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RECONNAISSANCE OF SOME GEOLOGIC FORMATIONS IN SOUTHEASTERN IDAHO, WESTERN WYOMING, AND NORTHERN UTAH

by

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RECONNAISSANCE OF SOME GEOLOGIC FORMATIONS IN SOUTHEASTERN IDAHO, WESTERN WYOMING, AND NORTHERN UTAH

Abstract

A radiometric reconnaissance, using a portable beta-gamma survey meter, of some geologic formations ranging in age from Cambrian to Cretaceous, and springs in southeastern Idaho, western Wyoming, and northern Utah, has shown that none of them are sufficiently radioactive to warrant further examination of them in the area.

Introduction

A number of geologic formations of the Bear River, Idaho, area, ranging in age from Cambrian to Cretaceous, were recommended by V. E. McKelvey, W. W. Rubey, and F. C. Armstrong of the Geological Survey, as being worthy of examination for abnormal radioactivity. Accordingly, during the summer of 1949 a radiometric reconnaissance of those formations was made by personnel attached to the Geological Survey's Western Phosphate field party. The results of the examination of these formations follow. The formations are discussed according to their geologic age.

All equivalent uranium values given in this report were based on the estimation that a ratemeter reading six times that of the normal background is equal approximately to that which would be due to 0.01 percent equivalent uranium. After several checks of this conversion factor against assayed sections of the Permian Phosphoria formation it was decided it was sufficiently accurate for the purposes of this report.

Formations examined, their location, and the results obtained

Cambrian.--Four formations of Cambrian age, the Blacksmith limestone, the Bloomington formation, the Nounan limestone, and the St. Charles limestone were radiometrically examined near Paris, Idaho. None of these formations exhibited radioactivity exceeding about twice the normal background which would correspond to 0.003 to 0.004 percent equivalent uranium.

Ordovician.--Three Ordovician formations, the Garden City limestone, the Swan Peak quartzite, and the Fish Haven dolomite were examined near Paris, Idaho, and near Soda Springs, Idaho. None of these formations exhibited radioactivity exceeding twice the normal background, or about 0.003 to 0.004 percent equivalent uranium.

Mississippian.--Phosphate rock beds in the Brazer limestone were examined in a hand trench in Laketown Canyon, Utah. Average ratemeter readings fell between two and four times background, corresponding approximately to 0.003 to 0.006 percent equivalent uranium.

Pennsylvanian.--The upper fifty feet of the Wells formation were examined radiometrically in Raymond and Coal Canyons, Sublette Ridge, Wyoming, and near Henry, Idaho. Average ratemeter readings for these examinations were approximately twice the normal background, which would correspond to 0.003 to 0.004 percent equivalent uranium.

Triassic.--A section of the Timothy sandstone, seven miles east of Montpelier, Idaho, on U. S. Highway 89, was examined in the hope that radioactive material might accompany copper mineralization in the sandstone. Seven prospect pits and many mineralized outcrops were examined; the highest ratemeter reading was three times the normal background corresponding approximately to 0.005 percent equivalent uranium.

Cretaceous.--The black shale member of the Bear River formation was examined at four localities; two in the Cokeville quadrangle, Wyoming, and two in the Afton quadrangle, Wyoming.

Although the shale is similar in appearance to the Chattanooga shale, radioactivity does not exceed three times the normal background, or about 0.005 percent equivalent uranium. A few small areas in the shale produced readings from four to five times the normal background, but these ratemeter readings were not maintained for more than a few seconds at a time at any one place.

Reconnaissance of hot and soda springs

Several hot springs near Hot Springs, Idaho, were briefly examined. No radioactivity exceeding the normal background was present. A soda spring near Soda Springs, Idaho, also was examined and showed no excess radioactivity.

Summary

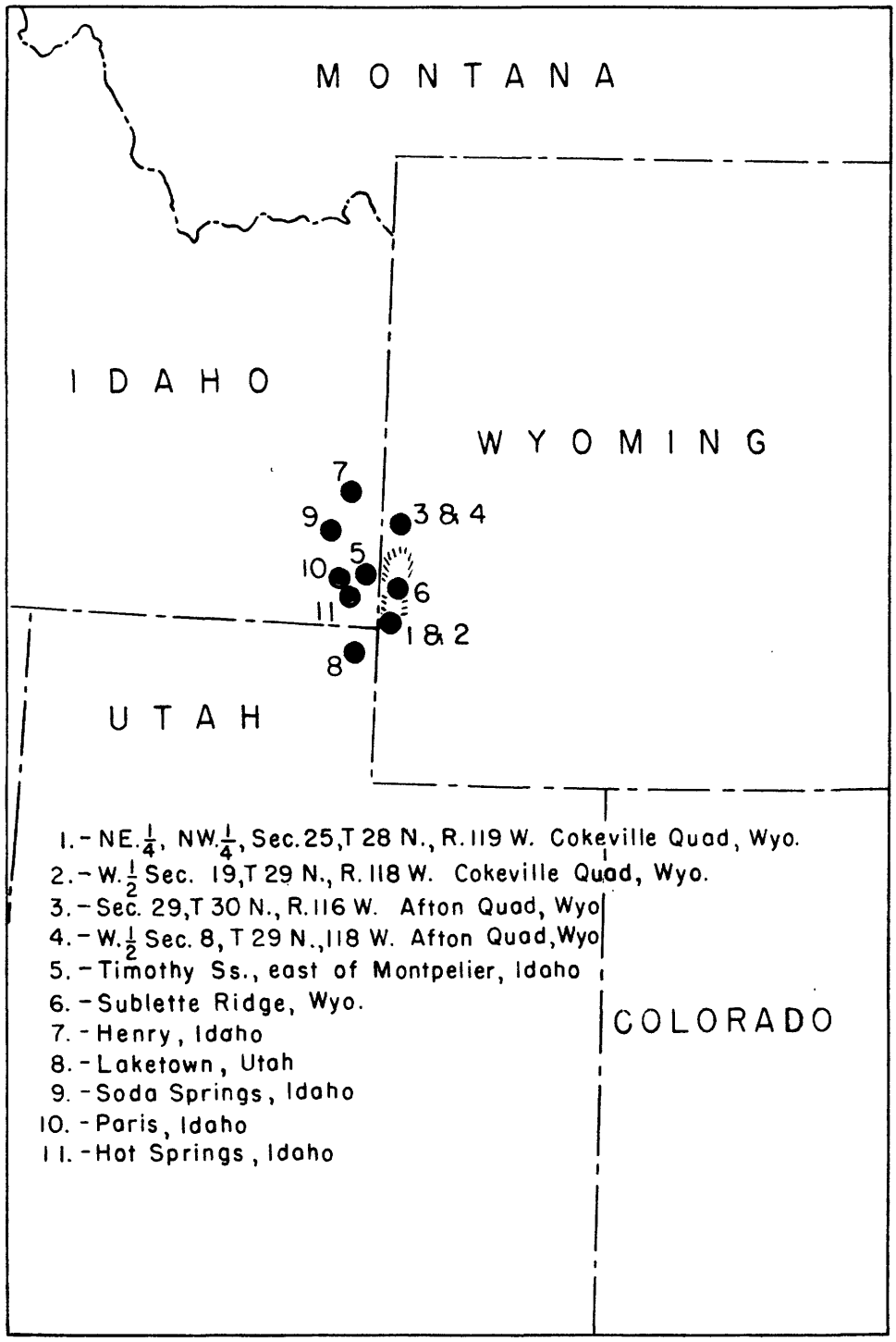
In the Bear River area, Idaho, none of the formations and springs examined were sufficiently radioactive to make further work on them desirable. The highest radioactivity encountered, four to five times normal background, was found in the black shale member of the Bear River formation, and owing to the sporadic nature of the activity, is of no interest.

Table of formations examined,
localities where examined and field radiometric analyses

Age	Name	Locality where examined	% E.U.[1]
Cretaceous	Bear River sh. member	Cokeville, Wyo., quad. 1) NE¼, NW¼, Sec. 25, T.28 N., R.119 W. 2) W½, Sec. 19, T.29 N., R.118 W.	0.005 "
		Afton, Wyo., quad. 3) Sec. 29, T.30 N., R.116 W. 4) W½, Sec. 8, T.29 N., R.118 W.	" "
Triassic	Timothy ss.	7 mi. east of Montpelier, Idaho, on route 89	0.005
Pennsylvanian	Wells fm.	1) Sublette Ridge, Wyo. 2) Henry, Idaho	0.003–0.004 " "
Mississippian	Brazer ls.	Laketown, Utah	0.003–0.006
Ordovician	Fish Haven dolomite	Soda Springs, Idaho	0.003–0.004
	Swan Peak qtzite.	"	" "
	Garden City limestone	"	" "
Cambrian	St. Charles limestone	Paris, Idaho	0.003–0.004
	Nounan ls.	"	" "
	Bloomington fm.	"	" "
	Blacksmith ls.	"	" "
	Hot Springs	Hot Springs, Idaho	none
	Soda Springs	Soda Springs, Idaho	"

[1] Estimated from ratemeter readings at the outcrops.

FIGURE 1.



INDEX MAP OF LOCALITIES WHERE SEDIMENTARY FORMATIONS WERE EXAMINED