Uranium in the East Walker River Area, Lyon County, Nevada

Trace Elements Memorandum Report 228

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

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UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

URANIUM IN THE EAST WALKER RIVER AREA

LYON COUNTY, NEVADA

By

M. H. Staatz and H. L. Bauer, Jr.

August 1951

Trace Elements Memorandum Report 228

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CONTENTS

ILLUSTRATIONS

TABLES

URANIUM IN THE EAST WALKER RIVER AREA
LYON COUNTY, NEVADA

by

M. H. Staatz and H. L. Bauer, Jr.

ABSTRACT

Uraniferous quartz veins and deposits of other types occur in an area at least six miles long and three miles wide, along the East Walker River in Lyon County, Nevada. Most of the deposits are on the west side of the river.

Six properties or areas were mapped, sampled, and tested radiometrically. These properties are: the Far West Willys group, Northwest Willys group, West Willys group, Silver Pick property, Grant View hot springs, and the Boerlin ranch radioactive area.

The East Walker River area is underlain by coarse-grained porphyritic granite. Cutting the granite are numerous aplite dikes and a few perthite-quartz pegmatites. Faulting was noted in a few places.

Radioactive material has been found in the East Walker River area in deposits of four types: (1) quartz veins carrying small amounts of copper, lead, and silver minerals; (2) partly altered granite adjacent to quartz veins; (3) gouge zones; and (4) hot springs. The quartz vein deposits are the most abundant. The uranium minerals pitchblende and kasolite occur in the quartz veins, in aggregates and streaks associated with copper and silver minerals, galena, and barite.

In many quartz veins abnormal radioactivity is absent or only locally present. Samples collected from quartz veins contained from 0.001 to 0.14 percent uranium; only five of 46 samples contained over 0.025 percent uranium.

Partially altered granite adjacent to the quartz veins in the West Willys No. 7 property contains scattered torbernite, but the highest uranium content noted in deposits of this type was 0.006 percent.

The third type of deposit is represented on the Silver Pick property, where a gouge zone of differing thickness contains scattered flakes of torbernite. Five samples from this deposit contained from 0.005 to 0.013 percent uranium.

The Grant View hot spring is moderately radioactive near the point where it issues from the hillside. Laboratory analysis of both water and sand from this deposit shows little uranium content (0.02 parts per million), and little radioactivity, indicating that the radioactivity is due to some short-lived daughter product, probably radon.

The uraniferous material found to date in the area is of too low a grade and small a size to be of present value.

INTRODUCTION

Quartz veins and deposits of other types are uraniferous in an area at least six miles long and three miles wide in Lyon County, Nevada. (Fig. 1.) The area trends north-northeast along the East Walker River, and most of the uranium occurrences are on the west side of the river. The area is in the Old Washington mining district and its western edge is in the Mono division of the Toiyabe National Forest. The area is

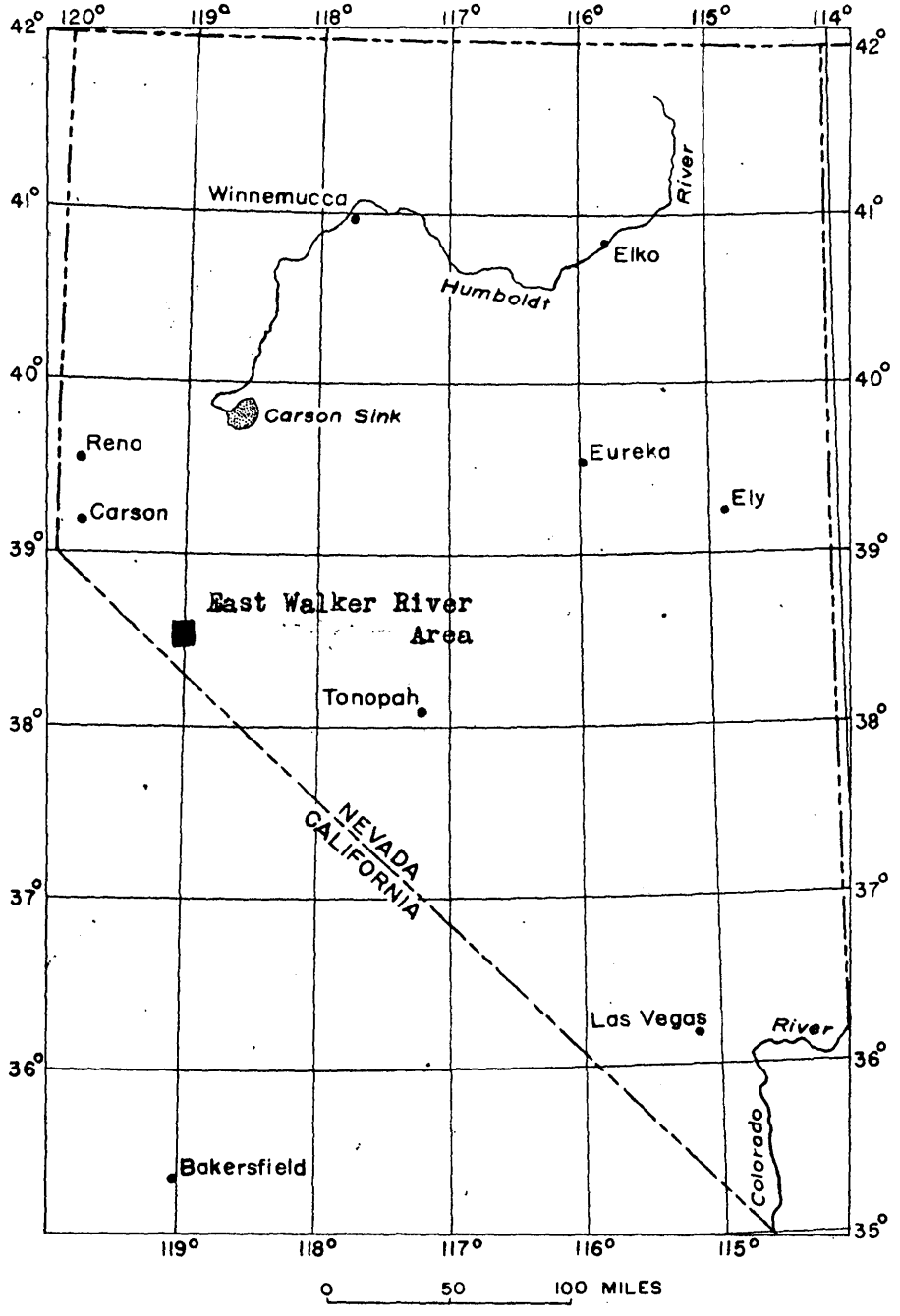

FIGURE 1.- INDEX MAP, EAST WALKER RIVER AREA,
LYON COUNTY, NEVADA

in secs. 28, 29, 32, 33, 34, and 35, T. 8 N., R. 27 E., and secs. 3, 4, 5, 6, 7, 8, 9, 17, and 18, T. 7 N., R. 27 E., Mt. Diablo meridian.

Several properties in the East Walker River area were mined for silver between 1880 and 1900. Past production from the area is not known but was probably small. Work on uranium has consisted only of prospecting.

The region is between 5100 and 6400 feet in altitude. The topography is rugged, and some slopes are as steep as 45 degrees. The East Walker River has cut a steep V-shaped canyon through granite but at present is aggrading.

The central part of the area is reached from Yerington, Nevada over 11 miles of tarred road and 30 miles of dirt road. A road log from the Yerington post office to the West Willys group, in the central part of the area, is given below:

Mileage	Description
0.0	Yerington Post Office - go south on State Highway 3.
11.0	Junction - take road straight ahead. State Highway 3 goes to right.
22.6	Junction - go straight ahead.
29.3	East Walker River airstrip.
36.7	Junction - turn right to Lewis ranch.
36.9	Junction - keep to left. Road to right goes to McLaughlin ranch.
37.4	Junction - go straight ahead. Road to right goes to Mr. Lewis' house.
37.8	Junction - turn to the right.

Mileage	Description
38.0	Junction - turn to the right.
38.3	Junction - turn to the right.
39.2	Cabin - follow road up river.
40.0	Cross river on bridge.
40.5	Old silver mill.
41.3	Junction - this is end of road except for vehicles with four-wheel drive. Road to left goes to Far West Willys and Northwest Willys groups. Road to right continues for about 100 yards and stops about 100 yards short of the West Willys claim.

The Silver Pick property can be reached by proceeding straight ahead at the junction at 38.0 miles, and continuing for several miles. The property is on the west side of the road.

After a brief visit by C. C. Towle, Jr., and Thomas Anderson of the U. S. Atomic Energy Commission, the area was studied by M. H. Staatz and H. L. Bauer, Jr., between September 30 and October 30, 1950. All known uranium occurrences were mapped and sampled. These included the following properties and areas: Far West Willys group, Northwest Willys group, West Willys group, Silver Pick property, Grant View hot springs, and the Boerlin ranch radioactive area. Radiometric measurements were taken on all properties with a Victoreen Model 268-B Geiger counter, with the beta shield open and the probe in contact with the material. Fifty channel samples, 11 grab samples, and one water sample were analyzed for radioactivity and uranium content.

GEOLOGY

The East Walker River area is underlain by prophyritic granite of unknown age. Cutting the granite are numerous aplite dikes and a few perthite-quartz pegmatites. Most of the aplite dikes occupy northeast-trending joints. Faults are present, but are obvious only where aplite dikes are offset and where gouge zones are found. To the east of the East Walker River area, the granite is overlain by coal-bearing shales and sandstones of Tertiary age.

MINERAL DEPOSITS

Types of deposits

Radioactive material was found in deposits of four types:

(1) Quartz veins contain most of the radioactive material in the area. Uranium occurs in minute scattered pitchblende grains and rarely in kasolite, a lead-uranium silicate, in association with copper, lead, and silver minerals. Where these minerals are lacking the quartz veins are not uraniferous.

(2) Iron-stained, fractured, and partly argillized granite is locally abnormally radioactive near the quartz veins on the No. 3 level of the West Willys No. 7 claim. This rock contains small scattered grains of torbernite, probably derived from pitchblende in neighboring quartz veins.

(3) Torbernite is found scattered through gouge in a shear zone at the Silver Pick property. The torbernite may have been derived from

primary uranium minerals associated with the lead and silver minerals, which occur in lenses of quartz along this zone.

(4) The Grant View hot spring, on the east side of the East Walker River, is radioactive. Water from this hot spring when allowed to stand decreases rapidly in radioactivity. Laboratory analysis showed a uranium content of only 0.02 parts per million, and it is probable that the initial radioactivity of this water is due to one of the shortlived daughter products of uranium, probably radon.

To the east of the area, in sec. 36, T. 7 N., R. 27 E., Tertiary sediments containing coal beds overlie the granite. The coal is subbituminous, has a high ash content (table 1), and is similar in appearance to cannel coal. It appears to be high in tars and resins and can be ignited with a match. Because many coals and lignites are uraniferous, the coal beds were tested at several places with a Geiger counter, and two channel samples were cut across the 4-foot coal bed in the Lewis coal mine. No abnormal radioactivity was noted and the two channel samples contained only 0.002 percent uranium in the ash (table 1).

Table 1.--Analyses of samples from the Lewis coal mine, Lyon County, Nevada.

Field No.	Equivalent Uranium (percent)	Uranium (percent)	Ash (percent)	Uranium in ash (percent)
BS-1-50	0.000	0.001	43.53	0.002
BS-2-50	0.000	0.002	42.03	0.002

Radioactivity

The quartz veins contain only local abnormal radioactivity. Of 46 samples, 41 contained between 0.001 and 0.025 percent uranium, and only 5 contained between 0.025 and 0.14 percent uranium. Of these five samples, four were of selected dump material. (See tables 3 and 4.)

Samples of altered granite contained between 0.002 and 0.013 percent uranium.

Five samples of the gouge zone on the Silver Pick property contained between 0.005 and 0.006 percent uranium.

Water from the Grant View hot spring contained 0.02 parts per million of uranium.

Description of deposits

Far West Willys group

The Far West Willys group is about one mile west of the East Walker River, in secs. 5 and 6, T. 7 N., R. 27 E., and is reached from the West Willys group of claims by a steep, narrow dirt road, 2.5 miles long and passable only by jeep. The group consists of seven claims: the Far West Willys claim and the Far West Willys No. 2-7 claims.

The Far West Willys group was located in 1949 and 1950 by Warren Loose, O. A. Kerlee, J. R. Ford, and L. O. Kerlee.

The area was prospected for silver between 1880 and 1900, and old workings include two shafts about 40 feet deep, a tunnel 125 feet long, a tunnel 80 feet long, and numerous small pits and trenches, mostly caved.

No silver was produced from the Far West Willys Group. New workings consist of three bulldozer cuts and several small trenches.

The eastern two thirds of the Far West Willys group, an area approximately 2,400 feet long by 600 feet wide, was mapped by plane table, and the two old tunnels were mapped with Brunton compass and tape (fig. 2). The veins were tested radiometrically and sixteen grab samples were taken from nine veins.

On the Far West Willys group of claims there are nine quartz veins over two inches in width. The quartz veins are bounded by silicified and argillized granite, and commonly the extension of a vein beyond the point where it pinches out is marked by a silicified zone. Veins and silicified zones appear to follow small shears or faults in the granite and slickensides are not uncommon. The nine quartz veins all strike between N. 70° E. and S. 75° E. and dip from 60° S. to 73° N. Most of the silicified shear zones also have this trend. Table 2 lists the strikes, dip, lengths, and average widths of the nine quartz veins. Only veins Nos. 1, 2, and 3 are in the area covered by figure 2.

The Far West Willys group is underlain by a porphyritic granite consisting of about seven percent euhedral orthoclase phenocrysts, 0.6 to 5 centimeters long, in a groundmass with an average grain size of 2.5 millimeters. The groundmass consists of orthoclase (50 percent), quartz (21 percent), oligoclase (16 percent), microcline (9 percent), biotite (1.5 percent), sphene (1 percent), apatite (0.5 percent), magnetite (0.5 percent) and a trace of zircon and hornblende. The distinguishing features of this granite are the high sphene content and the

orthoclase phenocrysts which have hornblende inclusions oriented in a zonal pattern parallel to the prism faces of the orthoclase.

Numerous aplite dikes and a few pegmatites cut the granite. The aplite is an equigranular rock with a grain size of 0.5 millimeters and is estimated to consist of quartz (32 percent), orthoclase (26 percent), microcline (24 percent), oligoclase (18 percent), and a trace of biotite and magnetite. The aplite dikes are more common on the Far West Willys group of claims than in other parts of the district, and range from a few feet to over 500 feet in length and from less than an inch to as much as 20 feet in width. The few pegmatites in the area generally transect the aplite dikes as small stringers, but in the south central part of the mapped area (fig. 2) two small pegmatites (38 and 62 feet long) were found. The pegmatites have an average grain size of one inch and are estimated to consist of pink perthite (65 percent), quartz (35 percent), and traces of garnet and muscovite.

Table 2.--Vein dimensions, Far West Willys group

Name or No.	Strike	Dip	Outcrop length (feet)	Average width (feet)
1	N. 76° E.	60° S.	30	0.35
2	N. 88° E.	74° S.	105	0.35
3	N. 86° E.	78° S.	316	1.2
Aiken shaft vein	N. 75° W.	90°	310	1.0
4	N. 70° E.	75° N.	240	1.1
5	East	81° S.	240	0.7
6	N. 75° W.	82° N.	11	0.8
Thackman tunnel vein	N. 72° E.	61° S.	50	0.8
Far West Willys vein	N. 87° W.	73° N.	80	0.5

The veins consist chiefly of quartz, which commonly shows comb structure with well-developed crystals up to an inch in diameter. Other minerals are irregularly distributed in thin layers and aggregates. Next

in abundance to quartz is a yellowish-green mineral that coats cracks and fractures and is probably epidote. Copper, silver, and lead minerals are commonly found together and include chrysocolla, chalcopyrite, chalcocite, tenorite, galena, and argentite. Barite and calcite were each found in but one place. No uranium minerals were noted.

All veins were tested with a Geiger counter. Their radioactivity is only locally higher than average, and readings ranged from 2 to 20 divisions on the 0.2 scale of the counter. A small pile of rich silver ore just north of Vein No. 1 gave a reading of 6 divisions on the 2.0 scale. Sixteen samples were taken from the nine veins. They contained from 0.002 to 0.14 percent uranium (table 3). The sample containing 0.14 percent uranium came from the selected ore pile north of Vein No. 1. A grab sample from the dump of a pit on Vein No. 5 contained 0.027 percent uranium. Only four veins yielded material containing over 0.010 percent uranium: Vein No. 1, Vein No. 5, Far West Willys vein, and a small vein less than two inches thick from a silicified zone (sample SJ-53-50).

Northwest Willys group

The Northwest Willys group is in sec. 29, T. 8 N., R. 27 E., and consists of the Northwest Willys and the Northwest Willys No. 1 claims. The claims were located in 1950 by Warren Loose, A. O. Kerlee, J. R. Ford, and L. O. Kerlee.

A radiometric traverse of the claims was made on October 15, 1950. Mine development consists of two short bulldozer cuts and two small prospect pits.

The country rock is a medium-grained porphyritic granite cut by aplite dikes. Two quartz veins having a general east-northeast trend and a steep dip cut the granite. The quartz vein on the Northwest Willys claim strikes N. 55° E. and dips 75° NW. This vein has an average width of one foot and is exposed on the surface for 250 feet. It grades into silicified granite on both ends. A pod of partly oxidized sulfides, 8 feet long and 0.7 feet wide, was noted in the vein near the location monument. This material, which contains galena, pyrite, chalcopyrite,

Table 3.--Analyses of samples from Far West Willys group

Field No.	Location	Description	Equivalent uranium (percent)	Uranium (percent)
SJ-47-50	Vein No. 2	Quartz vein	0.003	0.003
SJ-48-50	Vein No. 1	do.	0.020	0.021
SJ-49-50	do.	do.	0.005	0.005
SJ-50-50	do.	do.	0.008	0.007
SJ-51-50	do.	Dump (selected)	0.14	0.14
SJ-52-50	Silicified zone	Dump	0.005	0.007
SJ-53-50	do.	Dump	0.016	0.019
SJ-54-50	Vein No. 3	Quartz vein	0.001	0.002
SJ-55-50	Vein No. 3	Quartz vein	0.004	0.005
SJ-56-50	Aiken shaft vein	Dump	0.004	0.004
SJ-57-50	Vein No. 4	Quartz vein	0.002	0.002
SJ-58-50	Vein No. 5	Quartz vein	0.012	0.010
SJ-59-50	Vein No. 5	Dump (selected)	0.033	0.027
SJ-60-50	Vein No. 6	Quartz vein	0.013	0.012
SJ-61-50	Thackman tunnel vein	Quartz vein	0.004	0.006
SJ-62-50	Far West Willys vein	Quartz vein	0.019	0.016

copper oxides, limonite, and quartz, is the most radioactive material noted on the Northwest Willys claims. Readings ranged from 2 to 8 divisions on the 0.2 scale of a Geiger-Mueller counter. A 0.7-foot

channel sample (SJ-75-50) across the pod contained 0.003 percent uranium. Readings on the rest of the vein and on the granite ranged from 1 to 4 divisions on the 0.2 scale.

The vein on the Northwest Willys No. 1 claim strikes N. 85° E. and dips 70° SE. The vein averages 3 feet in width and can be traced along strike for 300 feet. It is composed of massive quartz; a little green copper staining was noted at one place. Radiometric readings along the vein ranged from 1 to 5 divisions on the 0.2 scale. A 5.3-foot channel sample (SJ-76-50) across this vein contained 0.002 percent uranium.

West Willys group

The West Willys group of claims is on both sides of an unnamed canyon half a mile to 1½ miles west of the East Walker River, in secs. 32 and 33, T. 8 N., R. 27 E. The group consists of seven claims: West Willys claim and West Willys Nos. 2, 3, 4, 5, 6, and 7 claims. The claims were located in 1949 by Warren Loose, L. O. and O. A. Kerlee, and J. R. Ford. The West Willys No. 7 claim overlaps a claim located as the Old Washington claim by the Sierra Minerals Corporation. A rough dirt road leads up the canyon to within a few hundred yards of the claims (see road log). Four zones of closely spaced quartz veins have been found. The vein zones are on the West Willys, West Willys No. 2, West Willys No. 4, and the West Willys No. 7 claims. Plane-table maps were made of parts of the West Willys and West Willys No. 7 claims.

West Willys claim.--The West Willys claim is on the north side of the canyon, several hundred yards west of the end of the road. The area had previously been prospected and there are six old open cuts (fig. 3). No recent work has been done. The property was mapped on a scale of 1 inch to 40 feet by plane table, and 13 channel and grab samples were taken. Two quartz veins cut porphyritic granite similar to that on the Far West Willys claim. They lie in a zone that trends roughly N. 67° W. (fig. 3). The eastern vein is exposed for 293 feet; it is two or three feet thick in the central part and pinches down to 0.5 feet at the west end. The western vein is 250 feet long and ranges from an inch to three feet in thickness. A zone of silicified granite up to 1½ feet thick commonly borders the vein.

The veins consist almost entirely of gray to milky quartz with a few small drusy openings. The other minerals are in general sporadically distributed along the hanging-wall side of the vein. Sericite, which forms fine veinlets through the quartz, is the chief accessory mineral. Chrysocolla, chalcocite, chalcopyrite, galena, and thin coatings of manganese oxides were noted. The radioactive material consists of a few grains of a dull black mineral, probably pitchblende, that occurs in association with the copper and lead minerals, and thin coatings of an orange-yellow mineral that is associated with pitchblende (?) and copper and lead minerals in the central part of the western vein. The orange-yellow mineral has been identified as kasolite.

Radiometric testing indicated that the veins are for the most part of average radioactivity. Locally readings were as high as 6 divisions on the 2.0 scale. Eight channel samples across the veins, three channel

samples of the silicified granite bordering the footwall side of the western vein, and two grab samples were taken (table 4). The channel samples of the vein contained from 0.001 to 0.087 percent uranium.

Table 4.--Analyses of samples from West Willys claim

Field No.	Location	Description	Equivalent uranium (percent)	Uranium (percent)
SJ-63-50	West vein	Quartz vein	0.093	0.087
SJ-64-50	do.	Silicified granite	0.002	0.002
SJ-65-50	do.	Quartz vein	0.018	0.015
SJ-66-50	do.	do.	0.001	0.002
SJ-67-50	do.	do.	0.013	0.013
SJ-68-50	do.	Silicified granite	0.002	0.002
SJ-69-50	do.	do.	0.002	0.002
SJ-74-50	do.	Dump (selected)	0.063	0.072
SJ-103-50	do.	Quartz vein	0.001	0.001
SJ-70-50	East vein	do.	0.001	0.002
SJ-71-50	do.	do.	0.003	0.003
SJ-72-50	do.	do.	0.008	0.009
SJ-73-50	do.	Dump (selected)	0.100	0.110

The three channel samples of the silicified granite contained only 0.002 percent uranium. Grab sample No. SJ-73-50 was taken from a pile of material from a sulfide-rich part of the eastern vein; grab sample No. SJ-74-50 came from the dump of a pit in the western vein and was selected by use of a counter. These samples contained 0.11 and 0.072 percent uranium, respectively.

West Willys No. 2 claim.--The West Willys No. 2 claim is near the top of a ridge about 450 feet above and 1500 feet north of the main canyon. The shaft is about 500 feet north of the workings at the western end of the West Willys No. 7 vein. Old workings consist

of a shaft 30 feet deep near the center of the vein, and several small pits.

A quartz vein cutting porphyritic granite strikes N. 40° - 65° E. and dips 75° SW. The vein is exposed for 500 feet along strike and ranges in width from less than 0.1 foot to 0.8 foot. The granite on either side of the vein is silicified. A little barite, galena, chrysocolla, chalcopyrite, and chalcocite were noted.

Radioactivity ranged from 1 to 5 divisions on the 0.2 scale of a Geiger-Mueller counter. A channel sample across the vein (SJ-85-50) contained 0.002 percent uranium. A selected sample from the dump (SJ-84-50) contained 0.022 percent uranium.

West Willys No. 4 claim.--The West Willys No. 4 vein is on the south side of the canyon, about 500 feet southeast of the eastern vein on the West Willys claim. The old workings include a shaft 20 or 30 feet deep, three open cuts, and three small pits. A shear zone in porphyritic granite contains several en echelon and branching quartz veins. The shear zone is 200 feet long and trends N. 49° E. The quartz veins dip from 56° SE. to 90°. They pinch and swell, and range in width from 0.1 to 0.9 foot, averaging about 0.6 foot.

The veins are chiefly white quartz, which locally is drusy. Other minerals noted were chrysocolla, sericite, chalcocite, chalcopyrite, and galena. These minerals occur either in thin layers along the footwall or in scattered pods. The granite adjacent to the vein is argillized and silicified.

Radiometric readings on the barren quartz ranged from 1 to 5 divisions on the 0.2 scale of a Geiger counter. The parts of the veins

containing the sulfides gave readings between 2 and 15 divisions on the 0.2 scale. Two channel samples cut across the entire vein (SJ-77-50 and SJ-78-50) contained 0.003 percent uranium.

West Willys No. 7 or Old Washington claim.--The West Willys No. 7 or Old Washington claim is 900 feet north of the main canyon, and about 1500 feet southeast of the West Willys claim. It is on a steep mountain face with a difference in altitude of about 300 feet from the lower to the upper workings.

Between 1880 and 1900 this property was mined for silver, and was called at that time the Old Washington mine. The production is unknown. The old workings include 7 adits and 3 small open cuts. For this report the adits are numbered from the lowest upward (figs. 4 and 5). All adits are accessible, except No. 2. The adits range from 31 to 367 feet in length. The vein was partly stoped out between the No. 4 and No. 5 levels. Below No. 4 level the veins continue, but the silver content is reported to have decreased below minable grade.

Narrow shear zones cutting granite contain en echelon quartz veins and irregular gouge zones. The shear zone exposed on the surface strikes N. 77° W. and consists of a series of slips having an average dip of 80° S. It is exposed for over 500 feet along strike. Another shear zone striking N. 51° E. and dipping 73° NW. is seen in the workings (fig. 4, section A-A; fig. 5, level No. 3) but is not exposed on the surface. The junction of these two zones plunges about 38° in a direction of S. 76° W. Several small east-trending silicified zones were noted on the surface. The two major shear zones contain one or more quartz veins which range from less than an inch to 1.5 feet in thickness. Small cross faults

striking N. 38° E. to N. 25° W. and dipping 50°-60° W. cut the veins and in some places offset them a few feet. The shear zones and quartz veins commonly are bordered by as much as six feet of silicified and argillized granite.

The veins are almost entirely quartz. Pockets and streaks consisting of epidote, chrysocolla, barite, chalcopyrite, galena, chalcocite, and probably argentite occur sporadically along the vein. Specks of a dull black highly radioactive mineral, probably pitchblende, were found in a pocket of sulfide minerals on the No. 4 level. At the face of No. 3 level fine crystals of torbernite were found in altered granite adjacent to a quartz vein.

Only locally abnormal radioactivity was noted. Analyses of 17 channel and grab samples from this property ranged from 0.002 to 0.018 percent uranium (table 5). Only two of the samples (SJ-89-50 and SJ-90-50) contained more than 0.01 percent uranium; these were selected from material rich in sulfides mined from a stope on the No. 4 level.

Table 5.--Analyses of samples from West Willys No. 7 or Old Washington claim.

Field No.	Location	Description	Equivalent uranium (percent)	Uranium (percent)
SJ-94-50	No. 1 level	Argillized granite	0.004	0.004
SJ-95-50	do.	Quartz vein	0.001	0.002
SJ-96-50	do.	Brecciated quartz	0.003	0.002
SJ-97-50	do.	Argillized granite	0.006	0.004
SJ-79-50	No. 3 level	Quartz vein	0.007	0.006
SJ-80-50	do.	do.	0.008	0.008
SJ-81-50	do.	do.	0.011	0.008
SJ-82-50	do.	do.	0.004	0.003
SJ-83-50	do.	do.	0.003	0.002
SJ-90-50	No. 4 level	Stoped rock (selected)	0.014	0.018

TEM-226

Table 5.--Analyses of samples from West Willys No. 7 or Old Washington claim. (Continued)

Field No.	Location	Description	Equivalent uranium (percent)	Uranium (percent)
SJ-91-50	do.	Quartz vein	0.002	0.002
SJ-92-50	do.	do.	0.003	0.003
SJ-86-50	No. 5 level	do.	0.006	0.007
SJ-87-50	do.	do.	0.001	0.002
SJ-88-50	do.	do.	0.002	0.002
SJ-89-50	do.	Stoped rock (selected)	0.014	0.017
SJ-93-50	do.	Quartz vein	0.002	0.002

Silver Pick property

The Silver Pick property is on the east side of a low ridge just west of the county road from the East Walker Ranch to Aurora, in sec. 35, T. 8 N., R. 27 E. The property was located 10 or 15 years ago for silver; uranium minerals were discovered in the spring of 1950 during assessment work. The property is owned by L. W. Osborn and Art Baseman of Yerington, Nevada.

The old workings consist of an open cut 17 feet long and 10 feet wide; a 16-foot adit at one end of the open cut, a shaft 30 feet deep, and several small pits. Since the discovery of uranium minerals a 34-foot shaft was sunk along a shear zone at a 52-degree incline, and from the bottom of the shaft a tunnel 37 feet long was driven (fig. 6).

A shear zone cutting granite strikes N. 30° E. and dips 50° NW., and can be traced from the new shaft for at least 210 feet to the southwest. The shear zone contains gouge and scattered blebs of quartz. The granite on both sides of the shear zone has been altered and silicified.

Scattered small nodules of quartz containing galena, chalcocite, and reported silver minerals are found in the altered zone. Locally the gouge contains a platy light-green mineral that fluoresces under ultraviolet light, and is tentatively identified as torbernite.

Radiometric readings ranged from 5 to 15 divisions on the 0.2 scale of a Geiger counter. A few pieces of high-grade ore from the dump gave readings up to 5 divisions on the 2.0 scale. Three channel samples were cut in the tunnel at the foot of the new shaft, one in the old shaft (fig. 6), and one in the short adit off the open cut. The results of analysis are given in table 6.

Table 6.--Analyses of samples from Silver Pick property

Sample	Location	Material	Equivalent uranium (percent)	Uranium (percent)
SJ-98-50	Tunnel at foot of new shaft	Altered	0.007	0.006
SJ-99-50	do.	Gouge	0.009	0.005
SJ-100-50	do.	do.	0.009	0.005
SJ-101-50	New shaft	do.	0.011	0.006
SJ-102-50	Adit at end of open cut	Altered granite	0.015	0.013

Grant View hot spring

The Grant View hot spring is about 2-3/4 miles south of an abandoned silver mill (see road log) on the East Walker River. The spring is in a big bend of the river valley, about 300 feet east of the river, in sec. 8, T. 7 N., R. 27 E. The nearest road ends 2-3/4 miles down the river at the old mill.

The hot spring is within the Grant View No. 1 claim, located in 1949 by Warren Loose, O. A. Kerlee, J. R. Ford, and L. O. Kerlee. No development work has been done.

At its source the spring water is estimated to have a temperature of about 110° F. When a Geiger counter probe was held directly over the water, the counter registered between 8 and 20 divisions on the 0.2 scale, averaging about 10 divisions, compared to an average reading elsewhere of about 4 divisions.

A sample of the water, and one of the sand through which the water seeped at the head of the spring, were collected. When analysed several weeks later, the water sample contained 0.02 parts per million of uranium, and the sand contained 0.008 percent equivalent uranium and 0.002 percent uranium. As the quantity of uranium in the water is not sufficient to give abnormal readings on a Geiger counter, it is concluded that the radioactivity of the spring is due to the presence of radon, which has a short radioactive life.

Boerlin ranch radioactive area

The Boerlin ranch radioactive area is on a ridge top about 500 feet above and a quarter of a mile west of the East Walker River. The area is about two miles down river (north) from the old Boerlin ranch, now part of the East Walker ranch, and is in sec. 18, T. 7 N., R. 27 E. The nearest road ends at the Boerlin ranch.

No claims have been located and no work has been done. The radioactivity was discovered by Warren Loose, who guided the writers to the area.

The country rock is coarse-grained porphyritic granite. A zone of altered, iron-stained, and silicified granite trends N. 65° E. and is intermittently exposed for about 80 feet along the top of the ridge over a maximum width of 25 feet. At one spot several small quartz veins, one inch to eight inches thick, were noted. Radiometric readings varied from 4 divisions on the 0.2 scale to 4 divisions on the 2.0 scale of a Victoreen counter, compared to readings elsewhere averaging about 4 divisions on the 0.2 scale. The higher readings were noted only in one area, about one foot in diameter, where readings ranged from 15 divisions on the 0.2 scale to 4 divisions on the 2.0 scale. Two feet away from this area, the radioactivity dropped to 6 divisions on the 0.2 scale. The average reading for the whole altered zone was about 7 divisions on the 0.2 scale. One channel sample (BS-5-50) was taken from argillized granite at a place where the counter registered 7 to 15 divisions on the 0.2 scale. The sample contained 0.010 percent equivalent uranium and 0.009 percent uranium.

CONCLUSIONS

Whereas the widespread distribution of uranium seems encouraging for further prospecting, the low grade of samples collected and the irregular distribution of uranium suggest that if any further work is undertaken it should be outside of the areas discussed in this report.