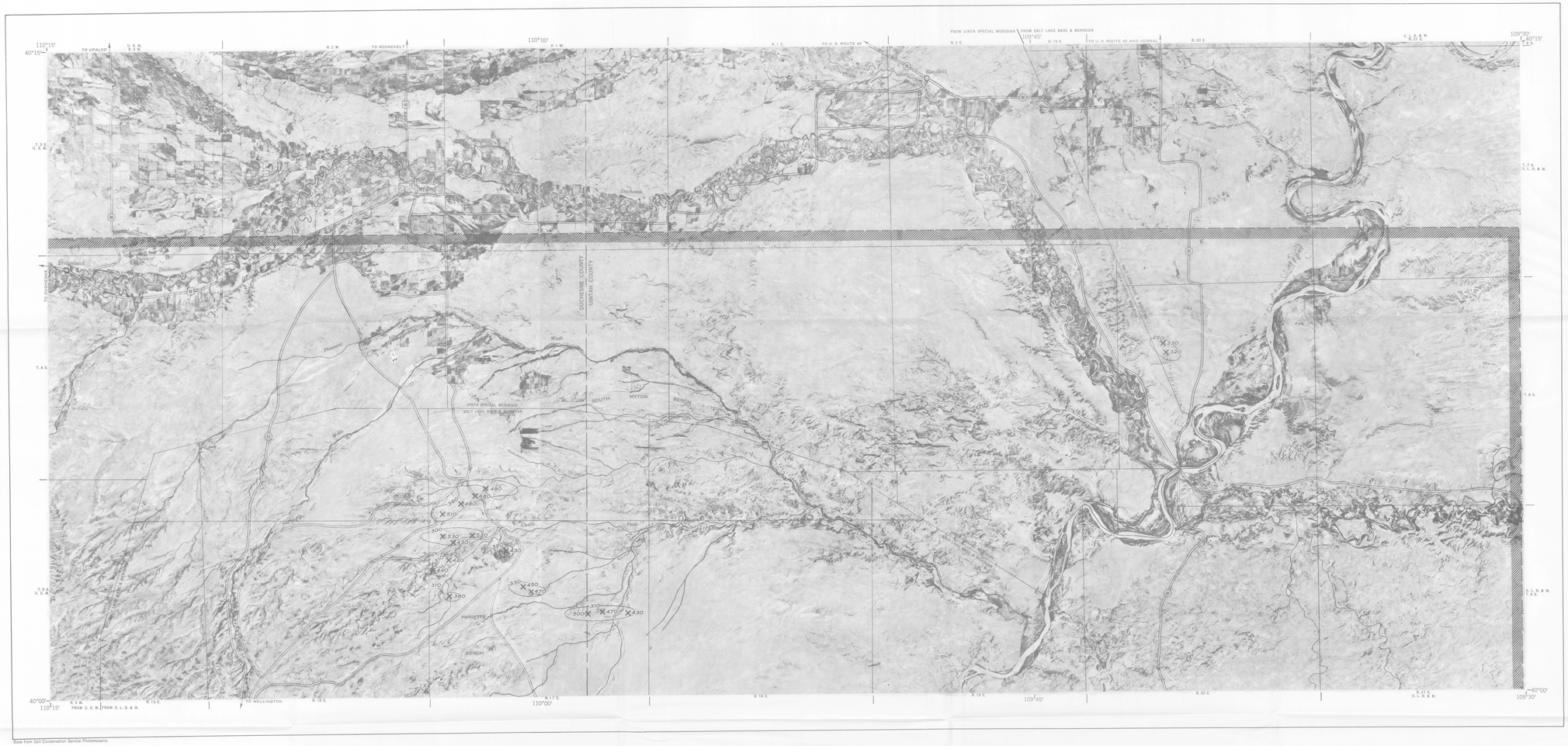
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY
W. E. WRATHER, DIRECTOR

PREPARED IN COOPERATION WITH THE
UNITED STATES ATOMIC ENERGY COMMISSION






Base from Soil Conservation Service Photomosaics

# AIRBORNE RADIOACTIVITY SURVEY OF THE MYTON AREA, DUCHESNE AND UINTAH COUNTIES, UTAH

APPROXIMATE MEAN DECLINATION, 1955

1 ½ 0 1 2 3 4 MILES

1955

## AIRBORNE RADIOACTIVITY SURVEY OF THE MYTON AREA DUCHESNE AND UINTAH COUNTIES, UTAH

by R. W. Johnson

The accompanying map shows the results of an airborne radioactivity survey of 640 square miles in Duchesne and Uintah Counties, Utah. The survey was made July 14 to 26, 1954, 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 gyrostabilized continuous-strip-film camera. The distance of the aircraft from the ground was measured with a continuously recording radio altimeter.

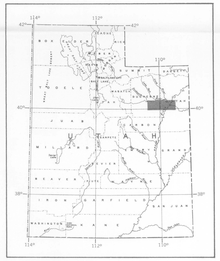
At 500 feet above the ground the width of the zone from which anomalous radioactivity is measured varies with the intensity of radiation of the source; for strong sources the width is as much as 1,400 feet. Quarter-mile spacing of the flight paths of the aircraft should be adequate to detect anomalies 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-mile owing to errors in available base maps or to the existence of areas on the base maps up to several square miles in which it is impossible to find and plot recognizable landmarks.

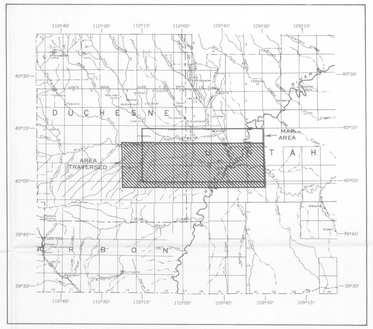
The present technique of airborne radioactivity measurement does not permit distinguishing between activity due to thorium and that due to uranium. An anomaly therefore may represent radioactivity due entirely to one or a combination of these elements.

It is not possible to determine the extent or radioactive content of the material responsible for abnormal radioactivity. The information given on the accompanying map indicates only those localities of greater-than-average radioactivity.

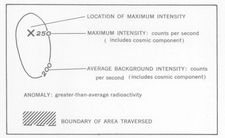
In part, the relative worth of anomalous areas can be judged by the ratio of average peak intensity divided by area. For a given average peak intensity then, larger areas result in smaller ratios and thus less significance. Large areas of low-grade material can give peak amplitudes comparable to smaller areas of higher grade material. It is entirely possible that high-grade material can be found within the low-grade material, and therefore the larger areas should not be completely discounted.




INDEX MAP OF UTAH SHOWING LOCATION OF AREA TRAVERSED




MAP OF MYTON AREA, UTAH, SHOWING LOCATION OF AREA TRAVERSED




EXPLANATION



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For sale by U. S. Geological Survey, price 50 cents