

MAP OF BIG HORN BASIN, WYOMING, SHOWING APPROXIMATE
LOCATION OF AEROMAGNETIC PROFILES

5 0 5 10 15 20 25 MILES

AEROMAGNETIC PROFILES OF THE BIG HORN BASIN, WYOMING
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INTRODUCTION

The accompanying profiles show variations of total magnetic intensity along the traverses as approximately located on the base map of the Big Horn Basin in northeastern Wyoming. Insufficient base-map control has prevented plotting the information as a magnetic contour map. The apparent lack of relationship between the magnetic features and the geologic structures as determined from surface exposures indicates that expenditure of further effort to prepare a satisfactory magnetic map is not justified.

METHOD

The total magnetic intensity was measured by the AN/SG-24 airborne magnetometer installed in a P-51 which was flown 1,000 feet above ground along traverses plotted on trimastigon photographs. The actual flight path of the aircraft was followed by means of a ground-stabilized continuous strip camera and was plotted on the trimastigon photographs.

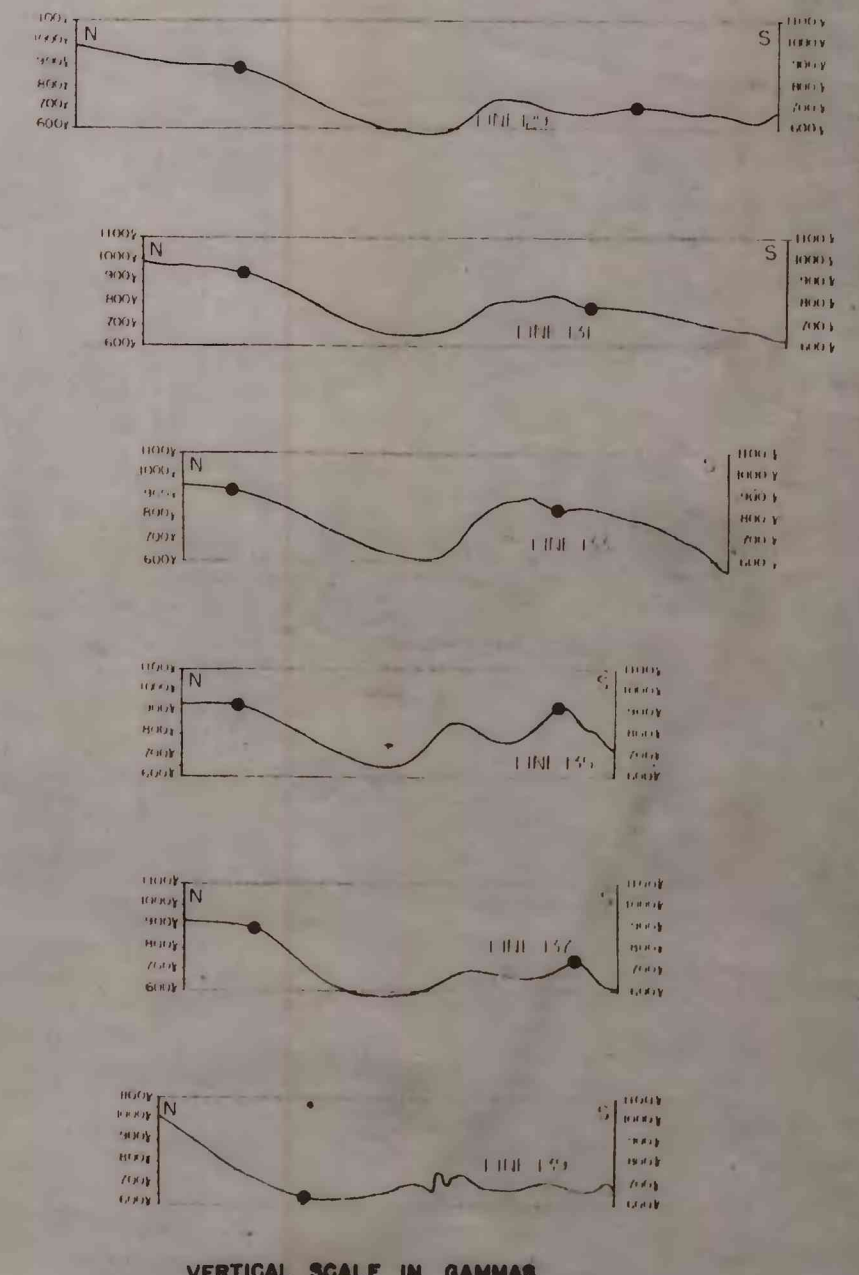
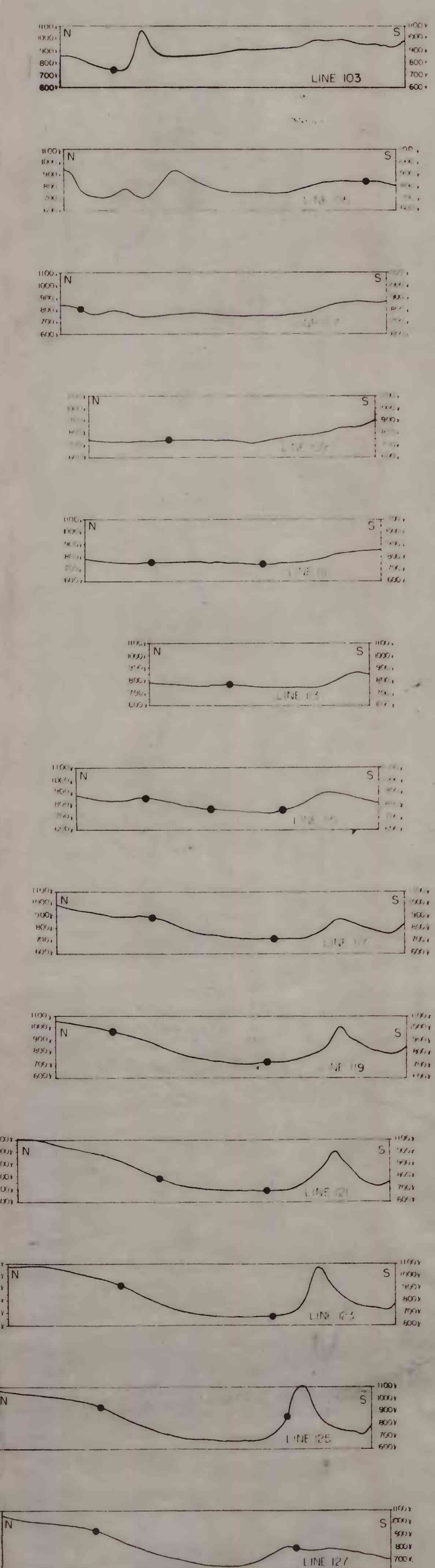
The lack of adequate base maps has made it not feasible to prepare a contour map from the field data now on hand, but in order to determine the usefulness of the information that was obtained, check points (shown as black circles on the profiles) whose positions are accurately known, were plotted and the intervening profile uniformly distributed assuming a constant ground speed and a straight flight line between the check points. Because the magnetometer is continuously recording, the magnetic value at any point on the profile is correct but because the ground speed of the plane varied and the flight line deviated from a straight line, the positions of points between the check points of the profile are not definitely known and no accurate comparison can be made between the profiles.

The magnetic base level of the curves was determined from two base lines, one flown along the Thermopole-Cody highway on the west side of the basin and the other along the Chicago, Burlington and Quincy Railroad between Warren and Thermopole on the east side of the basin.

INTERPRETATION

Magnetic features such as those shown on the profiles are commonly due to either variations in composition of the basement rocks or to topography of their surface, and the trend of these features is generally an expression of similar compositional or topographic trends within the basement. The fact that no obvious relationship exists between the magnetic trends and the geology as determined from surface exposures indicates that the surface structures have no simple relationship to the basement trends.

As it is known that many surface structures within the area are related to topographic features of the basement, it appears that most of the magnetic features are related to compositional rather than topographic variations in the basement rocks.



HORIZONTAL SCALE
5 0 5 10 15 20 25 MILES

VERTICAL SCALE IN GAMMAS

