Introduction ✓

Geology

General Statement ✓
Geologic History
Tertiary Rocks

Glassy rhyolite
Lake Seds.
Volcanic tuffs
Basalt (early)
Welded tuff -- Rhy.?
Basalt (late)

} Not completed.

Structure ✓

Folds ✓

Faults ✓

Uranium Deposits

White King
Lucky Lass

} Not completed (will be essentially same as in previous report, especially Lucky Lass & Marty K. White King will be changed some.)

Prospecting and exploration ✓

Introduction

The first commercial uranium discovery in Oregon was made in June, 1955 by Don Tracey and John Roush of Lakeview. The location of the original claim was kept secret for several weeks but immediately after the location became known, the Lucky Lass was found, about 5,000 feet away. This was the beginning of extensive prospecting in the Lakeview area. The 1955 season lasted about four months but no important new discoveries were made by the end of October when snow essentially stopped prospecting.

It is estimated that about 100 people spent these four months prospecting with radiation detection instruments. Most of the work was done with car-borne scintillation counters and multiple-tube geiger ~~x~~ counters. Several groups had plane-mounted detection instruments. The greater percentage of the work was done by private individuals or groups, but several mining companies had representatives in the area. Most of these men did no prospecting, but merely examined existing claims.

At different times private groups have done drilling, usually by diamond coring drills. No other machine has been used to any extent, in spite of the fact that very little core has been recovered.

Thornburg Bros. have acquired leases on the two main deposits. Under the name of Lakeview Mining Company, this company is carrying on extensive exploration by drilling and detailed geologic mapping of the known deposits on the Lucky Lass and White King claims. Their stated objective is the finding of sufficient reserves so that a mill may be built near Lakeview. At the present time, ore is shipped to the Vitro mill near Salt Lake City.

The White King and Lucky Lass are located about 15 miles NW of Lakeview on the Augur Creek drainage system. The two mines are about 5,000 feet apart in the steep hills that rise to the west of the valley occupied by Lakeview and Goose Lake. Elevation of the White King is 6,000, the Lucky Lass 6,200, and Lakeview 4,800 feet.

Geology

General Statement

The Lakeview area is the northern part of the Basin and Range province with the typical block faulting the principal geologic feature. Abert Rim gives eloquent testimony to the forces that have broken the earth and ~~push~~ raised or dropped ~~ed~~ huge blocks thousands of feet ~~upwards~~.

Folding is present but ~~not quite~~ is not so apparent as the faulting. Most of the ~~non-horizontal~~ dips may be attributed to the faulting rather than folding. However, Waring (1908) shows a NW trending anticline, the axis of which is near the mine area. No positive evidence of this fold was seen during the present mapping project.

The rocks of the Lakeview area are the usual assemblage of volcanics, and lacustrine deposits common to ~~most~~ much of the central and eastern part of Oregon. The volcanics ~~range~~ vary from rhyolitic to basaltic and from tuffaceous to massive. The age of these rocks range from Oligocene to Recent (Trauger, unpublished). The rocks near the mine area are among the older rocks, probably Olig.?-Miocene.

Geologic History

The earliest effusive rocks laid down in the map area is the welded tuff at the White King mine. This same rock crops out in several places on Thomas Creek also. These few outcrops are believed to represent an early acid flow of late Oligocene or early Miocene age (Trauger).

This rock was sheared and fractured and mineralized at the White King mine by solutions bearing uranium, iron, mercury and antimony and penetrating the early shear zones and fractures.

A period of erosion and deformation followed before an acid tuff was laid down over the welded tuff at the White King. Fragments of the welded tuff were broken off and included in the tuff layers. After this tuff was laid down it probably became mineralized at the White King mine by leeching of the existing ore-deposit by ground water action.

The acid tuff directly over the welded tuff at the White King appears to be part a series of loose, unconsolidated basic and acid tuffs, tuffaceous lake sediments and basaltic flows. These effusives are extremely thick, probably being several thousand feet thick. These rocks were probably laid down in Miocene time. This series covers the southern half of the map area.

These vesicular basalts are the country rocks at the Lucky Lass mine. The mineralization is present in a large shear zone of altered basalt.

The lake sediments are present in several places along the divide between Augur and Thomas Creeks and to the north of the map area. It is possible that these bedded deposits may be much more extensive than is realized. They crop out only in road cuts and discovery holes. The tuffs do not form prominent outcrops except where they are overlain by lava. Float of basalt and a later rhyolite and soil covers large areas

of probable tuffaceous rocks.

A series of rhyolitic lavas was the latest volcanic rock to be ejected in the map area. This rock is white to tan to reddish and shows prominent flow structure.

Major deformation took place after these rocks were deposited.

Structure

Folding

No evidence of folding was proven in the small area covered by the reconnaissance map. Non-horizontal (?) dips were wholly attributed to the "tilted" nature of fault blocks.

Waring (1908) shows an anticline, the axis of which goes from the east side of Goose Lake through Summer Lake to the middle of Silver Lake and trends N 22° W. Smaller folds are parallel and at right angles to this major structure in the northern and central part of Lake County.

Faulting

The faulting near the mine area is not so apparent as that of Abert Rim and Winter Rim. These "scarps" are classical examples of exposed fault surfaces and are not duplicated anywhere in the world.

The faulting has broken the mine area into blocks, most of which are less than a mile on a side. These faults were first delineated on areal photographs. Distinct lineations appear on the photos and several of these were checked on the ground. All of those checked were actually faults. On this evidence, most of the faults on the map are a result of the examination of the areal photos.

Faulting in the map area is essentially two directions and the two sets are at right angles. These directions are N. 30-60° E. and N. 30-60° W. The NW-trending "set" appears to be two distinct sets trending N. 30-40° W. and N. 50-60° W. Generally the faults cannot be traced for more than 5 miles and usually seem to be shorter.

Little evidence on the sequence of faulting was obtained. However, some of the NW-trending faults seem to be cut off by the NE faults, indicating that the NE faults are younger.

and the following conclusion

Such evidence, ~~if present in the map area,~~ is believed to be of little value because of the belief of recurring movement of each set over extended periods of time. The idea of continuous recurrence of movement is borne out by the earthquake history of Lakeview, Oregon. Three tremors, severe enough to be felt by people not in buildings, have been recorded (Ore-Bin, Vol. XI, No. 6, p. 39-43). If the area was more heavily populated, undoubtedly more movements would have been felt.

Faulting is undoubtedly the key to the deposition of uranium at the White King and Lucky Lass mines. The Lucky Lass is a typical shear-zone and several faults converge on the White King. Three directions of faults converge on both mines. A fault, trending N. 60° W., connects the mines. The three directions of faults seem to converge upon the Marty K occurrence where a small block of ore was found.

Some of the faults have been traced by prospectors by radiation detection instruments. The faults tested are slightly more radioactive than the surrounding ground.

The present occurrences do not explain the relative importance of a single set or the junction of two or more sets. The only evidence to favor the importance of a single set is the fact that the NW trending faults seem to be older and the mineralized rocks are also old. The possibility remains, however, that the fault system was essentially established previous to mineralization and that this reasoning is not valid.

Prospecting and Exploration

Prospecting in the area has largely been done by car borne scintillation counters or multiple-tube Geiger counters. Several private groups and commercial exploration companies have used detection instruments in planes and much work has been done on foot. A comment might be appropriate here -- the White King was first discovered by a prospector with no detection instrument who found a piece of float which looked "interesting". The sample was tried on a counter later and the mine was very quickly located beneath a thin soil cover when detection instruments were used the next day.

Car prospecting with a sensitive detection instrument is probably the best method for making preliminary surveys. There are many roads built and maintained by the Forest Service and logging companies that give excellent access to the area. Very many square miles have networks of roads which are less than ¼ mile from each other. Of course, many small deposits will be missed by traveling roads even with good detection counters.

Airborne detection instruments that have been used by private groups do not seem to have been too successful. It is probable that much more elaborate instruments must be used over most of the country to give good results.

There are many difficulties encountered by the flying prospector. The mine area is rough with about a thousand-foot relief within 5 miles. Steep, narrow, wandering canyons divide the land. All of the land, except the "meadows" or alluvial fills in the stream valleys, is heavily covered with pine or brush, and the soil mantle is universally over 2 feet thick. These factors present serious problems to the flying prospector.

Some type of detection instrument is an absolute necessity for the

uranium prospector. Practically the whole area is covered with some soil and even if ore is exposed, some of it is hard to detect in a good specimen with just the naked eye. A "black light" may be used on the Lakeview ores but their prospecting benefits are limited.

The most popular method of exploration in the Lakeview area has been by bulldozer methods. Discovery pits are almost always dug by this method. Some individuals have done exploration by diamond-drill methods but this method has not been too successful generally. Lakeview Mining Co., lessee of the White King and Lucky Lass have used diamond drill methods to explore the two mines. The principal benefits from this work has been merely the hole down which a "counter" probe can be dropped. Core is extremely hard to recover because of the brittleness of some of the volcanics and the variable nature of the rocks penetrated. These volcanics range from poorly consolidated tuffs to brittle rhyolite and volcanic glasses. Sludge samples must be carefully kept to have any continuous chemical assays on rock penetrated.

As has been noted, the Lakeview deposits seem to be located along shear zones. These shears are visible, upon close examination, on areal photo "mosaics". These mosaics are about a mile to the inch in scale. Any place shears or faults are present is a good place to prospect.

The Lakeview deposits are in volcanic rocks. They may be primarily associated with an older series of acid volcanics such as welded tuffs and rhyolites and acid tuffs.
These rocks are light-colored, being pink, tan to yellow, or white. Rocks like this are found extensively in central and eastern Oregon. It is believed that many more uranium deposits exist in these rocks and now that the "barrier" has been broken, more of the existing deposits should be discovered.

PRELIMINARY REPORT OF URANIUM OCCURRENCES IN LAKE COUNTY, OREGON

Introduction

This preliminary report is written as a summary to the field work completed by Max Schafer and R. E. Corcoran of the Dept. of Geol. & Min. Ind. Schafer has spent 10 days and Corcoran 2 in the area. The report was written by Schafer and responsibility for the ideas are his.

The original deposit, the White King, was discovered June 25 (?) by Don Tracy and John Roush of Lakeview. Several weeks later the Lucky Lass was found and the extensive prospecting in the area dates from the Lucky Lass discovery.

These two mines are located about 15 miles northwest of Lakeview on the Augur Creek drainage, and are about 4,500 feet from each other. The area is in steep hills that rise to the west from the valley occupied by Lakeview and Goose Lake.

Geology

Lake County is covered by extensive layers of Mio-Pliocene lavas and tuffs and by later stream and lake deposits.

Near the mine area these rocks appear to be divided into three groups: an older series of altered (opalized) tuffs, a younger series of acid lavas and tuffs, and a young andesite (?) flow. This last flow (or flows) is in part vesicular and dense, and black.

The oldest tuffs are steeply dipping and have been opalized. They ~~can be~~ are delineated by their structure.

The overlying acid volcanics are fairly flat-lying and are unconform-

able on the top of the older tuffs. These volcanics are made up principally of white, tan and red and green tuffs and rhyolite flows. Welded tuffs are present, but may belong to the older group. The thickness of these volcanics is unknown but should be at least a thousand feet and probably much more.

The andesite overlying tuffs and flows is conformable or nearly conformable. It is the youngest volcanic rock in the vicinity of the mines. On one ridge it forms buttes (Shoestring Lookout) but this form is not the rule. The upper part of the andesite is very vesicular with elongated bubbles being as much as an inch long. The lower andesite is not vesicular and could possibly be another flow. It is likely that it is one flow, however, having a thickness of at least 50 feet.

Nowhere is faulting better exhibited than in Lake County. Famous Albert Rim gives testimony to the extent of the movement which has taken place. There are several systems of faults, and faulting is probably not restricted to any narrow span of time.

The only apparent folding is that which has tilted the older tuffs. The other beds are flat or have gentle dips which could be attributed to the extensive faulting.

Uranium deposits

White King Mine

The White King mine is located in T. 37 S., R. 19 E., sec. 30 on the Augur Creek drainage about 14 miles from Lakeview.

The rocks present at the White King mine are principally opalized tuffs of the older series, and weathered, clayey tuffs of the younger

acid volcanics. Nearby, the andesite flow covers all but a thin layer of the younger acid volcanics overlying the older series. Mineralization has occurred in both the younger and older tuffs.

Secondary uranium minerals and sulphides are exposed in an area roughly 100 feet square. The opalized tuff forms a resistant ridge about 20 feet across trending N. 55° E. A pit in this hard rock shows a small fold forming the ridge. A white clayey tuff and a buff to tan tuff alternate to the side of this rock. All of these rocks are mineralized.

A fracture system trending N. 50° W. is prominent in the pit.

Yellow to greenish-yellow uranium minerals fill fractures in the hard opalized tuff. The uranium does not enter the bedding planes which delineate the structure but is confined to fractures and sometimes small vugs. In the S. corner of this pit cinnabar, orpiment and realgar occur with the uranium minerals.

An occurrence of a green uranium mineral is in a trench dug in a white tuff, 100 feet NW at the main pit. Cinnabar accompanies the uranium. The minerals coat fine fractures in the rock.

A pit dug 50 feet N. 70° W. of the main pit has exposed a yellow and greenish-yellow uranium mineral along with cinnabar, orpiment, realgar, pyrite and stibnite (?). This rock appears to be the same opalized rock which appears in the main pit. It is not on strike and appears to be offset about 30 feet to the north.

A large body of yellow and green-yellow uranium mineralization is present for at least 25 feet in the bank 30 feet to the north of the main pit. The minerals are disseminated throughout a soft light-brown clayey

tuff. Several small trenches above the bank show this same mineralization although it is better exhibited in the bank itself.

The general trend of the mineralization appears to be N. 70° E. At this point in the development of the property, it is useless to speculate too far, but it could be that the hard tuff is the site of a fault trending N. 70° E. that was healed by silica and the minerals which filled open spaces and fractures that were formed in several different stages.

The mineralization occurring in the loose tuff is different from that in the discovery pit. It may be that this mineralization is secondary after deeper mineralization or that it has been formed from the minerals from the area of the main pit. Ground water circulates through the ground freely and was present 6 feet below the surface in a hole drilled near the main pit.

It is likely that primary mineralization will be encountered in the hard opalized rock. The presence of the antimony, arsenic, mercury and iron sulphide is a typical low-temperature, low pressure assemblage and it would seem likely that primary uranium minerals will occur in the vein material.

The uranium minerals present have not been identified positively. There are at least two present in the White King workings, and probably several more. The two most common are a yellow and a green mineral. They are both secondary and are similar to the autunite and torbernite groups of minerals. Both minerals fluoresce the typical greenish-yellow uranium color, although the yellow mineral is not so bright.

No sequence of mineralization can be postulated at this time, but it would seem as if uranium has been deposited at several different stages,

before, and after the deposition of the sulphides. It is probable that there has been repeated solution and deposition of the secondary minerals since the uranium was first deposited. A true sequence of deposition may be apparent when, and if, primary uranium minerals are found.

Samples have run as high as 1.4% U_3O_8 and channel samples have run about .5% U_3O_8. Ore in excess of 50,000 tons of .2 U_3O_8 can be calculated at the present time. The total production should be much more.

Lucky Lass

The Lucky Lass was the second major discovery made in the Lakeview area and is located in T. 37 S., R. 18 E., sec. 25, approximately 4,500 feet from the White King. The mine was located by Clair D. Smith, R. S. Adams, L. F. Shelton and Don R. Lindsay, all of Lakeview.

The mine is located on a shear zone which has cut vesicular andesite and has exposed several small patches of underlying white to tan tuff.

In the mine workings, large blocks of bleached vesicular andesite are exposed along shears, along with altered tuff. Yellow-green uranium minerals are disseminated throughout the tuff and altered andesite.

The main shear is made of many smaller shears trending in all directions, but most are steeply dipping. These subsidiary shears have "chopped up" the uranium body so that very definite "blocks" of ore are left. The boundaries of these blocks are very sharp, the ~~radioactivity~~ uranium content increasing from practically none to as much as 0.6% U_3O_8 in the space of 6 inches. The blocks of ore may be as much as 50 feet wide or long. The main shear seems to be trending NW although the direction is not apparent.

The uranium minerals are the only ones which have been discovered thus far. It seems unlikely that other minerals, such as those which appear in the White King, will be present in this deposit.

The uranium mineral present at the Lucky Lass is a yellow-green, highly fluorescent mineral found in small scales, in films coating fractures and as discreet platy crystals lining the vesicles of the altered andesite. Only the single mineral appears to be present and it is similar to autunite.

The Lucky Lass mine poses some interesting problems. As there is plentiful ground-water circulation in the trenches, it would appear that the uranium is a comparatively young occurrence and that it had moved from some other source. The fact that the shears so sharply delineate the ore zones would lead to the belief that the uranium minerals do not "move" as readily as might be supposed. If the uranium does "move" easily, the shear zone is an active one and has moved in very recent times. The deposition of the uranium and subsequent shearing appears to be too much to crowd into a space of several hundreds or thousands of years. The source of the mineral itself is not evident although the shearing and bleaching of the zone would lead to the belief of a hydrothermal origin for this deposit.

It can be seen that this deposit is totally different from the White King. The Lucky Lass, as noted before, gives the impression of being a "younger" deposit. The minerals are disseminated throughout blocks in a shear zone. At the White King the shear zone is not so well defined and some of the mineralization is restricted to fractures in a hard competent opalized tuff. A fairly complete assemblage of epithermal minerals are found in the White King deposit while secondary uranium minerals are all that are found at the Lucky Lass. Hence, there are two distinct types

of deposits found.

Marty K

The only other deposit examined by the author is the Marty K claimed by Sam Lookholder of Ohio and Elmo Angele of Lakeview. The deposit is located in T. 37 S., R. 18 E., sec. 14.

The Marty K workings show a very small segment of radioactive minerals in an altered tuff. The mine is very similar to the Lucky Lass in that the uranium mineral is disseminated throughout the tuff. The mineral appears to be the same as that at the Lucky Lass. It is highly fluorescent. There was one piece of bleached vesicular andesite noted in one of the trenches.

Shears are prominent in the trenches dug at the Marty K. These are undoubtedly responsible for localizing the ore "blocks" as at the Lucky Lass.

Assays from the Marty K average between 0.3 and 0.4% U_3O_8.

Prospecting for Further Deposits

Prospecting for uranium in the Lakeview area is difficult. Most of the ground has a fairly deep soil cover, and the hills are covered with trees and brush. However, there are many fire-roads in the area, and this is a great help to the prospector.

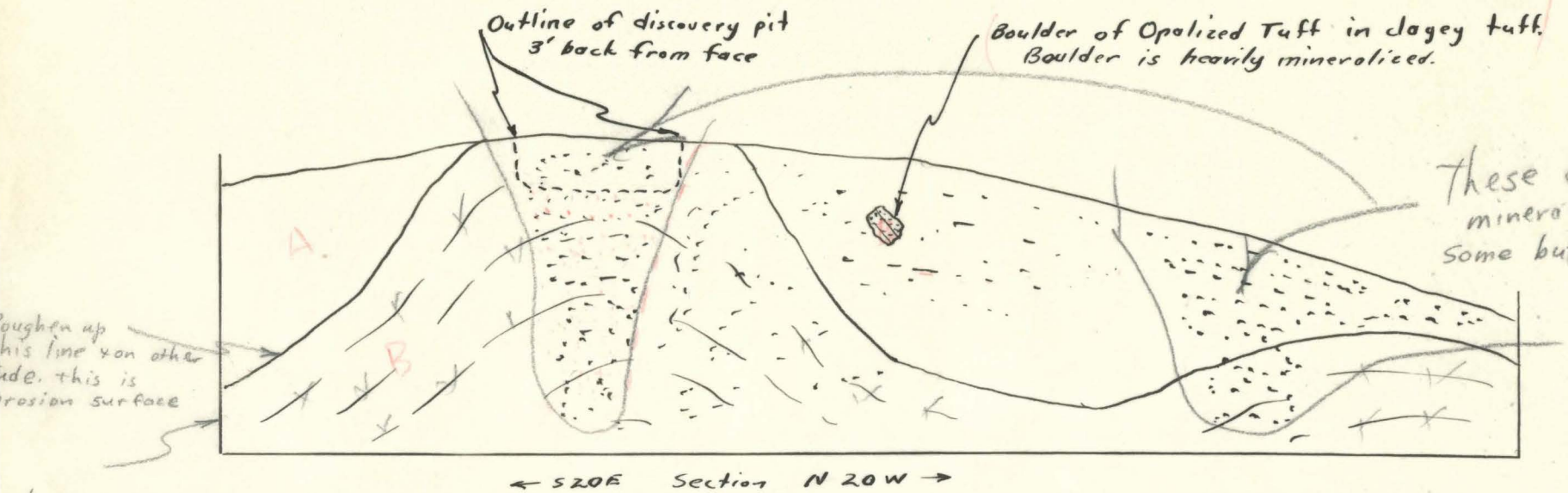
It is likely that several more important deposits will be found in the near future in the Lakeview area. The easiest ones to discover will be those of the Lucky Lass-Marty K type as they are in younger rocks and have that much greater chance to be exposed. Also they ~~seem to be~~ are in

shear zones which have cut the latest flows in the mine area.

The discovery of the White King type of uranium deposits will probably be more difficult. The faults that control the ore, and the deposition of the ore itself were probably completed before the effusion of the later andesite and basalt flows. With present instruments the detection of these deposits through the later flows may be impossible. But there should be some of these deposits still uncovered and it is probable that more may be found.

At the two main deposits, the White King and the Lucky Lass, uranium mineralization was discovered within a very few feet of the top of bedrock. It is difficult to say when the prospector should stop digging, but several facts may give an indication. Most of the tuffaceous material in the area is radioactive, and mass radiation can be found in most places in the area. When a high reading is found, the prospector must examine the whole area of high readings thoroughly. The spot giving the highest reading should be selected for the site of a test pit or trench. If uranium mineralization is present, these should appear soon after bedrock is reached. Radioactivity should progressively increase with depth. One factor that might have to be considered in picking out the spot with the highest radioactivity is the depth of the soil cover. The radioactivity may not be so strong if the soil cover is deep. If at all possible, work can be done with a bulldozer. Caution should be used, however when 'dozing. Great care should be exercised not to disturb the uranium mineralization, and when mineralization is uncovered all later work should be done with pick and shovel to examine the deposit. The bulldozer should be used only to uncover the deposit, not to mine it in the initial stages. It

might be that the 'dozer can be used to great advantage in mining a deposit, but this should be after the deposit has been fully delineated.



Irv:
Use different symbol for Opalized tuff.
I do not intend to show folding or foliation

Opalized Tuff
Clayey weathered Tuff
Mineralized Rock showing density of mineralization

Sketch of Working Face - White King Mine, Lake County, Oregon

Scale ~ 1" = 10'
Brunton & Tape
Oct. 31, 1955
MS

Facts:

1500' of basalt in ~~mine area~~ Abert Rim

Rock just to W & SW of Abert Rim is made up of andesitic to acid tuffs & flows with some basalts & basaltic tuffs more than 500' thick.

Drill (at mine area) gets stuff that looks like Th - Cottonwood Ck section (Green tuffs)

Rocks just to W & SW of Abert Rim ~~Eldod~~ are equivalent to mine area rocks.

Rocks to W & SW of Abert Rim and mine area are more evenly folded than Abert rim rocks! 30-40 & 3°

Abert Rim basalt has no columnar (?) structure & probably no olivine (?)

Madras or Dalles (Plio. basalt) & Tcr

Mini. tuff from White King.

Entirely devit glass - gone to clay.

Opallized tuff from WK

Glass - devit ca 1.49

~~1.52~~
~~1.49~~

pld.

glass 1.52
1.46
1.47

Glass - n = 1.48 to 1.61
low n - high silica
high n - low "

Rhyolitic Glass

Thin sec.

Small shears? vugs replaced by chalc. or opal. Qtz in cavities last.
Banding faint - opal may be along banding with no clear.

1.47
1.47
1.49
3 | 4.43
1.48

6.70
1.47
50.70

Hi - Siliceous Glass & opal

WK Rhyolite

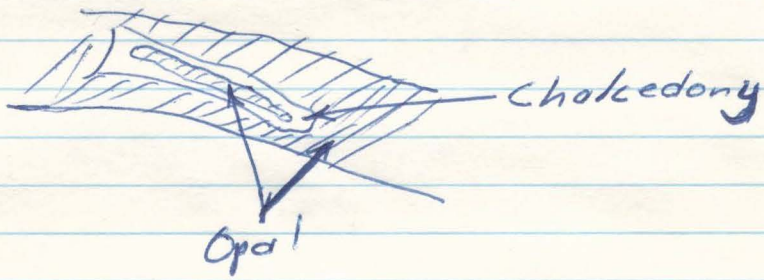
Structure

Breeciation? ∥ to bedding
filled w/ opal then chalcedony

Cross fracturing later - filled w/ opal

Maybe bedding fractures not breeciated. Some naturally filled

Opal - chalc (spheriulitic) - opal in center



One of these - center opal - may be associated w/ ~~ores~~ metals

Pyrite looks like maybe it was dep. sooner in frature or bed. pl. but most of uranium, Hg, Sb was along fratures crossing - later.

opalized

~~Glassy~~ ~~Rhyolite~~ Volcanic

~~The~~

This rock, the oldest seen in the map area is exposed in ~~f~~ a very few places. ~~Outcropping~~ Near surface exposures were found at the White King mine and outcrops are present along Thomas Creek in sec. 34 & 35, T37S, R18E. This ~~flow~~ carried the mineralization discovered at the White King.

Outcrops ~~of the rhyolite~~ are white, tan or reddish in color, and show some faint flow-banding. The rock is very brittle and has heavily fractured.

~~The~~ rock is ~~made up of~~ ~~dead~~ opal almost entirely. Opal has replaced the original rock until it is impossible to discern the original ~~com~~ constituents.

A few small ~~[illegible]~~ corroded feldspar crystals are present in a groundmass of opal. The rock has been entirely replaced by the secondary opal with the exception of these feldspars.

The rock shows sign of ~~[illegible]~~ fine brecciation and healing by opal and chacedony. One generation of opal appears filling fractures and small vesicles ~~[illegible]~~ after chalcedony has been deposited; so that at least two generations of opal and one generation of chaladony are present

A few small corroded plagioclase (?) crystals are present in a groundmass of opalized glass

Country Rock

Uranium Deposits

White King Mine

The White King mine is located in T 37 S, R 19 E, sec 30 on the Auger Ck drainage about 14 NW of Lakeview. The mine is situated just to the west of a large "meadow" or alluvial stream fill.

The principal rock present at the mine is an opalized tuff or flow of undetermined origin. The rock has been brecciated and silicified to such an extent that the original character has been completely erased except for a ~~slight~~ faint banded or spotted appearance.

This rock is gray, very brittle, ~~and~~ ~~shows banded or spotted~~ ~~appearance.~~

Overlying the opalized rock is a white, clayey tuff, ~~partly unconsolidated~~

Get sample of pitchblende - galena ore
for addn of pitch & spec. on
galena

Get dope on galena work temp & impurities

location of area (Lakeview)

Other deposits in Lakeview examined
since last year.

Faults in mine area

30' { Dacite (dikty) — Cougar Peak Tuff

50' { Basalt, resicular
Tuff
Basalt, dense

Rhy dikes + plugs – Intrusive
Tuffs – rhyolitic to andesitic
crystal + lithic
(biotite, feldspar)
partially indurated to loose
varicolored, white, red, green, buff, grey, brown
Andesitic? breccia or agglomerate
contains lithic (pumice) frags, etc
Tuff, seds – bedded

400' on tuffs, etc puts restriction on throw of faults.
Could be OK.

Cougar Pk. rhy above ves. basalt.
Basalt pebbles seen in some seds + lithic tuffs
" feeders spread over much area – widespread quiet extrusion
NW Faults First, NE second (later)

Lapilli Tuff from 41

2 mm feld. pheno. in ~~th~~ th brown clayey matrix. Feld. rounded.

Oligoclase feld.

Fine ~~stic~~ glass

Clay - fest

Buff ~~rhyolitic~~ acid tuff

Dacite (welded tuff)
Rhyolite

Pheno.

Oligoclase Ab_{84} An_{16}

Quartz

Orth

No particular orientation of pheno app. except Qtz has 001 ⊥ to flow lines?

Heulandite

Biotite

Ground mass n < balsam
biref + non-biref
Spherulites

Qtz + glassy groundmass w/ opal + chalcedony?

26

lithic tuff. sed. – c-g tuff ss

Rock frag. ½" max.
basalt
opal
welded?(silicic) tuff

27 f-g clayey tuff

white

feld & glass, mostly devit.

dig. ~~dol~~r - plag. feld? 1.55 1.57
50% 1.59 1.54
Rest devit. glass 2|3.14 2.54
1.579 54
4|6.19
1.55

looks like same stuff above
ht tuff.

#28 Brown Lithic Tuff

Feld. < 1.545 ✓

1.54 ~~✗~~

1.53

Oligoclase

Rock fragments - ½"-¾" max.

1.53
1.56
2(3.09
1.505

3.09
1.53
3(4.62
1.54

4.62
1.49
4(6.11
1.53

Subm. for Ore-Bin
for Dec 1955

Preliminary Report on the Lakeview Uranium Occurrences, Lake Co., Oregon

Introduction

The first commercial uranium deposit in Oregon was found in June 1955, by Don Tracey and John Roush of Lakeview when the White King mine was discovered. Several weeks later the Lucky Lass was found about 5000 feet northwest of the White King.

The prospecting season lasted about 4 months and intensive prospecting was done over much of Lake county. In spite of this concerted effort, no other commercial deposits are known to have been discovered.

Geology

Stratigraphy and Rock Types

The oldest rock in the area is an opalized rock exposed at the White King and at several places on Thomas Creek. This rock is completely replaced until the original character is not evident, although it is presumed to have been a silicious tuff.

In places the rock is banded faintly and is usually a gray color. The opalized tuff is brittle and has been severely fractured.

Disconformably above the opalized tuff a white clayey tuff is exposed in the White King workings.

A series of tuffs, basalt flows and lake sediments overly the older rocks. The tuffs are of intermediate and acidic composition. The lake sediments are tuffaceous and in some places show fine stratification. The sediments are usually medium to coarse-grained.

The basalt flows are the most prominent member of this series

because of the tendency for the loosely consolidated tuffs and sediments to erode. The basalts are vesicular, the vesicles are elongated and range up to 1½ inches in length. The rock is commonly black. Some flows are dense.

A thick flow or series of flows overlies this series. These rocks range from welded tuffs to rhyolites and dacites. These acid flows are light in color, often show flow banding and cover extensive areas as float.

These rocks are called Oligocene (?)-Miocene by Trauger (1948). Generally the older flows, tuffs and lake sediments crop out in the vicinity of the mine and the younger acid flows occur to the north.

Structure

Faulting is the more prominent structural feature of Lake county. Abert Rim is a well-known feature which testifies to the severity of the deformation of the region. Faults occur frequently and control stream drainage and other topographical features.

Folding was not discerned near the mine area. Although lake beds dipping up to 35 degrees were found, tilting of fault blocks are thought to have caused this.

Ore Deposits

The White King mine is in sec. 30, T. 37 S., R. 19 E., about 14 miles northwest of Lakeview on the Augur Creek drainage system.

Opalized tuff and a weathered clayey tuff are exposed in the mine workings. Secondary uranium minerals coat fractures in the opalized tuff and are disseminated throughout the overlying unconsolidated tuff.

Cinnabar, pyrite, stibnite, orpiment and realgar occur with the uranium in various parts of the mine workings. The uranium minerals have been identified tentatively as novacekite-saleite, hydrous uranium-magnesium arsenate and phosphate.

The mine is located at the intersection of several major faults, one of which continues through the Lucky Lass mine. These faults undoubtedly control the mineralization. The minerals present constitute a typical epithermal, low temperature-pressure assemblage.

The Lucky Lass mine is located in sec. 25, T. 37 S., R. 18 E., Lake county. Structurally, the mine is in many steeply-dipping shears which make up a large shear zone. These shears have "cut up" the deposit into blocks of ore having very sharp boundaries with unmineralized rock.

Bleached vesicular basalt and gouge make up the main country rock. Uranium minerals coat fractures and vesicles and are disseminated in clayey gouge.

The minerals present seem to be similar to those found in the White King. No other visible metallic minerals have been seen, but trace amounts of mercury are present in all of the ore.

No other commercial deposits are known to have been developed at this time. The White King and Lucky Lass have been leased by Lakeview Mining Company, a company formed by Thornburg Brothers of Gunnison, Colorado. Extensive exploration at the two properties has been in progress. Diamond drilling methods have been used almost exclusively.