destruction. Numerous 'late' minor faults, perpendicular to and radially distributed along the main fault zone, trend NE - SW to N - S and cross-cut and offset the main arcuate faults. A concentration of NE trending faults to the E of Tsookhor Morit may act as a major fluid pathway creating an increase in the magnetite destruction along a broad corridor.

A possible explanation for the arcuate and radial fault patterns may be that they represent a ring fracture (caldera) and associated radial fractures. This would require an intrusive body to be present at depth to the NE, with the survey only covering the bottom SW quadrant.

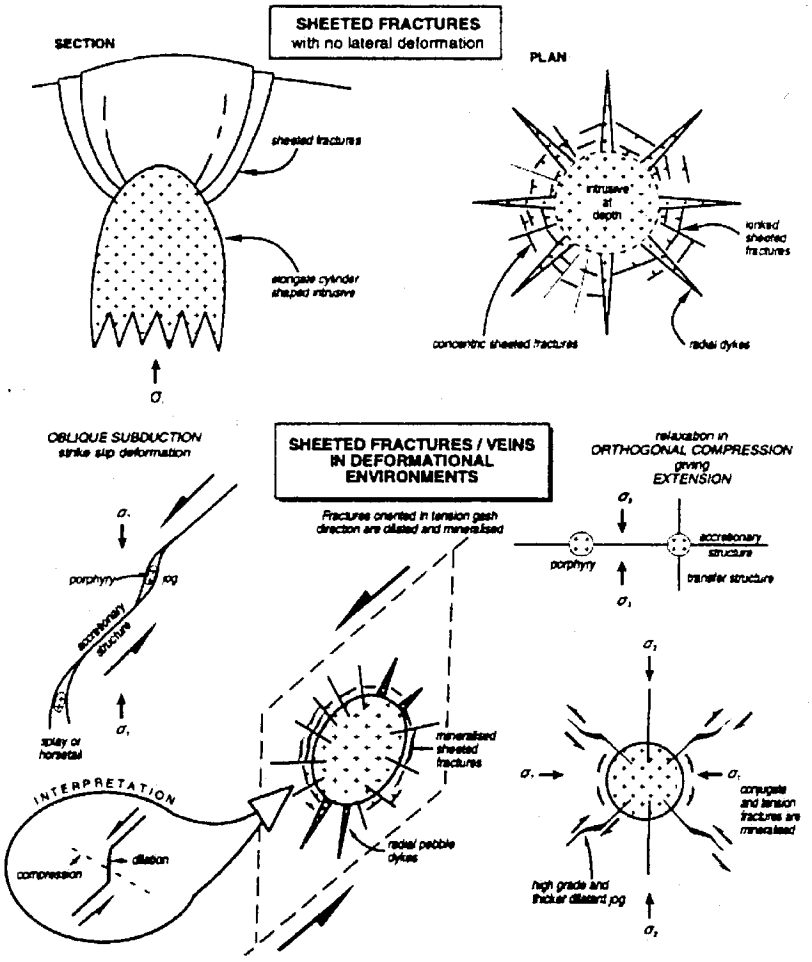

Figure 4.32: Schematic representation of radial fracturing around a possible intrusive body (from Corbett and Leach 1995).

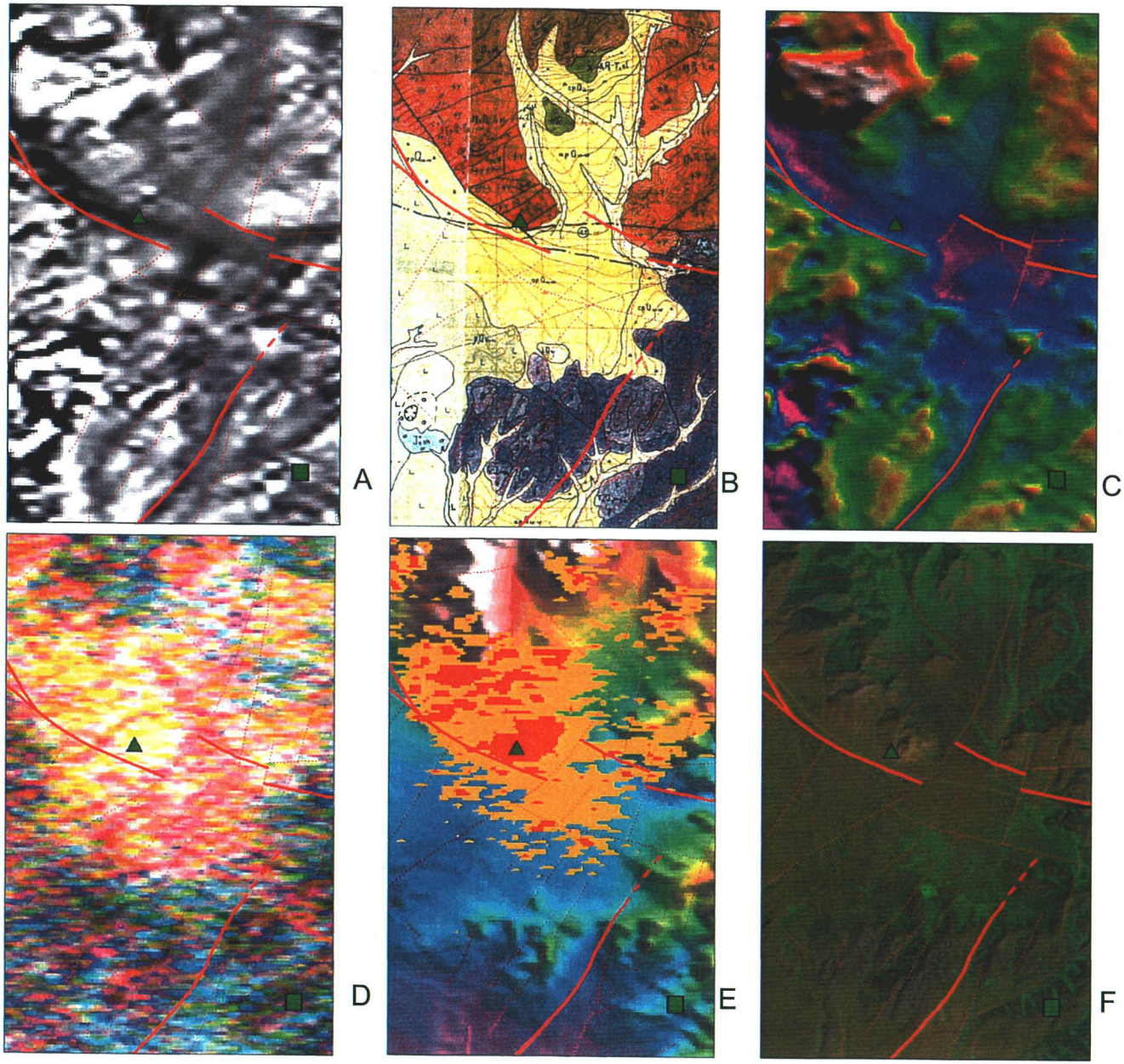

Figure 4.33: Characteristics of the Tsookhor Morit prospect area.

Radiometric data appears to provide a different distribution of surface material to that proposed from the published mapping. Detailed analysis of the data may enable a more accurate litho-magnetic interpretation to be made. A large K enrichment zone is present around the main area of mineralisation at Tsookhor Morit (372500mE 5401000mN). The highest values (99% clip, shown in red) also have a slight NE elongate trend that may indicate an association with faults. The magnetic data also supports the probability of NE trending structures in this area. However, the high response may be due to the host lithology and locally derived colluvial material and field verification is required. A slight K enrichment response occurs around the mineralised area at Khar Uul (376100mE 5395500mN). Although not as spectacular an anomaly as at Tsookhor Morit, it is potentially just as significant with the difference between the two areas most likely due to the host lithology.

5 CONCLUSIONS/ RECOMMENDATIONS

In conclusion to this project we would like to reiterate that the aeromagnetic data has been successful in:

a) Enabling the identification of structures that significantly improve the geological knowledge of the study area. Consequently the enclosures 1, 2 and 3 are the main results of this study, with enclosure 4 summarising the key elements.

b) From the structural interpretation and litho-magnetic associations it is possible to divide the area into 5 domains. The most prospective domains are likely to be domain 3A and 2A, as they clearly contain zoned igneous units and are cross-cut by major (E – W and NW – SE trending) regional structures. Domain 3B could contain similar structures to domain 3A, with prospective units at depth, buried by Triassic-Jurassic volcano-sedimentary units.

c) The predominantly E-W trending structural domain 2, possibly provides evidence of thrusting having been active in the region which could be beneficial for the development of large porphyry deposits.

d) Even though structures with an E – W strike appear to be the dominant regional structures (such as the Vitim Suture Zone) this study proposes that the NW trending structures are equally if not more significant for focusing large porphyry mineral deposits.

e) Normal faulting affects the area to create several large basins and our preference is to infer that these structures represent a relatively 'late' event and has occurred with relatively in-situ dip-slip displacement.

f) Recognition of multiple phases and/ or zonation of igneous related litho-magnetic units may also assist the identification of porphyry mineralisation. It is not possible to definitively say whether areas of relative magnetic low of high response is the most prospective as magnetic signatures vary depending on the depth of weathering across porphyries. A good litho-magnetic study may help to resolve some of the apparent complexity within the igneous units.

g) All the data is compiled as an active project (1495_Mongolia.apr) in a geographic system (ArcView™) ready for verification and addition of further complimentary information.

h) Fourteen prospective sites that occur around areas of known mineralisation, major structures or zoned intrusive bodies are described in terms of their geophysical response. Possible explanations for the mineral occurrence and further potential are discussed.

Recommendations that result from this study are:

a) The contract for this interpretation stipulates that the interpretation focuses on the structures within the area. However, much of the potentially useful information on litho-magnetic units, and in particular the identification of igneous zonation and multiple intrusive bodies has not been rigorously interpreted and correlated with published mapping. In order for the data to be used to its full potential we strongly recommend that a more detailed litho-magnetic interpretation be undertaken. To correlate litho-magnetic signatures with mappable units and areas of alteration, interpretation should preferably be made in conjunction with field verification.

b) It is now possible to develop a regional interpretation or synthesis based on the remote sensing imagery and constrained by the detail available from the airborne geophysical data. However, the validity of the regional interpretation or synthesis decreases the further you go from the geophysical data. To rapidly develop an improved regional overview for the structure, tectonics and intrusive history of Central - Northern Mongolia it would be beneficial to undertake other surveys with a similar coverage and data resolution and strategically placed throughout the region. Following this approach would provide the necessary control to accurately develop a true regional synthesis.

c) The possible explanations for the numerous mineralised areas highlighted in this study require verification. Use of any information such as company reports, geochemistry, drill hole logs and field mapping should be assessed using the new data available from this work. During the course of the verification process it may be necessary to review and amend this interpretation.

d) Once the correlation between structures and litho-magnetic units from airborne geophysical data and significant mineralised areas are verified, it may be desirable to review specific target areas. Due to the current 250 m line spacing of the airborne surveys much of the fine detail and information for fault geometries (offsets, jogs and splays, radial fractures) are missing. By undertaking an infill survey using 50 m line spacing over a series of areas such as key targets and mines would enable a far more detailed assessment of the area to be made.

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