MAGNETOMETER MAP
of SOUTHEASTERN SOUTH DAKOTA
by Bruno C. Petsch
1962
MAGNETOMETER SURVEY OF SOUTHEASTERN SOUTH DAKOTA

by

Bruno C. Peterson

LOCATION AND GENERAL

The southeastern part of southeastern South Dakota is located in the Precambrian shield, a region characterized by a complex geologic history and diverse rock types. The survey area encompasses parts of the Black Hills, known for its rich geological and mineral resources.

FIELD WORK

The survey was conducted using a magnetometer, a device sensitive to variations in Earth's magnetic field. Data was collected along grid lines across the area of interest, allowing for the mapping of magnetic anomalies.

OBJECTIVE

The primary objective of this survey is to delineate geological boundaries, identify mineral deposits, and assess the potential for groundwater. The results will be used for land use planning and environmental assessments.

METHODS

Surveying was carried out using a combination of ground and airborne techniques. Airborne magnetometer surveys provided a broad-scale view, while ground surveys offered detailed, localized data.

MAIN RESULTS

The survey data reveals a complex geological structure with various magnetic anomalies that correspond to different rock types and mineral deposits. The analysis of these anomalies is ongoing and will be used to refine future mining and exploration activities.

TABLE 1

<table>
<thead>
<tr>
<th>Province</th>
<th>Lat (°)</th>
<th>Long (°)</th>
<th>Lat (°)</th>
<th>Long (°)</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Dakota</td>
<td>44.50</td>
<td>-100.00</td>
<td>44.00</td>
<td>-99.50</td>
</tr>
</tbody>
</table>

Figure 1. Index Map of Southeastern South Dakota Magnetometer Surveys, showing regional provinces and areas of interest.

Figure 2. Magnetic Profile and Geologic Structure along a Transect.

Figure 3. West-East Cross-Section and Magnetic Profile along Transect.

Figure 4. North-South Cross-Section and Magnetic Profile along Transect.

Figure 5. Interpretation of Survey Data and Mapping of Southeastern South Dakota, after C. Petersen, 1963.

Diagram and Figures

A series of maps and diagrams illustrate the survey's findings, including cross-sections and profiles that provide a visual representation of the magnetic anomalies and their geological context.

Conclusion

The magnetometer survey of southeastern South Dakota has provided valuable insights into the region's geology. Further studies are necessary to fully understand the implications of these findings for resource management and environmental conservation.