

Summary of Airborne Magnetic Survey
Hanford Site, Richland, Washington

BY

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**Airborne Magnetic Survey,
Hanford Site, Richland, Washington**

Data Acquisition

Involved a single level, constant elevation airborne magnetic survey with magnetic field recordings taken at a constant interval of 100 meters.

Data include 44 NE-SW profiles approximately 32 miles long and 65 NW-SE profiles about 22 miles long. The 20 mile X 30 mile area was "overflowed" to reduce edge effects in the data processing.

Geophysical Interpretation

Survey's purpose: to define the structural grain of the Pasco Basin and the degree of structural deformation.

Magnetic highs shown as structural anticlines. Magnetic lows appear as structural synclines, which may be presumptuous in view of the thick sequence of volcanic flows, some of which are known to be reversely polarized. Even so, the data agrees with other maps of the area.

Calculations of fault displacement have not yielded logical results due to the complication of reversed polarity.

Rattlesnake Hills platform is the most obvious feature. Platform is characterized by intense deformation and a network of faulting that leaves very little of the area undisturbed. Depths to the source of the magnetic anomaly are shallow based upon the sharp gradients and the short distance between highs and lows.

Strong anomaly, in the most southern corner, marks the frontal edge of a folded and faulted basalt flow.

Major NW-SE trending faults cross the area in parallel to sub-parallel directions. Multilevel surveys which compare the gradients on either side of the faults would provide a reliable basis for calculating their relative movements.

The axis of Pasco Basin is dissected by faults and minor folds. The basin area is the least deformed part of the survey area.

Fairly complex pattern of folds and faults within Pasco Basin, northeast of Rattlesnake Hills. A common source for the magnetic horizon is postulated, in part upon the consistency of the susceptibilities measured. Reverse polarities could be the cause of the anomaly or it could be messing up the measurements and leading to the wrong conclusion. A multilevel survey would clear everything up.

High gradients do not necessarily mean an uplift or a shallower part of the Pasco Basin.

Sharp parallel highs and lows in the eastern corner are interpreted as roll folds in lava flows. The separation of the axes suggests a 4000 foot thick sequence of flows.

Multilevel survey is recommended to clear up:

1. fault displacements
2. reverse polarities that affect the interpretation and dip of fault planes

Residual Maps

The near identity of the three residuals means the anomalies are of shallow origin - little evidence for deep structures of a size commensurate with the area covered.