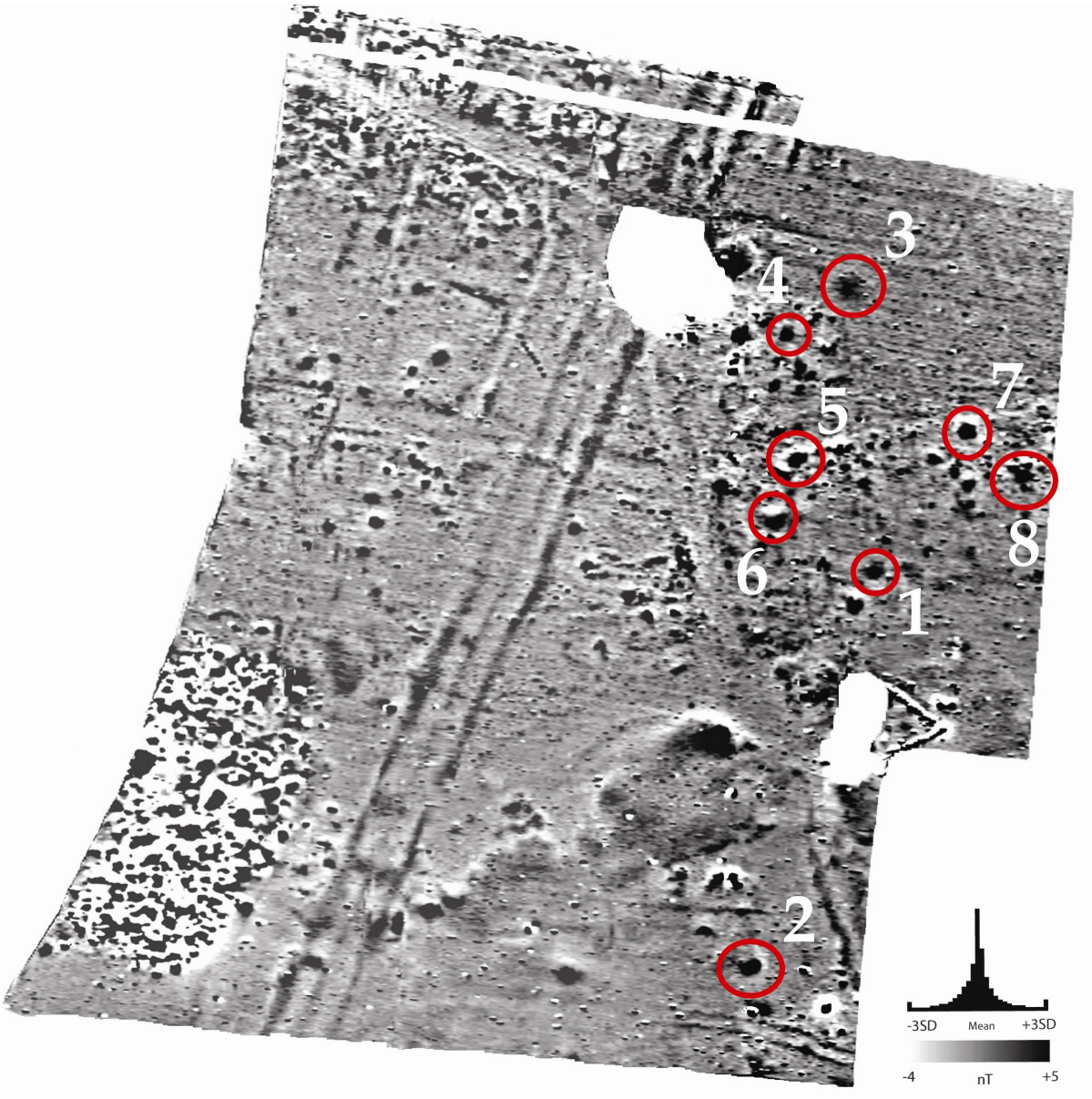
Numerical Analysis of possible SFB features in Park Field.

Summary

Within the eastern portion of the survey data from Park Field a wide cluster of positive sub-rectangular features were evident which appeared superficially to be consistent with the possible remains of SFBs, similar to those identified from survey data from Dunston Field in 2012,

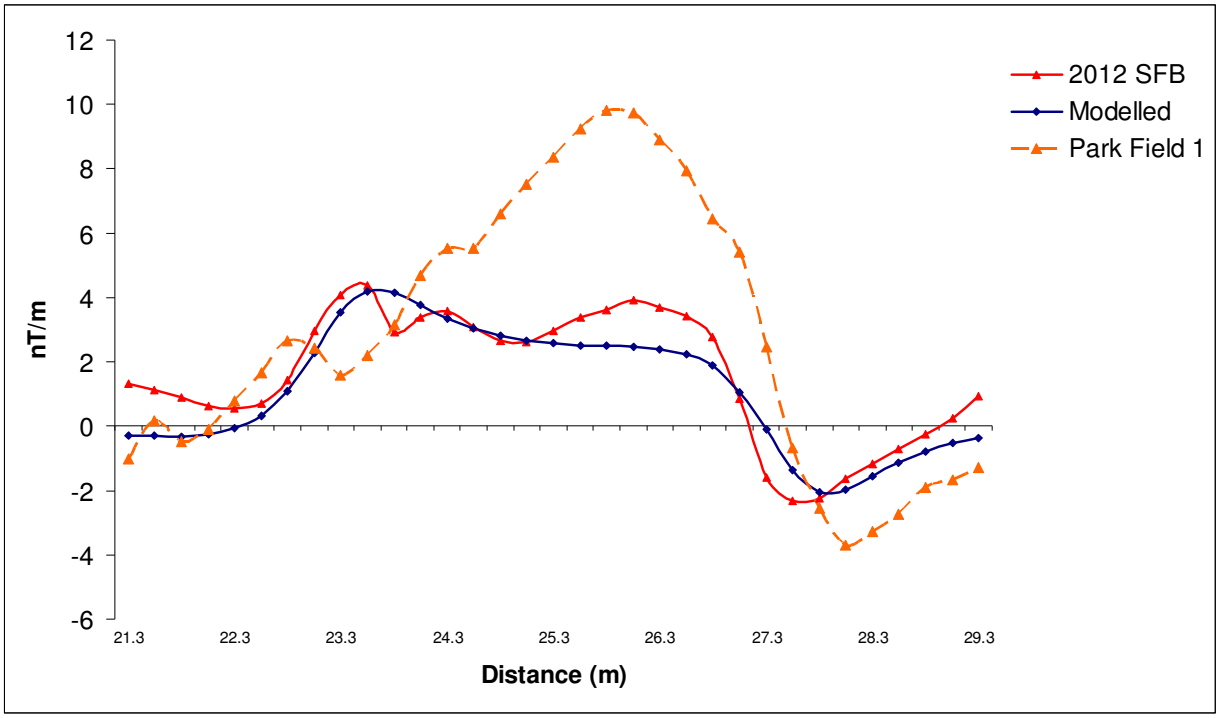
In order to elucidate the nature of these anomalies, a magnetic model of sub-surface SFB remains was generated using the data from the SFB excavated in 2012 and a theoretical reference magnetic response generated. The theoretical magnetic response, along with the magnetic response recorded over the excavated Dunston SFB, were then compared with 8 anomalous responses recorded in the Park Field data.

One good SFB candidate was identified in the Park Field Data (anomaly 3), while the while anomaly 2 and 7 might also represent the remains of SFBs containing a secondary infill of brick and tile building material, although here the interpretation is less certain. Anomaly 6 is probably a small kiln, while the remaining anomalies are most likely derived from brick and tile building material deposits, possibly comprising the fill of small pits.



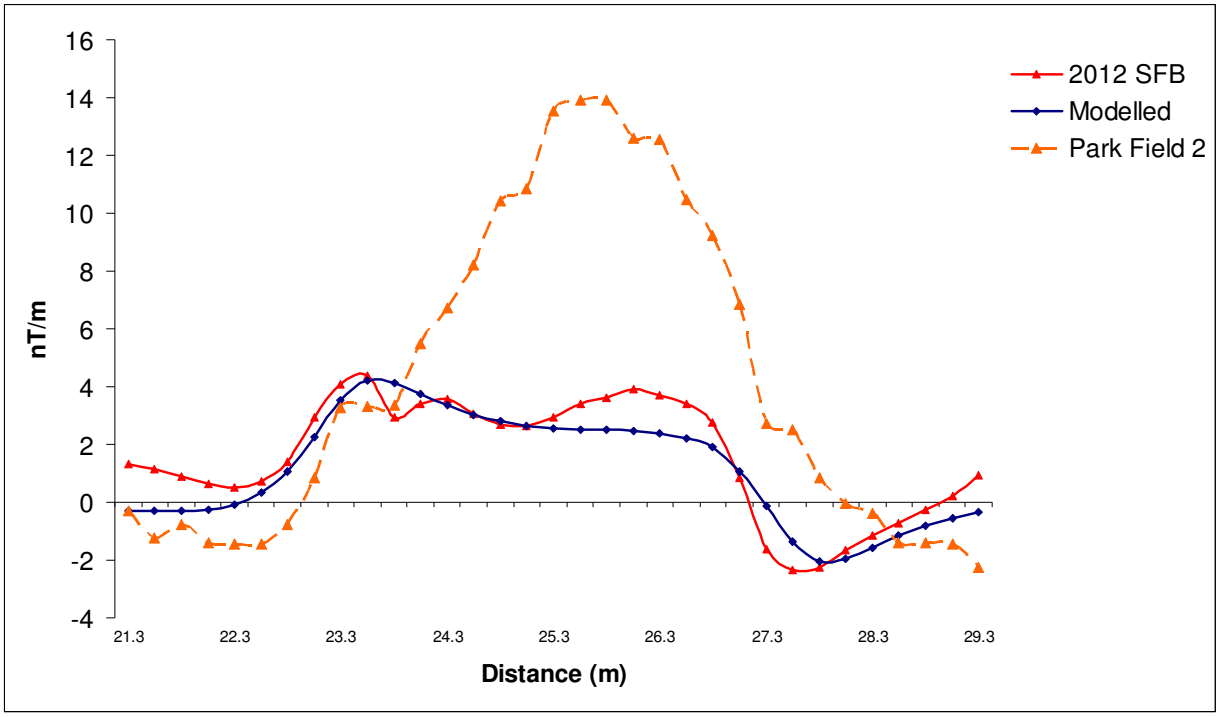
Location of magnetic anomalies from Park Field subject to further numerical investigation and described below.

Park Field Anomaly 1



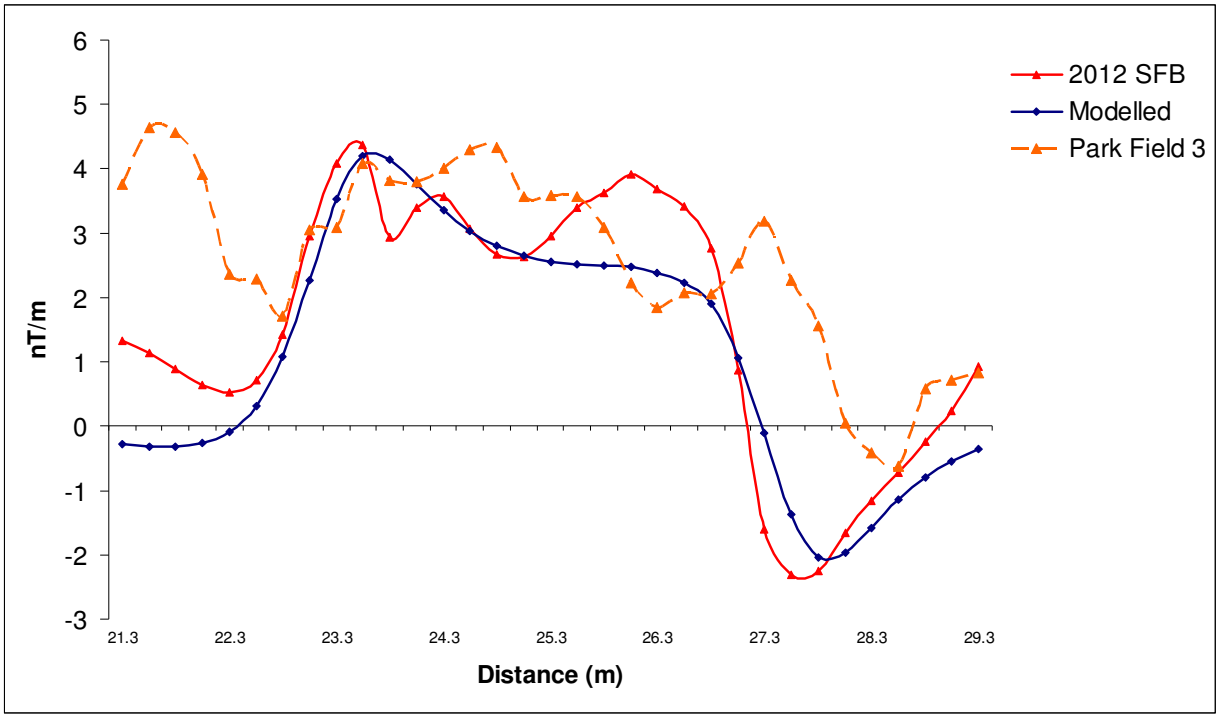
The graph above shows the magnetic response produced by the SFB model (blue); the magnetic response measured over the Dunston field SFB (red) and the magnetic response measured over anomaly 1 in the Park Field data. It can be seen that the response from anomaly 1 has a strong central peak and overall is likely to be derived from a large sub-circular pit type feature.

Park Field Anomaly 2



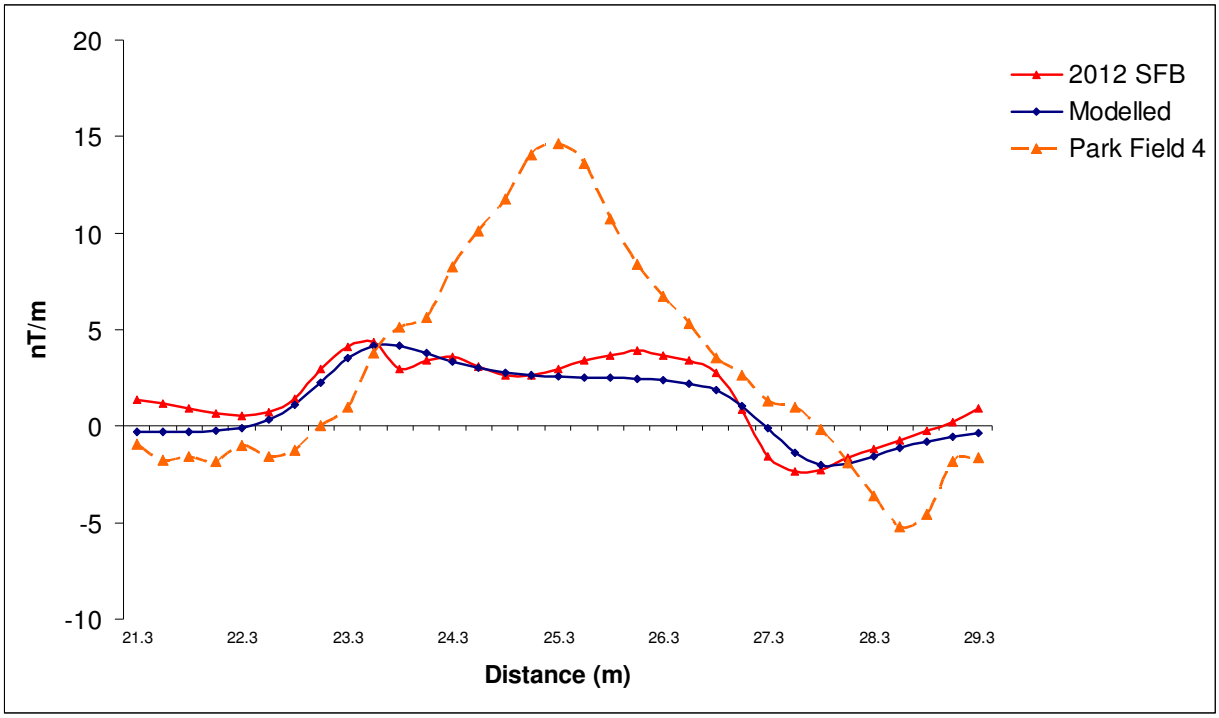
Similarly, the magnetic response measured over anomaly 2 from the Park Field data is characterised by a central peak, here of a greater amplitude. The overall form of the response suggests that it is likely to derive from a large pit type feature. In terms of overall dimensions, anomaly 2 is consistent with the response expected from a SFB, and it has to be considered whether the large central response may be secondary and derived from a magnetic infill of brick and tile.

Park Field Anomaly 3



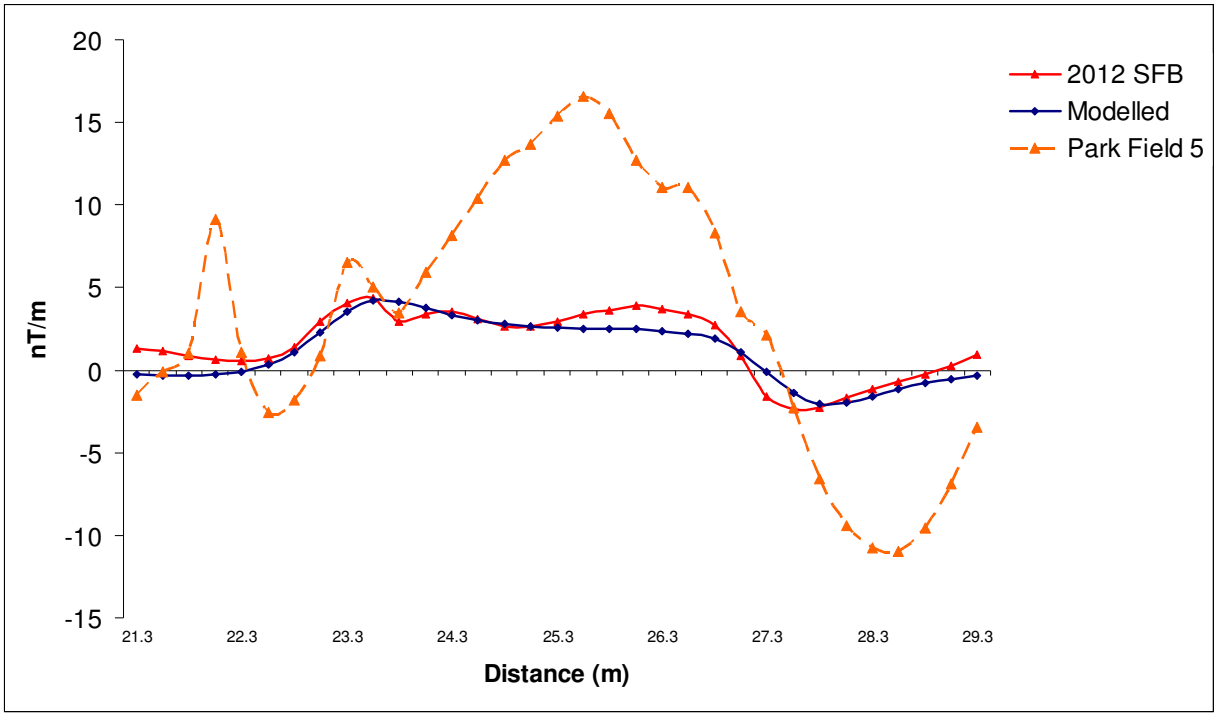
The magnetic profile across anomaly 3 provides a fairly close match with the modelled magnetic data and that from Dunston Field. The overall response is slightly wider, suggesting that the infilled feature itself is ~0.7 m wider than the Dunstan remains. The positive response to the south (21.3 – 22.3 m in the graph above) appears to be derived from a N-S positive linear magnetic response immediately to the south and likely to result from a ditch type feature.

Park Field Anomaly 4



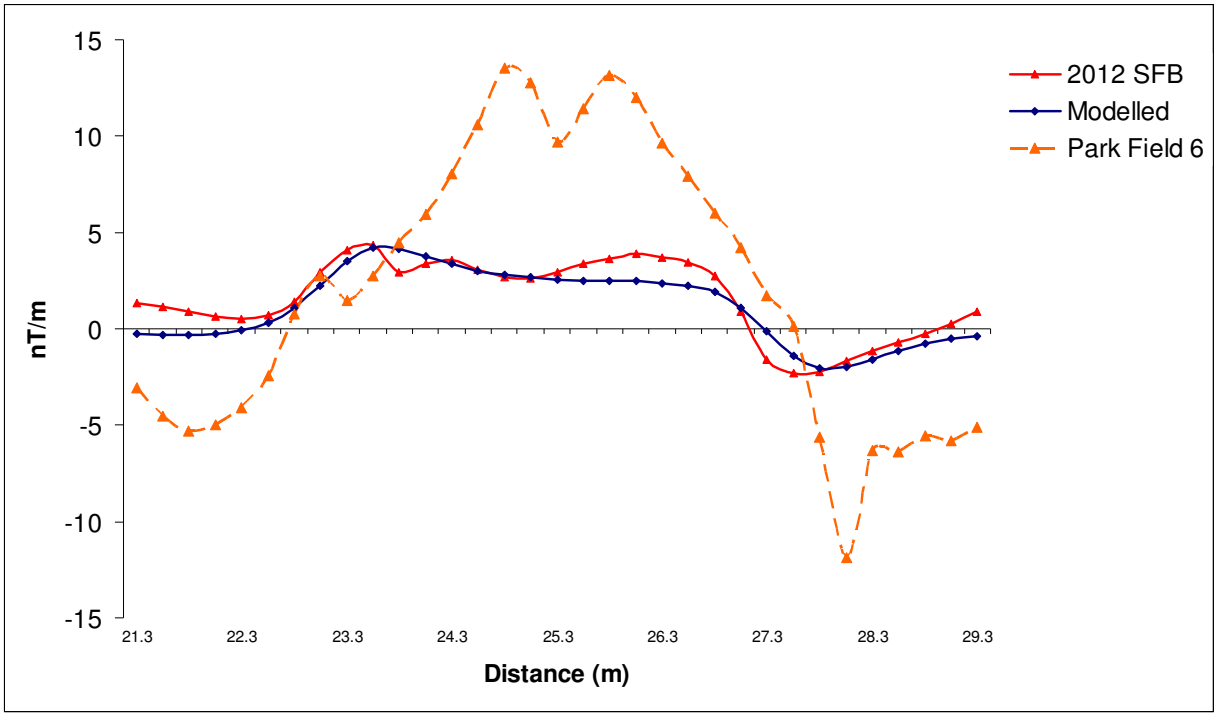
Anomaly 4 is characterised with a strong central peak and is most likely derived from magnetic (fired) masonry/building material, possibly within a pit.

Park Field Anomaly 5



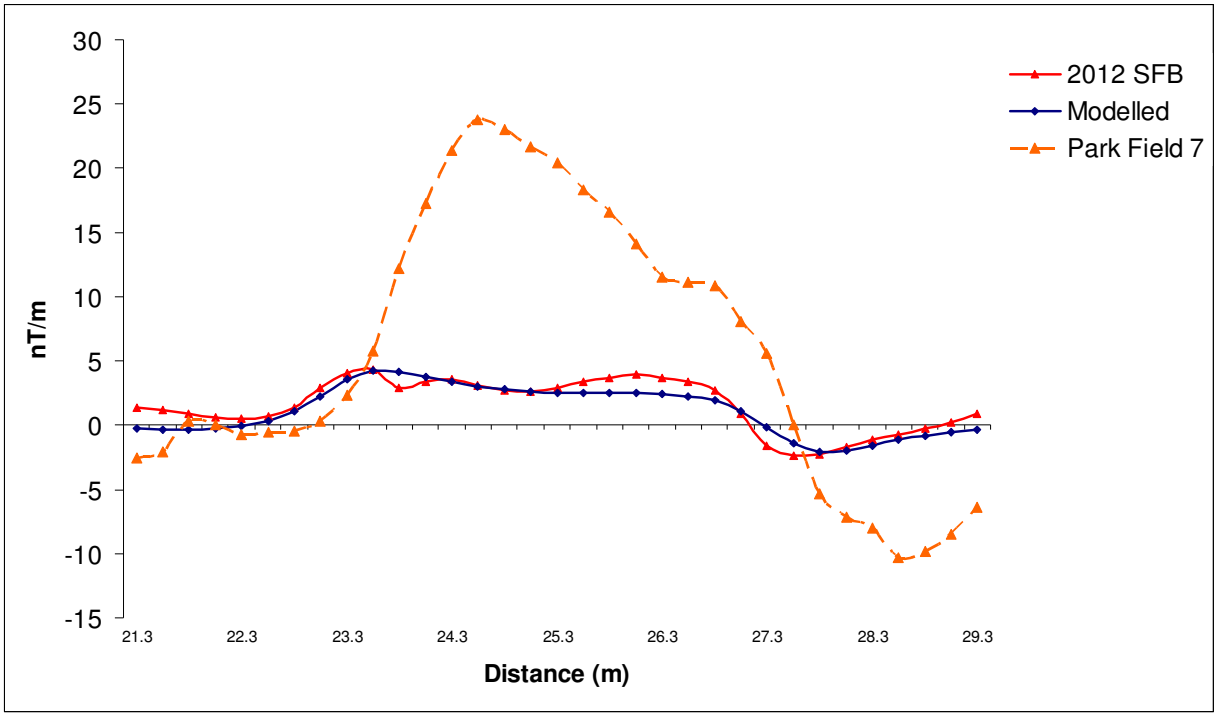
Anomaly 5 has a central peak and strong negative response to the north (28.3 – 29.3 m in the plot). It appears to be located in an area of enhanced magnetic activity, seen running in line westwards and culminating in anomaly 7. It is likely to be derived from building remains containing elements of brick and tile.

Park Field Anomaly 6



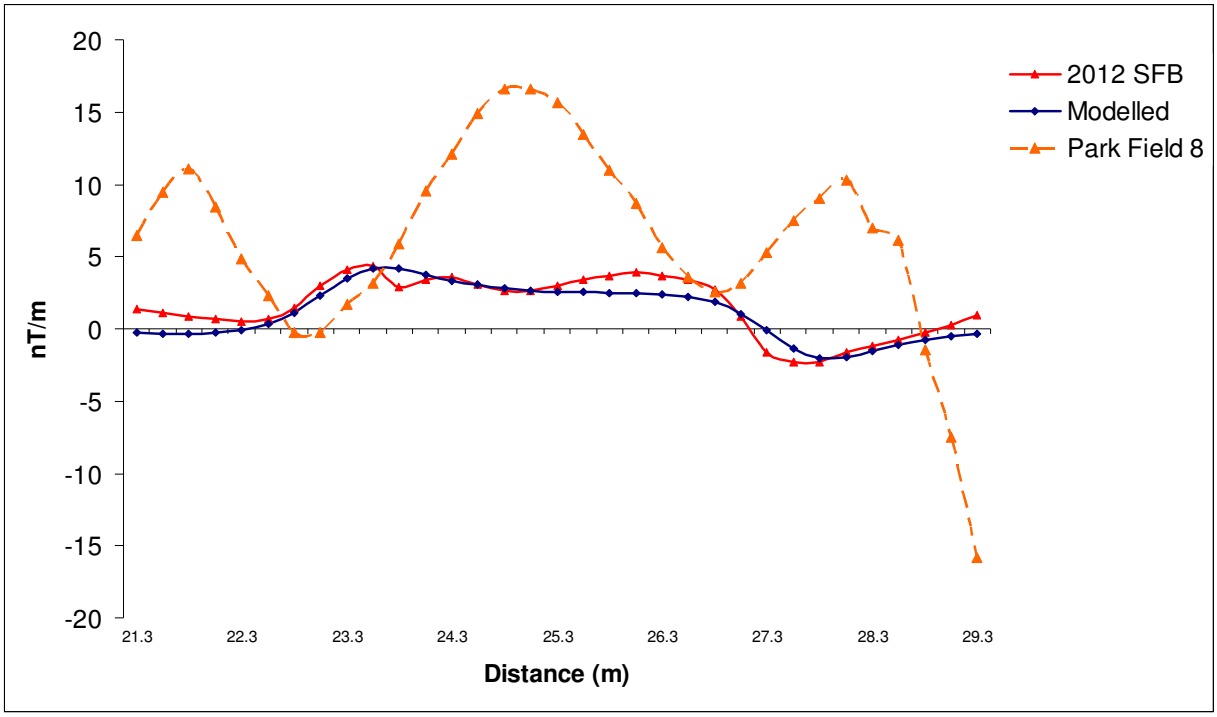
Anomaly 6 is characterised by a double central peak and significant negative responses to the north and south. This appears to be derived from magnetic material which has been heated (strong remanent magnetic effect), and most likely relates to a small hearth or kiln structure.

Park field Anomaly 7



The overall magnitude of this anomaly again implied it is derived from magnetic building material (brick/tile) and is located within an area of elevated magnetic responses interpreted as being derived from building remains. It is possible that this response represents a backfilled pit feature and given it's overall dimensions, could conceivably be a SFB with a substantial secondary backfill of fired building material.

Park Field Anomaly 8



This response appears to be formed of 3 discrete features, their magnitude suggesting a brick/tile source, possibly infilling a small, central pit within a wider spread of building material.