



**AIRBORNE RADIOACTIVITY SURVEY OF THE PAINTED DESERT AREA,  
 COCONINO AND NAVAJO COUNTIES, ARIZONA**  
 by J. L. Meuschke

The accompanying map shows the results of an airborne radioactivity survey of 1,300 square miles of Coconino and Navajo Counties, Ariz. Maps for two areas in which radioactivity anomalies were found are shown in detail. The survey was made by the U. S. Geological Survey, January 26 to February 24, 1955, as part of a cooperative program with the U. S. Atomic Energy Commission.

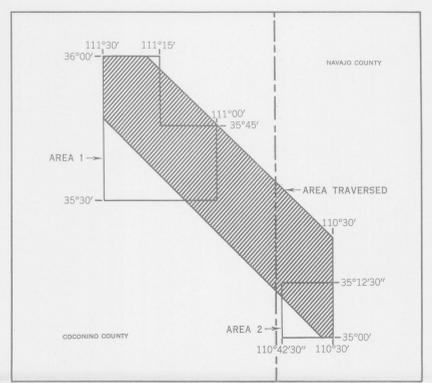
The survey was made with scintillation detection equipment. Parallel traverse lines, spaced at quarter-mile intervals, were flown approximately 500 feet above the ground at an average air speed of 150 miles per hour. Aerial photographs were used for pilot guidance, and the flight path of the aircraft was recorded by a gyro-stabilized continuous-strip film camera. The distance of the aircraft from the ground was measured with a continuously recording radio altimeter.

At 500 feet above the ground the width of the zone from which anomalous radioactivity is measured varies with the intensity of radiation of the source; for strong sources the width is as much as 1,400 feet. Quarter-mile spacing of the flight paths of the aircraft should be adequate to detect anomalies from strong sources of radioactivity. However, small areas of considerable radioactivity midway between flight paths may not be noted.

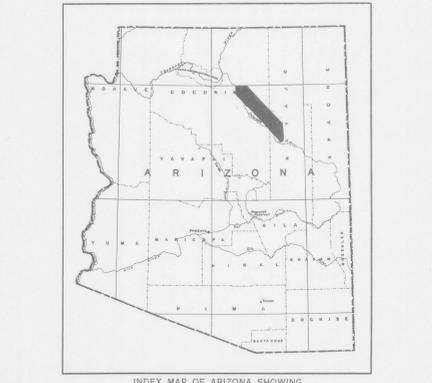
The approximate locations of the radioactivity anomalies are shown on the accompanying map. The plotted position of these anomalies may be in error by as much as a quarter of a mile owing to errors in available base maps or to areas on the base maps so large as several square miles in which it is impossible to find and plot recognizable landmarks.

The present technique of airborne radioactivity measurement does not permit distinguishing between activity due to thorium and that due to uranium. An anomaly therefore may represent radioactivity due entirely to one or a combination of these elements.

It is not possible to determine the extent or radioactive content of the materials responsible for abnormal radioactivity. The information given on the accompanying maps indicates only those localities of greater-than-average radioactivity and therefore suggests areas in which uranium or thorium deposits are more likely to occur.



MAP OF THE PAINTED DESERT AREA



INDEX MAP OF ARIZONA SHOWING LOCATION OF THE PAINTED DESERT AREA

APPROXIMATE MEAN DECLINATION, 1955

**EXPLANATION**

- ANOMALY; greater-than-average radioactivity; number refers to flight line and position and not to intensity. The center of the circle is the approximate location of the airplane when the anomaly was recorded. The size of the circle itself is meaningless.
- △ ANOMALY ASSOCIATED WITH KNOWN MINING OPERATIONS
- ▨ BOUNDARY OF AREA TRAVERSED

**AIRBORNE RADIOACTIVITY SURVEY  
 OF THE PAINTED DESERT AREA  
 COCONINO AND NAVAJO COUNTIES  
 ARIZONA**  
 1955