

TEXAS) George A. Nicoud, Jr.

Board of Directors
~~Dr. S. W. Thornburg~~
President

John L. Robinson

~~James F. Poulos~~
General Manager

} Mgr. of Gunnison Mining Co
and
Lakeview Mining

6
Hugh J Stapleton
Office Manager

14
Kenneth Kutz (Cobalt, Idaho)
Mine Superintendent

Thomas L. Wilson
(Cobalt, Idaho)

~~George H. Black~~
Thomas L. Wilson
Assistant Superintendent

Phil Wein
Chief Engineer

Chief Chemist
Dale Cutting

Engineering
Paul Garding
~~Nich. H. H. H.~~

Geology
J. Y. Greene — Cobalt, Idaho
R J Daniel — Cobalt Idaho
~~Vern. H. H.~~
Garten

Laboratory
Technicians

T J Wand
~~Purch.~~
Agent

M Boswell
Secretary

Rodman

~~Sampson~~

~~Sampson~~

ACCOUNTANT

as of Aug. 8.

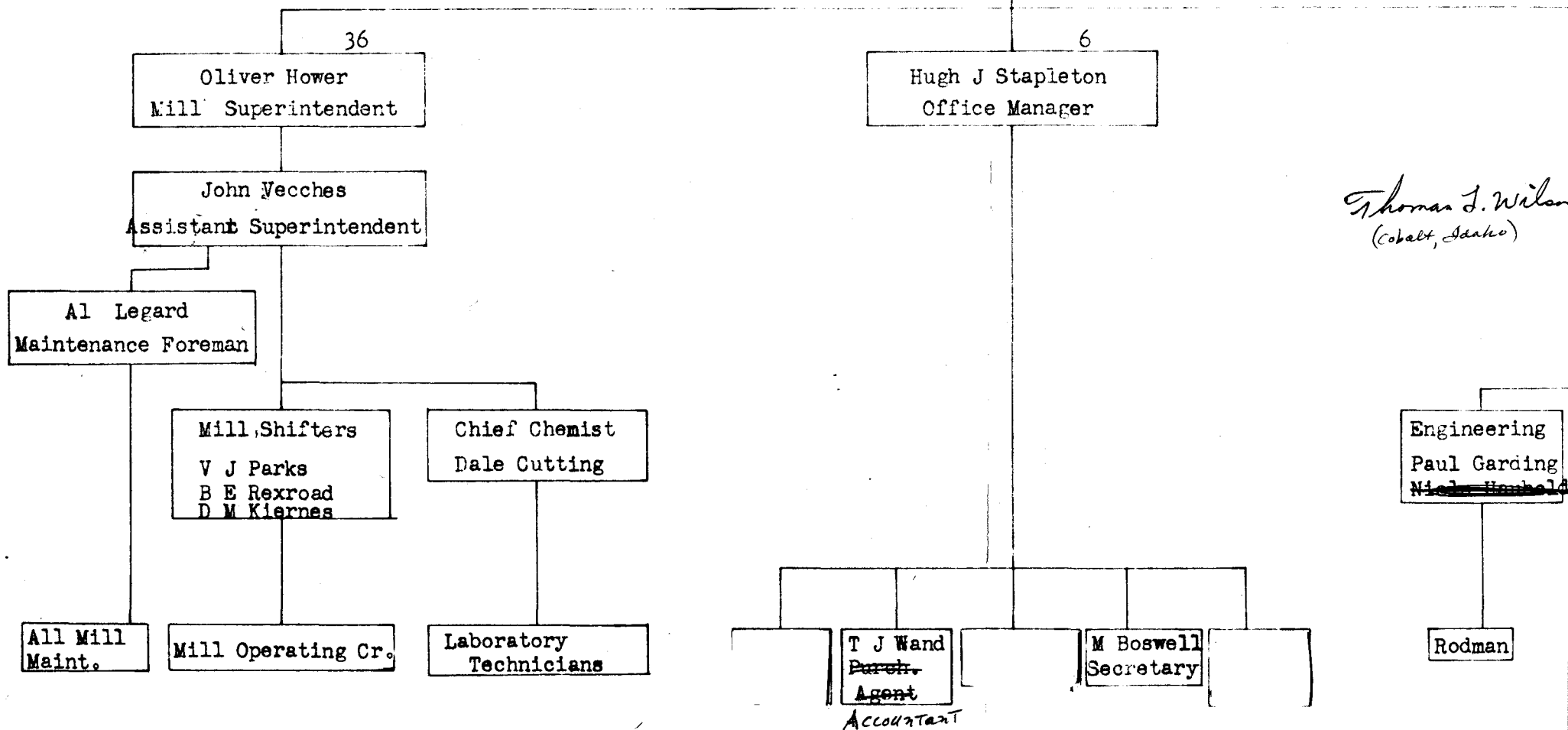
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Thomas J. Wilson
(Cobalt, Idaho)

Effective as of Aug. 8.

The

ORE BUCKET

Volume 1, Number 4

Lakeview, Oregon

March 2, 1959



THE JANUARY safety suggestion contest winners are shown here receiving their cash awards. At left is T. E. Copeland, who was a welder at the plant, whose suggestion to put shields around the arc welder earned him the \$15 second prize. Next is James F. Poulos, general manager, handing the first prize \$25 check to R. S. Lee, White King skip tender, for his suggestion to fix a bell cord from collar to sump and to run a bell cord to the dump. Next is George Larson, hoistman at the mine, whose prize was \$10 for his suggestion to put bottle switches on each station, also in the pockets where skip tenders can reach them. At right is Dr. Garh W. Thornburg, president of the Lakeview Mining Company. (Ore Bucket Photo)

Joins Staff At White King

Kenneth J. Kutz, from Cobalt, Ida., joined the Lakeview Mining Company's supervisory staff at the White King on Monday, February 23.

Kutz took his bachelor of science degree in geological engineering at the University of Saskatchewan, Canada, in 1958, graduating with Great Distinction. That year, he joined the staff of the Howe Sound Mining Company at Britannia Beach, British Columbia, and by 1954 he had risen to assistant chief engineer. In 1954, the company transferred Kutz to its Snow Lake, Manitoba, mine and from November, 1955, to January, 1957, he was mine and

plant superintendent there. The Howe Sound company then sent him to its mine at Cobalt, Ida., as research engineer, and from May, 1957, to February of this year he was mining superintendent at Cobalt.

Mr. Kutz is married, and they have a six-year-old daughter.

Second Yellow Cake Shipment

The second shipment of yellow cake left the plant last Saturday.

Packed in drums, the uranium oxide went by truck to Grand Junction, Colo., for delivery there to the Atomic Energy Commission.

"Ore Bucket" Name Chosen

This is the first issue of your newspaper under its new name, and we are proud to present "The Ore Bucket."

In the newspaper name contest, there were 35 names suggested by 24 persons. The committee selected the suggestion of L. C. "Lanny" Davidson, who is the thickener operator on Dee Kiernes crew at the mill. Lanny won the \$25 prize offered by the company.

Company To Sponsor Team

The LMC will sponsor the local American Legion youth baseball team this year, it was announced by Jim Poulos, general manager. The coach will be J. Clark Hill, hoistman at the White King.

Ed Sisson, youth baseball committee chairman for Lake County Post No. 53, American Legion, said this team is for boys who are 15 to 17 years of age. Any boy of those ages in the community can qualify, and LMC employees who have sons are asked to have them try out for the team when the season opens.

Hill came to Lakeview from Kellogg, Ida., where in 1957 he coached the regional Junior Legion champions. That team went on to be runner-up to the national winning team.

The Safe Way Is The Right Way

Feb. Safety Contest In Full Swing

A number of safety suggestions have been turned in for the February contest, which will close the last day of the month. Each monthly contest begins on the first.

There are now suggestion boxes at the mine and at the mill, and employees may send their suggestions by mail (Box 1231, Lakeview) if they wish. The committee will meet shortly after March 1 to select the February winners.

The company offers three cash prizes of \$25, \$15 and \$10 each month, and all employees below supervisory level may take part. Suggestions must be of a technical or engineering nature to improve safety conditions or methods, and may not be simply slogans or to "post a safety sign."

Transportation Furnished

LMC furnished transportation to Seattle a week ago so that three Lakeview Pal Club boxers could enter the Golden Gloves tournament there.

Traveling in a company station wagon were Gary Henderson and Frankie Lightle, of Lake County, and Jake Gregg, of the Klamath Falls YMCA, who fought for the Lakeview outfit.

Coach Lew Jones, who accompanied the boys, said the local contingent was out in the first go-round but they got what they went for . . . experience against the more seasoned Golden Glovers.

Editorial

Leave Geology Dept. Alone

The current legislature has before it a measure which could, and probably would, result in damage to the state's mineral industry. The measure, House Bill 132, would group all of Oregon's natural resources within one department and thus the likely result will be curtailment of the efforts of the Department of Geology and Mineral Industries in behalf of mines and mining in Oregon.

The Lakeview Mining Company recognizes the good work being done by the present department in developing Oregon's mineral resources; it recognizes the harm that can be done to future development if this work is curtailed or hampered; and it recommends to all employees, each of whom has his livelihood involved, that they take careful notice of HB 132 and be ready to lend their own efforts in saving the present geology department from being gobbled.

The simple grouping of trees, minerals, water, game, etc., under the name "natural resources" gives us no basis for assuming that the conservation problems of each are the same for the others. At present we have separate departments to study and plan the wise use, development and conservation of each natural resource and certainly these departments should consult and cooperate in solving overlapping problems . . . and they do cooperate.

But what serious consequences could result to the Oregon timber industry, for instance, if the appointed director of a new "Department of Natural Resources" should be a man particularly devoted to the preservation of wilderness areas? And what could happen to the minerals industry if the director should be a man with neither interest in or knowledge of mining?

Under the present set-up, each resource department is directed and staffed by men qualified in their own field; and when there is conflict between problems of minerals development and fish conservation, for instance, the department staffs work out solutions aimed at serving the greater interests of the state and its people.

Too much consolidation of state business, under one head, can be a dangerous thing. Today the woods industry could be given all the benefits of state sanction and policy, while tomorrow wild fish and game interests would reap the harvest.

Speaking of the minerals industry alone, this Oregon resource needs and deserves more, not less, attention at the state government level. The present Department of Geology and Minerals Industry is doing a good job of promoting the location and development of minerals and mines; but the job deserves expansion rather than the hazard of being smothered in an octopus type department.

We believe that each natural resource, its promotion and conservation and use, can best be served by continuing the present system of separate, effective departments for each. If all are tied into the same bundle, as would be done by House Bill 132, there can be suffering for each resource and its attendant payrolls.

—L.S.

Lakeview Mining Ore Bucket

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Box 1231, Lakeview, Oregon

DR. GARTH W. THORNBURG President
JAMES F. POULOS General Manager
LESLIE SHAW Editor

The Other Shift

—By Leslie Shaw

The fatal accident on the Big Hill two weeks ago was not the first time the Lake County Volunteer Disaster Unit has been called to handle mine and mill accidents. Methinks everyone at LMC should know this disaster bunch, what they do and how come, because there is one outfit which deserves the whole support and full thanks of every Lake County person.

IT ALL started about nine years ago when the Odd Fellows, Rebekahs, Lakeview Firemen and interested persons set out to raise money for a disaster car. There were dances, donations, parties; and the income from these resulted in purchase of the present wagon, annual expenses of which are now supplied through the Lake County United Fund.

THE CREWS are entirely volunteer and every man is a highly skilled first aid technician . . . in fact, a lot of their training was given by the local doctors in addition to the full flight of Red Cross first aid courses. These men are ever ready, willing and able to take that car on mercy missions anywhere in the county and adjacent areas without charge.

THE CAR is well equipped to handle most any type of case, including heart attack. Not the least of that equipment is the two-way radio hook-up by which the crewmen can keep in touch with the dispatcher's office in Lakeview and even receive instructions from local doctors if an MD has not made the trip in person.

THE CREWMEN are businessmen, workmen, clerks, mechanics just like the rest of us except that these volunteers give a lot more than most to the county's well being. They are mostly unsung, pretty much un-thanked, and entirely deserving of every bit of praise that can be heaped on them. If this free, volunteer service were provided for us through the

tax rolls, it would easily cost \$100,000 a year; but the Disaster Car request through the United Fund runs only about \$700 a year, and mostly that is for insurance premiums which are naturally heavier than yours and mine .

ANY LMC man who has a hankering to be a part of that outfit can get the details by calling Dean North or any Disaster Crew member; the dues are nothing in dollars, but plenty in time and effort.

AEC Reports 1958 Picture

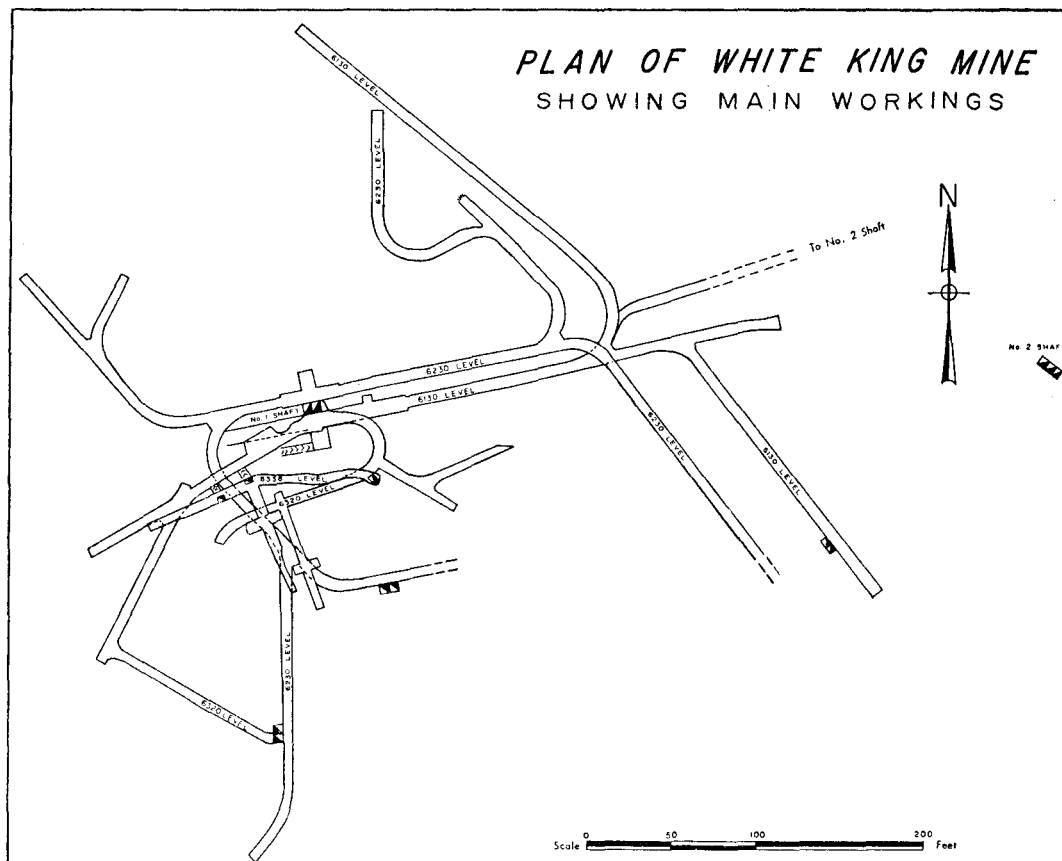
There were 23 uranium reduction plants operating in the United States at the end of 1958, according to the 25th semi-annual report of the Atomic Energy Commission for the period July-December. During the year, nine new mills had opened, including the Lakeview Mining Company's plant here, and two mills closed during that period.

Uranium ore reduction in the US during 1958 totaled about 5.2 million dry tons as compared to 3.7 million tons in the previous 12 months. Uranium oxide production was 12,560 tons and at year's end it was at the rate of 15,000 tons per year.

Uranium ore reserves in this country, at the end of 1958, were estimated to be approximately 82.5 million tons, averaging .27 percent U 308, as compared to about 76 million tons averaging .27 percent at the close of 1957.

Congratulations

Congratulations to Mr. and Mrs. R. V. Randolph, to whom a son, Jerry William, was born Thursday, February 26, at Lakeview Hospital. The baby weighed six pounds, 5½ ounces.



LAKEVIEW Mining Company map of its White King mine underground workings, reproduced here from the Ore-Bin, monthly publication of the State Department of Geology and Mineral Industries which printed a detailed article about the mine and reduction plant in January.

Car Accident Takes Life Of LMC Employee

Milton Earl Loper, surface employe at the White King, died Monday evening, February 16, of injuries sustained in a car accident on the Big Hill. The accident took place at about 4:45 p. m. as Mr. Loper, accompanied by four other men, were on their way home.

According to county and state officers, Mr. Loper's car left the road and crashed against a tree stump which in fact prevented the car from rolling some 300 feet to the bottom of the canyon. The other men were brought to Lakeview Hospital by the Lake County Disaster Unit. These were Harold Cartwright, trammer; Henry Teet, mine sampler; Dalton Steele, carpenter helper; and Carroll McCormick, double drum

hoistman.

Mr. Loper was born November 18, 1936, at Merrill, Ore., the son of Milton and Margaret Clemmons Loper, and at death he was 22 years, two months and 28 days of age. In June, 1955, he was married to Mary Lou Sweet, who survives. Also surviving are two sons, Richard and Randy; his mother, Mrs. Margaret Moore, of Merrill; two brothers, Luther, of Prospect, Ore., and Robert, of Corvallis; one sister, Mrs. Lilly Dickens, of Berkeley, Calif.

Mr. Loper was a member of the Assembly of God Church at Lakeview, where he was youth director and a Sunday School teacher, and had planned to study for the ministry. He had resided in Lakeview about six months, at 912 South First Street.

Funeral services, directed by the Ousley-Osterman Mortuary, were held from the Presbyterian Church at Merrill at 2 p. m. Friday, Febru-

Vacation Slips Issued

LMC employes received announcements about the vacation plan last Tuesday, along with their payroll checks.

The slips stated the employe's starting time with the company, by which to determine when he is eligible for annual vacation. After one year of employment with LMC, an employe can have one week of paid vacation, and after two years he is eligible for two paid weeks of vacation. A man having one week vacation due him can arrange to take a second week without pay.

The slips request that the employes list a first and second choice of vacation time, and the company officials will endeavor to grant his choice if it can be done without disrupting operations at the mine or plant.

ary 20, with the Rev. James C. Hicks, of Lakeview, and the Rev. Forest Bard, of Prospect, officiating. Interment was at the Merrill Cemetery.

Exchange Vows At Pilot Rock Ceremony

At a double ring ceremony on St. Valentine's Day at Pilot Rock, Ore., Miss Velmetta Sherburn, daughter of Mr. and Mrs. Gerald Hemingway, of Pilot Rock, became the bride of Mr. Gerald E. Wilsey, son of Mr. and Mrs. Ivan Wilsey, of Lakeview. Mr. Wilsey is employed at the uranium reduction plant.

The wedding took place at 4 p. m. at the Assembly of God Church in Pilot Rock.

The bride, given in marriage by her father, was lovely in a gown of white satin and crowned with a finger tip veil. She was attended by her sister, Mrs. Florence Watkins, as matron of honor, and her niece, Christina Watkins, as flower girl.

The groom was attended by his brother, Glen Wilsey, of Ellensburg, Wash., as best man, and by his nephew, John Bennett, of Lakeview, as ring bearer.

After a short wedding trip, the couple is at home on North J Street. Wedding guests from Lakeview were Mr. and Mrs. Ivan Wilsey and Mr. and Mrs. Bob Bennett and children.

In Denver For Meeting

Dr. Garth Thornburg, president of LMC, flew to Denver on Wednesday, February 25, to meet with his partners. The partners, who own the Lakeview Mining Company and the Gunnison Mining Company, are Dr. Thornburg, of Lakeview; Vance Thornburg, of Grand Junction, Colo.; the Perry Bass - Sid Richardson partnership, of Fort Worth, Tex.; and the Murchison Trusts, of Dallas, Tex.

After meeting in Denver, the group planned to visit the Gunnison mine and plant.

This above all: to thine own self be true; And it must follow, as the night the day, Thou canst not then be false to any man.

—Shakespeare



GENERAL view of the uranium reduction plant at Gunnison, Colo., where the Gunnison Mining Company processes ore from its leased Los Ochos mine. That company is owned by the same group of partners who own the Lakeview Mining Company. (Western State Aviation photo by Rocky Warren, Gunnison, Colo.)

Gunnison Mining Company In Operation Over Year

A 12-page article in the January "Trefoil," publication of the Denver Equipment Company, told in story and pictures an account of the Gunnison Mining Company, uranium producer at Gunnison, Colo. The Gunnison company and the Lakeview Mining Company are owned by the same group of partners, with Dr. Garth W. Thornburg president of the Lakeview firm and his brother, Vance, president at Gunnison. The other partners are the Sid Richardson - Perry Bass partnership, of Fort Worth, Tex., and the Murchison Trusts, of Dallas, Tex.

LMC employees may be interested in some details of the operation of the sister company, which put its reduction plant into operation in January of 1958.

The Gunnison plant uses ore from the Los Ochos uranium property, 26 miles from the mill. The primary uranium ores, which are pitchblende derivatives, are hard and abrasive. In the hard rock, with no water problem, mining methods include square set, open slope and modified room and pillar.

Ore is hauled to the mill in nine company-owned 15-ton dump trucks.

The plant handles about 350 tons of ore per day, running seven days a week with the 35 employees averaging five and a third days per week. Primary grinding is done by a 6 x 12 foot Denver rod mill in closed circuit with a spiral classifier. To obtain a grind of 65 mesh, the overflow from the classifier is pumped to a cyclone, from which the overflow in turn goes to a 4 x 5 foot ball mill. The pulp goes to the leach section which includes four 16 x 16 foot agitator tanks, built of wood staves. Sulphuric acid and sodium chlorate are added at the No. 1 leach tank.

The sand-slime separation is made in four spiral classifiers and four 40 x 10 foot thickener tanks, the latter built of wood staves. Separation is added in the thickeners to flocculate and settle the slimes for pumping to the 40-acre tailings pond.

The No. 1 thickener overflow goes to the solvent extraction circuit. Here the uranium oxide is extracted

from the pregnant aqueous by the organic solution which is composed of kerosene, Di Phosphoric acid and Iso Decanol. The pregnant aqueous formerly was sent to plate and frame filter presses, but this has been discontinued as the clarity of the thickener overflow is adequate.

The stripping section consists of three stages of mixers and settlers where the uranium values are taken from the solvent organic by the sodium carbonate solution, leaving a barren organic for re-use. The pregnant carbonate is pumped to filter presses for clarification, from which the precipitates are removed as filter cake, repulped and pumped to the head of the rod mill circuit to assist in the oxidation process.

The clarified pregnant carbonate is precipitated in one of two 12 by 12 foot agitator tanks, where sulphuric acid and magnesium oxide are added. Heat was formerly used, but has been discontinued as operation has shown that adequate agitation is sufficient to precipitate the uranium.

While away from home, the stingy husband sent his wife a check for 100 kisses on her birthday. She sent him a postcard: "Dear Jim, thanks for the birthday check. The milkman cashed it for me this morning."

LETTER BOX

GENTLEMEN:

On behalf of the members of the Safety Committee of District 5 of the Western Pine Association who had the good fortune to be conducted through your uranium reduction plant Saturday, February 7, I extend our thanks and appreciation for your time and consideration. All of the individuals who participated in the tour personally expressed to the writer the fact that the tour was the high point of our safety meeting.

VIRGIL MASTELOTTO
American Forest Products Corporation.

DR. THORNBURG:

Congratulations on your newsletter. I found it most interesting and I know it will be eagerly received by LMC employees.

With best regards and every good wish for the success of your newsletter and your fine new plant.

AL ULLMAN
Congressman
Oregon Second District.

(A letter of congratulations also was received from State Representative Verne N. Cady, of Burns, another good friend of Oregon mining.)

CONVENTION

Dr. Garth Thornburg and James Poulos, president and general manager, respectively, of Lakeview Mining Company, attended the American Institute of Mining, Metallurgical and Petroleum Engineers at the Sheraton Palace Hotel in San Francisco from February 15 through 19. About 4000 attended the session.

Husband was fast losing his temper. He yelled at his wife, "Look out, or you'll bring out the beast in me." "So what?" she yelled back. "Who's afraid of mice?"

The White King Mine

Location. The White King Mine is located about 15 miles northwest of Lakeview, Oregon, ~~very~~ near the center of Sec. 30, T. 37 S., R. 19 E. This area is in the southern part of the Fremont Mountains that lie just to the west of the Goose Lake and Summer Lake basins. The mine is, at about 6,300 feet elevation, ^{in the southern part of the} near the west edge of an upland meadow through which Augur Creek has meandered. ^{2 records and some in the area. It is} A heavy soil cover and abundant timber is typical ~~throughout~~ the area.

The discovery of secondary uranium minerals in a surface outcrop of opalized tuff was made by Don Tracy of Lakeview in June of 1955. Limited exploration by trenching and drill holes indicated the possibility of a commercial orebody extending out into the Augur Creek Meadow. Tracy and his partners, John Roush and Walter Lehman, leased the White King claims to the Lakeview Mining Company, and Oregon corporation headed by Dr. Garth Thornburg and Vance Thornburg of Gunnison, Colorado.

General Geology. ¹¹¹ The rocks exposed in the general area are ~~all~~ of Tertiary age and consist of a great variety of volcanic ^s rocks. A series of acid to intermediate tuffs, tuff breccias, crystal tuffs, and welded

tuffs are the oldest rocks, and they are prominently exposed in northwest-trending ridges with steep northeast-facing fault scarps along Cottonwood

Creek and Thomas Creek, to the southwest of the mine area. A fossil rhinoceros tooth found in this sequence, has been identified as being of early Miocene

age. These tuffs are overlain, apparently conformably, by less indurated agglomerates, clayey tuffs, and a thick section of tuffaceous lake beds.

Fossil leaves have been found in these rocks but have not been identified.

The less indurated tuffs are in turn covered by thin to thick (0 to 750 feet)

olivine basalt flows. All the older rocks have been intruded by glassy

flow-banded rhyolite, and there are conspicuous rubble cones made up of the rhyolitic material. ^{at other places the rhyolite has formed conical rubble cones.} ~~the rhyolitic material.~~ ^{Some of the outcrops of rhyolite are massive white} Cougar Peak, the highest peak in the area, is one of these cones built on a northeast-trending ridge of the older tuffs. The topography and drainage are controlled by prominent fault sets

in three directions, N. 45° W., N. 45° E., and N. 15° E. Field work in-

dicates the presence of a rather broad N. 45° W. trending anticline with

the axis just east of the mine. The area near the axis of the anticline

has been highly faulted. Vertical displacement along the faults does not

appear to be great -- a few tens to a few hundreds of feet -- but they are

so numerous that the stratigraphy and structure is complex.

Except for a small amount of commercial-grade material containing secondary minerals in the oxidized zone near the surface, all of the ore is found in a roughly rectangular area about 400' wide and ^{800'}~~1,000'~~ long. Ore bodies are roughly tabular ~~shaped~~ and extend downward and ~~to the east~~ from the original discovery point.

The mineralization appears to be directly related to the intrusive rhyolite, and localization of the mineralization results from ~~the~~ fault pattern. The mineralization is found in a horst of younger tuffs and agglomerate surrounded on all sides by downfaulted basalt flows. Intrusive flow-banded rhyolite occurs both at the surface and underground in the mine. A variety of minerals ~~are found and~~ indicate^s the possibility of at least 2 periods of mineralization. An earlier mineralization contains low-temperature minerals such as cinnabar, realgar, stibnite, and opal. A suite of medium-temperature minerals including sooty pitchblende, coffinite, galena, pyrite, and jordanite¹² are believed to have originated at some later time. A new mineral, Lakeviewite, a uranyl arsenate, has been described ^{by mineralogists from the AEC} from the oxidized part of the deposit. It is a yellow green fluorescent, autunite-type mineral. A vivid blue mineral, ilsemanite, ~~is~~

^{molybdenum}
a hydrous ~~Mo~~ oxide is also found as ~~a secondary~~ ^{an oxidation product of the jordite,}

^{in which most of the ore occurs,}
The clayey tuffs and agglomerates have been highly altered. Underground the rocks are mottled gray and black and colored by the orange and yellow arsenic minerals. Fault zones are sometimes difficult to see but usually have a gouge zone of several inches of clay. Later faulting has broken the ore body into roughly tabular blocks. Over 30 faults have been recognized in the mine and they offset blocks of ore and complicate the geology underground.

Exploration and Development. Early exploration by the Lakeview Mining Company was directly supervised by James H. Polous, General Manager, and Howard Dutro, ^{NOW} (Assistant General Manager) ~~and~~ Chief Geologist. Surface exploration and a drilling program were followed by underground development.

Drilling in the mine area totals about 125,000 feet. Over 250 vertical drill holes averaging about 500 feet deep have explored the area mainly to the east of the original discovery. Company-owned truck-mounted "Sullivan" rotary drills are used for shallow holes (less than

500 feet) and a large "Mayhew 2000" rig sinks the deeper holes. Mineralization is determined both by probing the holes and interval checking of the drill cuttings with a geiger counter.

Underground. Underground exploration and development work now totals well over 4,000 feet. Development and mining through the No. 1 shaft, are being carried out on three main levels at 70, 160, and 260 feet below the surface. The latest step in the development of the mine is the sinking of a Number 2 shaft about 600 feet east of the Number 1 shaft. This 3-compartment shaft will be about 700 feet deep and will tap haulage levels to permit mining of the deepest ore ^{No 2} bodies. The ~~new~~ shaft required extensive new installations at the mine site. These included a ~~new~~ hoist house, compressor building, change room, and an all-steel headframe 96 feet high. The shaft is being extended by a "Cryderman" mucker and at the present time is about 275 feet deep. A station ^{TNE} is being cut at ~~this~~ 6130' level and will be the main connection to the older mine workings to the west.

Mining. Normal mining methods are being used and there are no unusual safety hazards. *Mining is conducted on a 5-shift basis, 6 days a week, miners live in Lakeland and are transported by company bus.* Ore is presently being mined by square-set stoping

but plans call for extensive use of a modified top-slicing method. Since ore and waste cannot be determined visually the face drill holes and exploratory long holes are probed before blasting. Each face is then scanned with geiger counters and channel samples are taken after each round.

After grinding and drying, samples are analyzed with a binary scaler, ^{a device for determining} Since ^{equivalent uranium content} the ore ^{has not reached equilibrium} is slightly out of equilibrium and uniformly so, ^{positive} a correction factor

is applied to indicate the U_3O_8 content. Chemical analyses are made at frequent intervals to check radiometric determination. Working faces are marked with paint from a spray can "O" for ore and "W" for waste. In some areas soft ground enables the use of spade bits for mining ore or muck.

Mucking machines load mine cars and the ore or waste rock is dumped into slusher pockets at the shaft station for loading into ore buckets and hoisting to surface ore bins. ^{EACH MINE CAR IS PROBED BEFORE} Small dump trucks then haul the ore to ^{DUMPING} appropriate stockpiles. ^{AS A} ^{FOR THEIR} ^{CHECK}

Haulage of ore from the mine to the mill in Lakeview has been contracted to the Lakeview Logging Company. Specially designed "belly dump" trucks with a 50-ton capacity will be used for the 15-mile haul over private roads.

Lakeview Mining Company Uranium Mill

Early in 1957 the Lakeview Mining Company entered into negotiations with the Atomic Energy Commission for a contract that would enable them to build a uranium mill. In November 1957 a contract was signed that authorized the construction of a 210 tons-per-day capacity mill. A site just north of Lakeview was obtained and by June 1, 1958, construction was well underway. Lakeview Mining Company acted as their own general contractor with Burr Johnson as their mill construction superintendent.

The mill is rapidly nearing completion, and ore grinding, to fill the fine ore bins and the first-step leaching tanks, (see flow sheet) was started on Nov. 29, 1958. The first yellow cake will be recovered about the middle of January. It will take this long to saturate the mill system.

A straight forward "Solvent Extraction" process will be used to extract the uranium oxide from the clayey ore. After grinding to minus 35 mesh in a 6' x 12' rod mill the ore, containing an average of about 0.3% U_3O_8 , is automatically weighed and sampled and fed to sulfuric acid leaching tanks. The leach liquor after dissolving the uranium from the ore is

fed to thickeners and clarifiers and then is mixed with an organic solvent (a 5% lauryl amine solution in kerosene). Then the organic solvent and aqueous phases are allowed to separate. During the time the two are in contact the solvent selectively extracts the uranium from the acid liquor leaving a raffinate (a barren leach liquor) which is discarded or recycled. ~~to the thickener section.~~ The pregnant solvent is then stripped of its uranium by a sodium carbonate stripping solution which has a greater affinity for the uranium than the solvent. The barren solvent from this step is recycled for further leach liquor extraction. To the non-pregnant stripping solution that contains from 30 to 60 grams of U_3O_8 per liter magnesium oxide is added ^{WHICH PRECIPITATES} (with the precipitation of) the uranium concentrate as "yellow cake". The yellow cake has a chemical composition of MgU_2O_7 and contains about 80% uranium oxide. After drying the yellow cake is packed in metal containers for sale to the Atomic Energy Commission.

For typical operating conditions the consumption of chemicals is estimated to be:

- sulfuric acid - 80 lbs/ton
- sodium chlorate - 5 lb/ton
- sodium carbonate - 10 lb/ton
- lauryl amine solvent loss - small amount from entrainment
- MgO for precipitation - 0.1 lb/ton
- flocculating agent - .75 lb/ton

but the ... 70° ...

The mill schedule has been set up for a 5-day week but will probably operate for 10 days and then shut down 4 days for maintenance.

The mill schedule has been set up to process 210 tons per day for continuous operation. The capacity of the mill will allow for processing of about 300 tons per day on a 10-day-on and 4-day-off operating schedule.

Mill superintendent C. Oliver Hower will operate the mill on a 3-shift basis with ^{about} 35 employees. ~~Under the contract with the Atomic Energy Commission~~ 30% of the mill capacity must be reserved for processing of custom ore. Custom ore must contain at least 0.25% U_3O_8 and be amenable to the "Solvent extraction" process. (see letter)

Other uranium and radioactive occurrences of small size have been discovered at several places in the state. Those that have been actively explored during 1958 are briefly described below.

Lucky Lass -- The Lucky Lass deposit is in Sec. 25, T. 39 S., R. 19 E. about a mile northwest of the White King mine.

A group of Lakeview people discovered the ~~Lucky Lass~~ in June 1955 soon after the White King discovery was made public. Up to a few thousand tons of ore have been mined from this deposit. The ore body was roughly

triangular ~~shaped~~ and bounded on all sides by faults. Secondary minerals similar to those found at the White King coat fractures and fill voids in the tuffs and vesicular basalt fragments which have been pulled into fault zones. The mineralization has lessened with depth and no more mineable ore is known at the present time. A continuing drilling program is being carried on by the Lakeview Mining Company.

~~Crook County~~
Bear Creek -- This radioactive occurrence in Sec. 13, T. 18 S., R. 16 E. near Bear Creek, southeast of Bend, in ~~Crook County~~. It showed some promise on its discovery in 1955 but intermittent exploration to November 1958 has not uncovered a mineable amount of commercial-grade ore.

~~of Bend,~~
During 1958 Leonard Lundgren leased and explored the claims and on deepening and cleaning out the older bulldozer excavations, found minor occurrences of uranium minerals. (See sketch map) Individual samples in the 1 percent U_3O_8 range have been reported. The minerals found in ^{small} lenses of breccia in slickensided zones were identified by the A.E.C. as primary uraninite(?) and secondary autunite. The zones containing the cemented breccia are very narrow, discontinuous, and show small horizontal displacements. Additional exploration included a detailed radiometric survey and a shallow

drilling program. This work was supervized by James Barlow a former A.E.C. geologist. No new radioactive zones were encountered.

~~Creek County~~
Powell Butte -- At Powell Butte in Sec. 13, T. 16 S., R. 14 E., about 8 miles south of Prineville, the discovery of small amounts of mercury mineralization along with the moderate radioactivity has been the only encouraging development during 1958. The radioactivity occurs with iron-oxide coatings of fractures and joints in small isolated occurrences in the ~~hy~~hyolite flows that make up Powell Butte. The claimants, Harley Dosser and Eldon McCain of Redmond plan further exploration as time permits.

~~Harney County~~
Pike Creek - Kiska Mine -- ~~Exploration by~~ the Solar-X Corporation of Boise, Idaho, ~~has continued~~ at the Pike Creek-Kiska Mine in Sec. 20, T. 34 S., R. 34 E. The radioactive occurrence is in the steep-walled gorge of Pike Creek, along the east scarp of the Steens Mountains. Exploration has been concentrated on the original discovery claim where uranium mineralization occurs in a ~~platy~~ ^{banded} rhyolite breccia along a high-angle, northeast-trending normal fault. Surface trenching has exposed the narrow brecciated zone for a distance of about 150 feet. Five samples of the rhyolite breccia from the fault zone recently analyzed by the

Lakeview Mining company varied from 0.14 to 0.95 percent U_3O_8 . A selected sample of the breccia from near the creek level assayed by the Department contained 0.37 percent U_3O_8 . ~~The reported exploration plans~~ will be ~~designed to~~ attempt to discover mineable widths of the mineralized breccia and associated tuffaceous sediments.

Timber Beast Claims -- During 1957-1958 the Timber Beast Mining Company, with the aid of a DMEA loan, ~~did~~ about 270 feet of underground work on their uranium prospect, in Secs. 8 and 9, T. 34 S., R. 34 E./on Little Alvord Creek just north of the Pike Creek claims. A drift was driven along the west side of a fine-grained basic dike for 180 feet to intersect an east-west trending fault along which minor uranium mineralization had been found at the surface. A drift was then driven eastward along the fault for about 90 feet. No ore-grade material has been developed.

The underground workings show zones of weakly radioactive material along fractures in the volcanics adjacent to the dike and also in the gouge zones along the intersecting fault. The radioactivity is generally associated with thin, but in places numerous and closely spaced, seams of ilsemannite (a hydrous molybdenum oxide). However, much of the ilsemannite-bearing

material is not radioactive. The Bureau of Mines reports that their

DMEA contract was terminated by mutual agreement effective June 6, 1958.

The

ORE BUCKET

Volume 1, Number 8

Lakeview, Oregon

May 25, 1959

Isbell Pushes White King Open Pit

Development of the new open pit operation at the Lakeview Mining Company's White King uranium mine is progressing very well according to the Isbell Construction Company's superintendent on the job, John Wright. The work should assume its full

stride in about two weeks, he said.

On April 12, a contract was signed between the Lakeview Mining Company and the Isbell Construction Company, of Reno, calling for the development of an open pit at the White King. The contract

involves the removal of approximately 6,500,000 cubic yards of overburden and ore during the next three years, and permits development of the White Kind deposit to a depth of about 370 feet. All work will be done by Isbell under the supervision of the Lakeview Mining Company.

Initial work under the contract was begun May 8. According to the present schedule, overburden will be re-

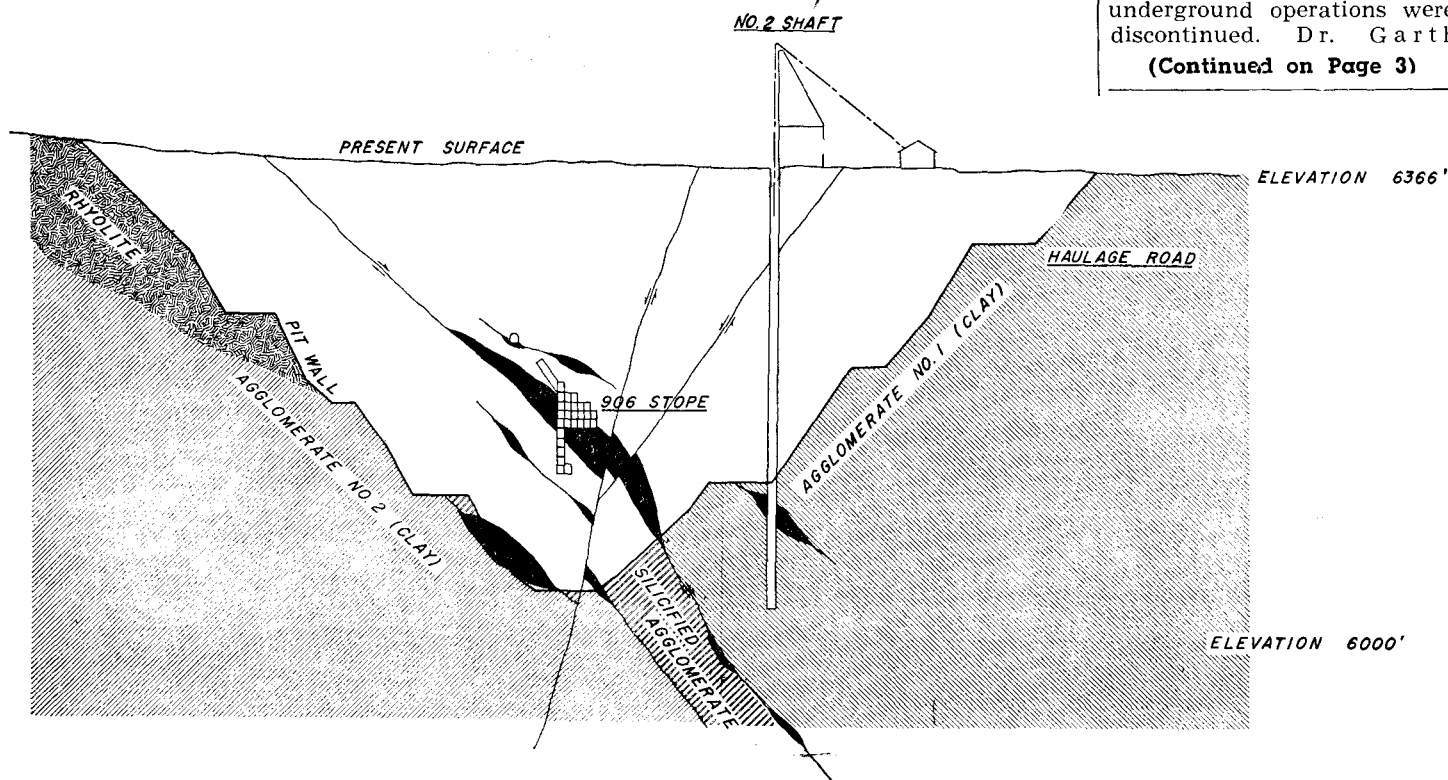
moved by motor scrapers and ore will be extracted by power shovels and trucks.

The completed pit will be approximately 1500 feet long and 1000 feet wide, going to a depth of about 370 feet. Upon completion of open pitting, underground work will be resumed to develop and mine ore remaining in the deposit below the open pit and outside the pit walls, said Howard Dutro, LMC chief geologist and assistant general manager. LMC opened a pit operation early in March, to augment ore then coming from underground workings, and when the Isbell contract was signed, all underground operations were discontinued. Dr. Garth

(Continued on Page 3)

VERTICAL section across the proposed White King open pit showing the present No. 2 shaft and a part of the existing underground workings in the 906 Stope area. Scale drawing was prepared by Howard Dutro, chief geologist and assistant general manager of the Lakeview Mining Company.

SW ← → NE





VIEW from the top of the No. 2 headframe, showing Isbell equipment in the initial stages of opening the new pit operation. (Ore Bucket Photo)

Isbell

(Continued from Page 1)

Thornburg is LMC president, and general manager is James Poulos.

In 1880, a young man of 17 named John Isbell hitched his mules to a scraper and built his first road. He worked at a dollar a day, and this was born three generations of construction work. Almost 80 years later, the Isbell Construction Company is still moving earth and still family owned. Its jobs have spanned open pit mines, highways, airports and dams in nine western states from Arizona to Washington.

The firm is now owned and operated by John Isbell's four sons, C. V., Wilmer, Roy and Guy. From the family home in San Diego, Calif., the company moved in 1927 first to Carson City, Nev., and

later to the present headquarters at Reno. They bought their first tractor in 1924, starting the transition from mules to machinery, and it was in the 1920's that they first entered the field of open pit mining, an experiment that mushroomed Isbell Construction Company into one of the biggest earth-moving firms in the United States. From one man with mules at a dollar a day, the company today numbers more than 1000 employees.

Wright, with Ken Wanlass as foreman, had 25 men on the White King job as of last Friday, and the full crew will be about 30 men for a one-shift operation when the work reaches its peak shortly. Only three or four Isbell men were brought here for the work, and all others are being hired locally, mainly from among former Laekview Mining Company personnel.

At full strength, said Wright, the men and machines will remove about 7000 yards per day on a single shift, and the project may go to two shifts.

Isbell equipment now on the job or seen to arrive includes an 80-D 2½ yard Northwest power shovel, three Euclid end dump trucks, five SS-24 Euclid 24-yard scrapers, two S-18 Euclid 18-yard scrapers, three D-9 Caterpillar tractors, one D-8 Cat, and one Model 25 Northwest dragline . . . a far step from the mule and scraper days.

Major strip mining projects the Isbell Company has done or is now operating includes the following: for the Kennicott Copper Corporation, Nevada Mines Division at Ely; Chino Mines Division, New Mexico; Ray Mines Division, Arizona; and Utah

Copper Division, Salt Lake City; for American Smelting and Refining Company, Silver Bell Mine, Arizona, and Van Stone Mine, Washington; for Consolidated Coppermine Corp. at Kimberly, Nev.; for Anaconda Company at the Leviathan Mine, California, and the Jackpile Mine, New Mexico; for the Calera Mining Company at Cobalt, Ida.; for the Duval Sulphur & Potash Company at the Esperanza Mine, Arizona; for the Rare Metals Corporation of America at Cameron, N. M.; for Manganese, Inc., at the Three Kids Mine, Las Vegas; for Pacific Coast Borax Co. at Boron, Calif.; for the Dawn Mining Company at the Midnite Mine, Spokane, Wash.; and for the Texas-Zinc Minerals Corp. at the Happy Jack Mine, Utah.

The

ORE BUCKET

Volume 1, Number 5

Lakeview, Oregon

March 16, 1959



L. C. "LANNY" DAVIDSON, of the reduction plant operations crew, won the \$25 prize for suggesting the winning name for this newspaper, "The Ore Bucket." He is shown here sampling the pulp density in the thickener section. (Ore Bucket Photo)

Congratulations

Congratulations to Mr. and Mrs. Phil Wein who became the parents of a daughter Friday evening, March 13, at Lakeview Hospital. The baby, who weighed 8 pounds, 6 ounces, has not yet been named. Wein is a geologist with LMC.

Let us be of good cheer, remembering that the misfortunes hardest to bear are those which never happen.—James Russell Lowell.

Never esteem anything as of advantage to thee that shall make thee break thy word or lose thy self respect.—Marcus Aurelius.

Geology Dept. Men Visit Reduction Plant

Two members of the Oregon Department of Geology and Mineral Industries visited the reduction plant Friday, March 13, while in Lake County on department business.

They were Dr. Hollis M. Dole, of Portland, department director; and Norman V. Peterson, of Grants Pass, field geologist for the department who has undertaken the extensive geology study of the Lakeview uranium area.

The two men inspected mineralization areas near Fort Rock and Paisley on Thursday, and left for Grants Pass on Friday afternoon after consulting with officers of the Lakeview Mining Company. They also toured the reduction plant, the first visit there for Dole.

LMC Boxer Wins So. Ore. Welter Title

Dalton Steele, carpenter's helper at the White King, became welterweight boxing champion of Southern Oregon last weekend when he won his bout at Albany over Bobby Horne of Eugene. Steele fights with the Lakeview Pal Club.

LMC furnished transportation for the Pal Club boxers to take part in the Albany show. Making the trip in the company's station wagon were Lew Jones, president and coach of the Pal Club; Steele, Jimmy Whitmire, Frankie Lightle and Larry Stewart, boxers.

Steele, at 147 pounds, won

Work Started On Open Pit At White King

An open-pit mining operation, to supplement the underground ore production at the White King, has been designed and laid out north of the old headframe, it was announced this week by Dr. Garth W. Thornburg, president of Lakeview Mining Company.

Expected to be producing ore within the next ten days, the pit operation is planned to substantially increase delivery of ore to the mill.

The open pit mining will take ore from the shallower White King deposits. It will not effect, but will be in addition to, the underground production.

The new work was laid out after consultation with several specialists in this type of mining, and was found necessary because present underground production through the old shaft is not sufficient to provide full use of the reduction plant's capacity.

To strive with difficulties, and to conquer them, is the highest human felicity. —Samuel Johnson.

his first fight last weekend with a unanimous decision over Ron Christianson, of Albany. In the finals, he took a split decision and the Southern Oregon welter crown from Horne, who had won his first fight by a KO.

Whitmire took a bye in the preliminaries and lost in the finals by split decision. Lightle and Stewart lost by split decisions in the first fights.

Editorial

The Fight For Lifeline

At no place in the world and at no time in history has a people been more dependent upon the earth's minerals than in this nation, today. Everything we own or use, everything we eat or wear depends in large degree or small upon the products of mines and mining.

Yet the minerals industry as a whole is beset by enemies, haunted by misrepresentation, hounded by misunderstanding. Instead of encouraging the discovery, exploration and development of mines, the better to enjoy the fruits of mineral deposits, people go out of their way to place obstacles in the way.

Oregon is no exception. Two years ago there was an attempt in the legislature to levy a special 4% tax on mining production. This year, the same legislature had before it an attempt to bury the Geology and Minerals Industry department within the confines of an octopus type "natural resources" department.

Because of this under-the-heel attitude, Oregon's mining has fallen far from the status it once enjoyed in the state's economy. A few years ago, mining added many millions of dollars to the incomes of Oregon's people. Last year the amount was only a fraction of that.

On the national level, too, there are enemies of mining progress. There are men in Congress who would deprive the industry of the "depletion allowance" which wiser men in government have granted in order to keep mines and mining abreast of the people's need for minerals. This tax allowance is based on the hard-headed fact that any mining company's property is subject to depletion as the ore is removed and processed. If that company is to continue in business, producing metal and paying payrolls, then it must replace its depleted properties by purchase or by discovery and exploration. The depletion allowance is the government's way of lending assurance to the future, but there are men in Congress who would kill the depletion allowance, collect and spend the taxes . . . to the devil with the future.

Everything we use, eat or wear depends upon mining or results directly from mining. If one industry more than another is the nation's lifeline, that one is the minerals industry; and that lifeline is worth fighting for. This is a fight for every person engaged in or employed in mining; but more than that, it is a fight for every person who enjoys our high standard of living, a standard which will fall unless mining progress is encouraged.

The Other Shift

—By Leslie Shaw

TV, radio and papers are full this month of stories and ads about the 1959 Red Cross campaign which is now under way in most parts of the nation. I say "most parts" because it is not under way here in Lake County. The 1959 Red Cross drive here was wound up last October.

THAT'S RIGHT. As a part of the 1958 United Fund campaign, Red Cross money for its 1959 goal was raised last fall. Red Cross and 11 other local agencies and 17 state and national agencies all had their 1959 funds raised for them by the United Fund drive.

IT'S EASIER that way, not only on the agencies but on all of us who give. Organization of the Lake County United Fund is somewhat unique in the land, so maybe you'd like a run-down on same.

LIKE most everywhere else, Lake County struggled along for years under the Community Chest banner with the same few people doing all the work, the same few giving what was given, and mostly falling low of the goal each year. It just about folded along about 1954 when John McDonald was persuaded to suggest a reorganization plan. He not only did that, but served as first president and first drive chairman of the 1955 United Fund.

AS ORGANIZED under McDonald's plan, the Lake County United Fund has 14 directors. Nine of these are named by major organizations of the county, and those nine name six directors at large. The nine organizations are Pomona Grange, Farm Bureau, Stockmen's Association, Soporoptimist Club, Business and Professional Women, Rotary, Lions, Chamber

of Commerce. The ninth is organized labor, except that the by-laws named the local of the Lumber and Sawmill Workers, which was active here at the time but not now. It is expected that the by-laws will be changed so that organized labor will have a delegate on the UF board.

THE FOURTEEN name a president, vice-president, treasurer, secretary and a 5-man executive board which includes the president and vice-president. The executive board is only for emergency action, but most all business of the UF is conducted by the full board of directors.

THE BOARD also names a drive chairman, who need not be a member of the board.

IN AUGUST the full board of directors sits as a budget committee to hear the various agencies' request for funds. Last year, for example, these requests totaled more than \$14,000 and the board cut here and there to keep the total quota at around \$10,800, thus keeping the donors in mind.

RECENTLY, Chick Chaloupka, the Lake County district attorney, was elected president of the 1959 United Fund, succeeding Tommy Flynn, local insurance man. John Buell was drive chairman of last fall's successful campaign, and the 1959 drive chairman has not yet been named. The drive will be held in September.

SO THERE is no Red Cross drive this March, because it was all taken care of last fall when funds for 28 agencies were raised in one drive . . . otherwise, there would have been 28 drives this year . . . we'd all be tapped 28 times to do what was hand-

(Continued on Page 3)

Lakeview Mining Ore Bucket

Published by The Lakeview Mining Company
Box 1231, Lakeview, Oregon

DR. GARTH W. THORNBURG President
JAMES F. POULOS General Manager
LESLIE SHAW Editor

February Safety Contest Names Three Winners

Fourteen men turned in 25 safety suggestions in the February contest, making a tougher job for the judging committee and improving the contest itself. Fifty dollars in monthly prizes went to three men.

First prize of \$25 went to M. A. Morse, stope miner at the White King, for his suggestion: "On some of the shifts at the White King No. 1 shaft, as many as eight men ride up on the skip, causing a dangerous overcrowding condition. Not over six men should ride the skip."

T. G. Wells, trammer at the White King, won the \$15 second prize for his suggestion: "The safety barrier on the 6230 level is just a chain and it has been broken. It would be a safety precaution if it were replaced with a more reliable barrier."

A reduction plant operator, Bruce Randolph, won the \$10 third prize for his suggestion: "Guard rail No. 3 thickener should be extended on out to the pumphouse. No one can tell that there is no rail without stepping out on the catwalk. By then it might be too late."

The Lakeview Mining Company, through the Ore Bucket, offers three prizes each month for the best safety suggestions. The suggestions can be placed in boxes at the mine and the plant, or mailed to Box 1231, Lakeview. All suggestions, whether they win prizes or not, will be considered for use by the mine and plant safety engineers and the company management. All employees below supervisory level may turn in safety suggestions in any or all of the monthly contests.

The Other Shift Miners Call Ball Players

(Continued From Page 2)

led in one drive. United Fund does a big job.

AND THE good Red Cross work will go right on, regardless of having no money campaign of its own. It will conduct first aid classes, sponsor water safety, conduct home nursing courses, provide aid for indigent persons, and above all it will be ready to move in when disaster strikes any area.

RED CROSS committee workers are devoted people who give long hours to being prepared and, if need be, longer hours to helping people when trouble comes. The local contribution to Red Cross, through United Fund, provides for the county's share to the national American Red Cross as well as financing the work of the local committee which is headed by Chick Sullaway.

Young man: I'm in love with a charming girl. How can I learn what she really thinks of me?

Uncle: Marry her.

All boys who are 15 to 17 years of age, and who want to play baseball on the American Legion team, are asked to get in touch with J. Clark Hill at his home as soon as possible.

The team is sponsored by the Lakeview Mining Company and the Legion team committee has named the team the Lakeview Miners.

Hill, double drum hoistman at the White King, wants especially to get the pitchers to working out early. Boys who will not be 18 before September 1 will qualify for the Legion team, said Ed Sisson, baseball chairman of the Legion post. The boys can phone Sisson at WH 7-6394, or see Hill at his home on F Street South, across from the Mormon church.

Well trained husband: My wife and I have an understanding. During the day I permit her to do as she pleases; and in the evening she permits me to do as she pleases.

Party Honors Randy Lucas

A birthday party was held Saturday, March 7, for one-year-old Randy Lucas, son of Mr. and Mrs. Ward Lucas, at the home of his grandmother, Mrs. W. A. Ferguson. Randy's father is a warehouseman at the White King.

Those enjoying refreshments were Paula and Beth Cutting, Janet, Johnnie and Theresa Daniels, Thelma, Nancy and Leon Flick, Christie Stapleton, Bonnie Pardue, Angelia Nelms, Bobby, Terry and Billy Johnson.

Prizes were won by Paula Cutting, Bonnie Pardue and Terry Johnson.

The theme was carried out in St. Patrick's Day colors and decorations, and a good time was enjoyed by all.

Future U-308 Deliveries Estimated

Senator Albert Gore, chairman of the Raw Materials subcommittee of the Joint Congressional Committee on Atomic Energy, has made public declassified version of the Atomic Energy Commission's February 16 statement at an executive session of the subcommittee. The meeting was not open to the public because military as well as civilian requirements of uranium were discussed.

Uranium deliveries under current commitments will reach their highest level in 1960 and 1961, they will be somewhat lower in 1962, with a sharp drop in fiscal 1963 following expiration of nearly all foreign contracts.

The statement estimated that about 46 percent of our uranium will come from this country during the current year, 41 percent from Canada and 13 percent from overseas, mostly South Africa. In the next two fiscal years, domestic production will supply about 51 percent of the total, Canada 36 percent and overseas 13 percent. Of the total uranium commitments for July 1, 1959 through December 31, 1966, there will be 66 percent from domestic production, 21 percent from Canada and 13 percent from overseas. All foreign contracts expire March 31, 1963 with

White King Underground Study Made

A thorough study of underground mining problems at the White King has been made the past several days by Vinton Clark, of Behre-Dolbear Company, mining and consulting firm of New York City.

On Tuesday night, March 10, Clark was guest of honor at a dinner party at the home of Dr. and Mrs. Garth Thornburg. Guests included Mr. and Mrs. James Poulos, Mr. and Mrs. Howard Dutro, Mr. and Mrs. Oliver Hower, Mr. and Mrs. Kenneth Kutz and Mr. and Mrs. Carroll Flick. Clark had been acquainted with Kutz and Hower when all were with the Howe-Sound Mining Company.

21 Men Join LMC Payroll

LMC has 180 employees, as of the past weekend, according to payroll records in the office. Of that number, 21 have joined the force since the last payroll list was published in The Ore Bucket.

Two of the new men are laboratory technicians at the lab, R. B. Pyeatt and J. M. Smith.

All others are at the mine: K. J. Kutz, superintendent; L. G. Ball, G. Barney, R. L. Barrett, R. L. Clark, R. L. Dowell, H. Gregory, O. F. Green, A. Johnson, D. A. Kangas, L. D. Knight, G. H. Monson, W. Ross, J. B. Tinall, L. L. Whitehead, all stope miners; L. C. Brashears Jr., J. E. Cooper, G. Waterman, trammers; and B. G. Averill, truck driver.

TO PHOENIX

Dr. Garth W. Thornburg, president of the Lakeview Mining Company, flew his family to Phoenix, Ariz., on Friday of last week. Mrs. Thornburg and the children will remain there until the first of April, but Dr. Garth Thornburg planned to return to Lakeview early this week.

the exception of South Africa where our contracts expire December 31, 1966.

Let's Get Acquainted Former Car Salesman Member of LMC Team

(Arrival of the uranium industry in Lake County brought a whole list of new-type jobs to the payroll front. Where heretofore the principal economy was based on such jobs as buccaroo, cut-off man, herder, filer, etc., the uranium industry has brought such jobs as sx operator, stope miner, chemist, trammer and many more. In this series, we will try to make the people of LMC acquainted with the men, the jobs and families that make up the organization. Editor)

Bob Lamon's job at the reduction plant includes various duties, from attending the stripping and precipitation sections to clean-up in the various plant areas, and sometimes he takes care of packaging the yellowcake.

Robert E. Lamon has been a Lake County resident for 12 years, the past couple of them as salesman for Fremont Motors where his wife, Clarine, is bookkeeper. He went to work for Lakeview Mining Company on December 16.

Bob was born at Castle Rock, Wash., the son of Mr. and Mrs. A. W. Lamon who now live at Paisley. Besides selling cars and weighing yellowcake, Bob has worked in sawmills, drove logging truck, and once for three months he was a commercial deep sea fisherman. In the Army from 1951 to 1953, he was stationed for 18 months in Japan, a Pfc. attached to The First Cavalry Division.

On September 3, 1954, at Lakeview, Bob was married to Clarine Welch, daughter of Mr. and Mrs. Byron Welch, of Lakeview. Bob and Clarine have one son, Mike, who is three years old.

Wilson Inspects Uranium Plant

An inspection of the reduction plant was conducted during several days last week by Robert Wilson, an engineer with The Galigher Company, of Salt Lake City, Utah.

With Johns

Fint Banister, who was maintenance painter at the plant for several weeks, left the LMC employe on February 28 to become associated with Dick Johns at the Round-Up Tavern. Fint will head the new expanded sports department at the Round-Up.

His place on the maintenance crew was taken by Jerry Wilsey, who prior to March 2 was a member of the operations crew at the plant, it was announced by A. W. Legend, maintenance foreman.

Mine-of-Year

The "underground mine of the year" was the Homestake-New Mexico Partners Section 32 uranium mine in Ambrosia Lake, N. M., a distinction which gave it the annual national award by the Mining World.

The San Francisco mining publication presented its award to Richard J. Stoehr at the recent National Western Mining Congress at Denver. The award was given the Section 32 mine because, in spite of extremely difficult mining conditions, it averaged a production of 12.4 tons per man shift in 412 shifts during the past year.

The Galigher Company designed and engineered construction of the plant, which went into operation last November 29.



IN BEGINNING a new "get acquainted" series of pictures and stories about LMC employes, The Ore Bucket presents Bob Lamon and his family. In the upper photo, Lamon is shown operating the small Hyster. In the lower photo he is shown with his wife, Clarine, and their son, Mike, at their home at 115 South D Street. (Ore Bucket Photos)

The

ORE BUCKET

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Volume 1, Number 7

Lakeview, Oregon

April 20, 1959

White King Changes To Open Pit

On April 12, the Lakeview Mining Company entered into a contract agreement with the Isbell Construction Company, of Reno, for open pit production of uranium ore at the White King, it was announced by James F. Poulos, LMC general manager.

Underground mining operations were discontinued on Monday, April 13, and the men are engaged in salvaging the rails, pipe, machines, ore cars and other equipment used below ground.

The Isbell company is to be on the site in about four weeks with a full crew to begin expanding the stripping area already opened by LMC. The initial stripping will cover an area 700 by 400 feet. The Isbell firm has stated that it will try to hire all the men possible from the present Lakeview Mining crew.

The change from underground ore production was made necessary by the problems presented there by heavy ground conditions.

Operations at the reduction plant will continue without change, and the ore haul from the White King will be made by the Lakeview Logging Company as in the past.

Congratulations

Congratulations to Mr. and Mrs. Basil Rexroad. Their daughter Karen Elaine was born at 1:15 a. m. Sunday, April 19, at the Lakeview hospital. She weighed 7 pounds 15 ounces.

Inner peace is still more important than outer space.



MEMBERS of the Portland Chamber of Commerce recently visited the reduction plant while here to meet with Lakeview businessmen. Part of the group is shown here, guided on their tour of the plant by John Vecchies, assistant plant superintendent, who is standing at left. (Ore Bucket Photo)

LMC Partners Hold Meeting At Lakeview

The Lakeview Mining Company partnership had a meeting here on Thursday and Friday of last week. Earlier in the week, Dr. Garth Thornburg, president of the company, flew to Denver and went to Gunnison where he met the group and returned here with them.

Present were Perry Bass, of Fort Worth, Tex., accompanied by Mrs. Bass; Vance Thornburg, of Grand Junction, Colo.; George Nicoud, of Dallas, Tex., representing John Murchison who could not be present; George Kruger, of New York City, repre-

Safety Is For Everyone

Industrial plant safety is for the workers, so it could be assumed that the workers would be all for installing safety measures and carrying out safe practices. But that is not history.

History shows that management is all for safety, while workers drag their feet at safer methods and devices. History shows that the employees look down their noses

sending the Chase Manhattan Bank; and Dr. Thornburg.

On Thursday evening, Dr. and Mrs. Thornburg entertained at dinner for the visitors and local mining executives and their wives.

at safety committees, call them "snoopers."

A recent issue of "Plant Engineering" tells of one plant where the story is different, the story of Eitel-McCullough, Inc., at San Bruno, Calif., a firm that makes transmitter tubes.

Seeing the usual failure of the "committee" plan, the firm made all employees safety conscious by starting a "committee of everyone." The accident frequency rating was 24.66 in 1951, and the new plan was started in 1952. The rating dropped to 2.96 in 1954, to nothing in 1955, 2.10 in 1956, and as of July, 1958, the rating was again down to zero.

Genius is only the power making continuous effort

Editorial

The Changeover

Probably no industry in the world poses the gamble, for the men as well as the owners, as does the field of mining. So many factors, from world conditions to the shape of rock, control or alter the problems of every mine and mining plant, that the only thing certain is change. Miners live with the certainty of change; owners recognize and face it.

Nothing would have pleased Lakeview Mining Company more than to proceed at the White King as had been planned, bringing the ore from underground to satisfy the 300 tons per day required by the plant . . . and required also by the necessity for meeting payrolls, retiring the loan, paying the bills.

The Company would have been pleased to continue that road for a number of reasons; to name a couple: It has spent upwards of \$3,000,000 in exploration and development aimed entirely at an underground operation; it has employed many men who, with their families, have made a place in a new community.

But underground mining was not bringing up enough ore to feed the mill. The No. 1 shaft had been sunk for exploration; it was not scaled for production. The No. 2 shaft was far from ready for production and it was proving inordinately expensive. Even should it one day produce enough ore to feed the plant, it would be ore too costly, coupled with milling expenses, to be processed at a profit.

The Company did not give up easily on its original plans. The changeover to stripping and open pit was made reluctantly, and only after some of the nation's leading experts in underground and pit method mining had been called in for study and consultation. A \$3,000,000 investment is not easily put aside, and men are not lightly discharged.

The change was the result of no whim. It was the result of facing hard facts: With more than \$6½ million dollars already invested in mine and plant, LMC needs adequate ore. It became obvious that open pit was the only possible answer.

The decision has been made, the work of changeover has begun. There will be other problems in the future, some as great as those presented by the underground conditions at the White King; they will have to be faced when they appear.

Lakeview Mining Company is grateful to every man who has had a part in trying to make a go of underground mining at the White King. Every problem was tackled with will and know-how, but the problems presented by the extreme conditions of water, heavy ground and moving earth were too great even for the many years of experience represented by the mine force.

—L.S.

The Other Shift

—By Leslie Shaw

IT ALL GOES TOGETHER

If I've learned one thing about Lake County in the past 12 years, it is such as this, to wit: When a job needs doing, people step in and get it done. Volunteer type people, which is the very highest among people types.

TAKE a for instance: Every well organized community needs itself a fire department, but to pay for same with taxes what would happen in places like Paisley, New Pine Creek and Lakeview? They'd do without much of a fire department, so volunteers turn out and take over and it's a right smart job they do. Likewise with the disaster unit, United Fund, and all kinds of local services. Volunteers pitch in and get the job done. High type people.

FEELING such, it pleasures me to relate that some LMC men are pitching into a new project. A youth program, this deal is called the Civil Guard and it will teach patriotism, citizenship, civil defense and military drill and bearing.

GERALD Wilsey is the sparkplug, having conducted similar programs at Cobalt and Salmon, Idaho, and at Pendleton. Here he will be assisted by Laney Davidson, Bruce and R. V. Randolph, of LMC, and Robert Collins, a member of the state survey crew on the Winnemucca-Lakeview road. Wilsey and the other LMC men work in the reduction plant.

THE LAKEVIEW town council the other night gave the green light for the Civil Guard meetings to be held in the armory building, one night each week. It will be open to boys 14 years old and up, and there will be small dues to cover expenses, the amount to be decided after expenses are known.

SEEMS there's a broad field in this mighty land of ours for a better understanding of our national heritage. It adds up to morale, it

makes better Americans. Some guys over in Korea didn't have it, and without it they gave in to the Commie patter. Some of them have since come awake, but a little late. Maybe if someone had taken the trouble, a few years sooner, to enlighten those guys about our great national background, maybe they wouldn't have gone over to the enemy. It would have been worth the pitch.

SO I'M glad to see someone taking on the job.

Ore Reserves Estimated

The U. S. Atomic Energy Commission on April 2 announced the latest estimate of available uranium ore reserves for the various states as of January 1, 1959.

The total is 82,500,000 measured, indicated and inferred tons of ore averaging 0.27 percent U 308 (uranium oxide). These reserves are determined in accordance with the definitions for measured, indicated and inferred ore reserves as adopted by the U. S. Geological Survey and the U. S. Bureau of Mines, Department of the Interior, and include only material metallurgically amenable to treatment.

Distribution of ore reserves by states is approximately as follows:

	Thousand Tons	% U 30
New Mexico	54,900	0.23
Wyoming	11,500	0.31
Utah	5,600	0.33
Colorado	4,400	0.30
Arizona	1,400	0.34
Washington, Oregon, Nevada	2,300	0.21
North and South Dakota	600	0.26
Texas, California, Montana, Idaho, Alaska	1,800	0.23
Total		
Reserves	82,500,000	0.27



ANOTHER part of the Portland Chamber of Commerce group is shown here during their tour of the reduction plant. They were guided by Dale Cutting, chief chemist,

who is standing at left. Next to Cutting is F. Carl Fetsch, Lakeview businessman. (Ore Bucket Photo)

Atomic Industry

Where did it all start?

Perhaps it started with Martin Heinrich Klaproth who in 1789 discovered a new mineral in a piece of Savony pitchblende. He named the mineral uranium, in honor of Sir William Herschel's discovery of the planet Uranus in 1781.

Or perhaps it started with Eugene Melchior Peligot, who in 1841 for the first time reduced the uranium oxide to a metal. Peligot is thus considered the founder of uranium chemistry.

Or perhaps it started with Dmitri Iyonovich Mendeleyev who, in 1869, formed the periodic system of classifying elements, placing uranium as the heaviest of all elements, at 92, a position it held until 1940 when the first transuranium element (derivatives of uranium such as plutonium) was discovered.

RADIOACTIVITY

Or perhaps it all started with Henri Becquerel who, in 1896, discovered in uranium the peculiar property of radioactivity . . . although he didn't know what to do with it, and the only uses for uranium

continued to be coloring of ceramic pottery and in fixing dyes used on silks and leather.

Or perhaps it was started in 1905 by Albert Einstein who that year propounded his theory of relativity on the conversion of mass into energy . . . that mass increases with an increase in its rate of motion. The calculations showed that one kilogram (2.2 pounds) of matter, if entirely converted into energy, would produce 25 billion kilowatts of energy. (By contrast, one kilogram of coal converted into energy by combustion, produces 8.5 kilowatt hours of energy.)

Or perhaps it started with O. Hahn and F. Strassman who, in January, 1939, demonstrated the fission of the uranium atom when bom-

barded with neutrons . . . the fission of one pound of uranium could produce energy equal to the combustion of 20,000,000 pounds of coal. It was demonstrated that when the uranium atom was bombarded with neutrons, more neutrons were released in a chain reaction. Slow bombardment meant controlled fission . . . as for power production. Rapid bombardment meant explosive fission . . . the A Bomb.

No matter where it started, the big questions are:

Where is it going?

Where will it end?

To tackle the second question first . . . it need not end. It could be the end of everything if all our effort is concentrated on nuclear fission bombs and missiles, because an atomic war could well be a short and final chapter in mankind's long warlike history.

But if the efforts of nations are concentrated on the de-

(Continued on Page 4)

Union Vote Deadlocked

Two labor unions tied in their bid to represent employees of the Lakeview Mining Company Tuesday and Wednesday when the election resulted in 27 votes each for the United Steel Workers, AFL-CIO, and the Operating Engineers, AFL-CIO. Of the 57 votes cast, three were for neither.

This was the second election in which the two unions were candidates to represent the employees as bargaining agent. The first was held on December 22 and 23, resulting in 41 votes for the Steel Workers, 37 for the Operating Engineers, one for neither, and eight votes of reduction plant workers were challenged by the Steel Workers. Since the eight challenged votes were sufficient, if counted, to change the results, the matter went to the National Labor Relations Board at Washington, D. C., which recently called a new election for April 14 and 15.

When the December election was originally set by the NLRB in November, it provided only for voting by the mine workers. The Lakeview Mining Company and the Operating Engineers petitioned for the election to include the mill workers, and this petition was granted but in re-setting the election the NLRB failed to change the eligibility date so it would include the mill employees. It was on the basis of this eligibility that the Steel Workers challenged the eight votes.

On April 6, the mining company filed a motion with NLRB asking an extension of the new election dates on the ground that a change in mining methods was being put into effect, and that this change would result in discontinuance of the underground mining and miners. By wire on April 14, the NLRB disallowed the motion as being not timely.

Lakeview Mining Ore Bucket

Published by The Lakeview Mining Company
Box 1231, Lakeview, Oregon

DR. GARTH W. THORNBURG President
JAMES F. POULOS General Manager
LESLIE SHAW Editor

Atomic Industry Looks Ahead

(Continued From Page 3)

velopment of power, there is no limit whatsoever to the great good which the fissioned atom can bring to all mankind . . . unlimited electric power, fuel for cars, ships and planes, fuel for space travel, heat and light for homes and factories, cures for diseases, improvement of plant species . . . all these and far more can be man's heritage from the wonders of nuclear fission. Uranium and its powerful sub-elements can make Earth the glory spot of the Universe. The Atomic Age need not end, nor be the end.

WHERE IS IT GOING?

More answers are being given every day. Before World War II, most of our atomic knowledge was centered in theory and mathematical equations. It was known that the atom could be split; it was known that fission of the uranium atom could produce energy through chain reaction. The past 20 years have expanded the theories, the equations and the fission into actuality. The next five, ten or twenty years will tell such a story as man has never dreamed.

As War II ended, lay people envisioned easy and cheap power as they considered the atomic power of a glass of water driving a train across the nation; a pellet of atomic fuel moving their cars for many un-fueling years; a tiny engine heating and lighting their homes.

FACTUAL FANTASY

Scientists poured cold water on those ideas . . . nuclear fission offered worlds of power, but only in large proportions. Small atomic power plants were out of the question, and even the huge plants were far in the future.

But since that time, the scientists have been busy disproving their own theories and proving the accuracy of the laymen's fantasy. Small power plants are near at hand. One development is a boiling water reactor which produces 200 kilowatts of electricity and 400 kw of space heat, developed by the Argonne National Laboratory. Westinghouse, General

Electric and other private firms have announced extensive programs aimed at commercial production of electric power by nuclear means.

MUST BE READY

The Atomic Energy Commission has presented a chart showing that the present cost of producing electric power by nuclear plants is estimated at from 16 to 50 mills per kilowatt hour, while the present cost of producing electricity by conventional (hydro, gas, coal, oil) is from five to nine mills per kwh. The chart predicts that nuclear power will enter the competitive price range in about 10 years and by 1980 will cost around six to seven mills.

During the same time, the cost of conventional power will be increasing due to the growing exhaustion of the conventional fuels. There are predictions that by 1975, oil and gas power plants will be providing 75% of this nation's electric power; but estimates show, at the present rate of use, our proven oil and gas reserves will not last 15 years. Nuclear power must be ready to take over.

The past 15 years of development in uses of the atom are only the warm-up. The next 15 years . . .

—L.S.

Civil Guard Group Forms

Organization of a Civil Guard group for boys 14 years of age and older is being undertaken by four LMC men and one State Highway Department employee. Spearheading the new movement is Gerald Wilsey, assisted by Bruce Randolph, R. V. Randolph and L. C. Davidson, all of the reduction plant crew, and Robert Collins, member of the state survey crew on the Winnemucca-Lakeview road.

The organization, which stresses civil defense and military training along with patriotism and citizenship, will meet one night a week at the Lakeview armory. The meeting night will be Thursday night.

Wilsey has conducted similar Civil Guard groups at

Bill Would Restrict Lands To Mining

Another blow at mining is shaping up in Congress through the so-called Wilderness Bill (Senate Bill 1123) which was introduced in the Senate on February 19 by Senator Humphrey. Seventeen co-sponsors include Sen. Richard Neuberger and Senator Wayne Morse, of Oregon.

S. 1123 would provide for setting aside, in a National Wilderness Preservation System, of federally owned or controlled areas to be retained in perpetuity as wilderness "where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain." Wilderness areas would be set aside within the national forests, public domain, wildlife refuges and ranges, Indian lands, or private lands which might be given to the government for this purpose.

Prospecting and mining would be prohibited within the wilderness areas, except on express authorization of the President pertaining to a specific area.

Before Senate field hearings on this bill in Seattle on March 30, Dr. Hollis M. Dole, director of the Oregon Department of Geology and Mineral Industries, stated that "The mineral industry looks on the diminishing of land open to exploration with a great deal of alarm. To arbitrarily set aside vast areas for single purpose use, we believe, is extremely hazardous to the national welfare and could work unwarranted hardships on the western states."

Dole pointed out that of the 753 million acres of land in the 11 western states, 55

Cobalt and Salmon, Ida., and at Pendleton, Ore., and has letters from officials in those places commending its work with the young people. On Tuesday of last week, he met with the Lakeview town council and was given permission to use the armory.

Any boys 14 years of age or older are invited to join the Civil Guard.

percent is federally owned and no western state has less than 30 percent of federal ownership . . . seven have more than half of their areas in federal ownership. He added that already 35 million acres of federal lands is reserved in these states for recreation or scenic use.

Minerals can be discovered only where they exist within the land; the more land restricted to exploration, the fewer minerals will be found. The Wilderness Act should be of great benefit to the bird watchers and chipmunk feeders, but it could hardly benefit the national economy.

Domestic U308 Figures Told

The U. S. Atomic Energy Commission on March 11 announced monthly and total statistics on domestic uranium production for the last six months of calendar 1958. Included are figures on uranium concentrates, domestic ore production, rate of processing, ore fed to process, ore stockpiling, ore reserves and initial production bonus.

Domestic ore reserves were estimated to total 82,500,000 tons on January 1, 1959. Ore receipts at all private plants and government purchase depots in July-December, 1958, totaled 2,807,000 dry short tons; ore fed to process totaled 3,011,000 tons with an average grade of 0.255 percent U 308; ore stockpiles as of December 31, 1958, totaled 1,747,636 dry tons; and a total of \$1,177,883 was paid in initial production bonus in the first six months of 1958.

As of January 1, there were 23 uranium processing mills in operation, including the single government-owned mill at Monticello, Utah. Their combined rated daily capacity was 21,005 tons of ore per day, and their total estimated capital investment was \$134,928,000.

Uranium concentrates received at the commission's depot in Grand Junction totaled 6,651 tons of U 303. The average price paid by the government for the concentrates was \$9.33 per pound, or approximately \$124,000,000.

The Story Of Uranium: Part Of County Progress

Lake County Examiner

As The Examiner dedicates this entire special edition to Progress in Lake county and Oregon, it is fitting that an account of uranium be included because the coming of the new uranium industry brings full circle the area's progress from ox yoke to U 308, from the past to the future.

When Oregon was born and when Lake county was established, uranium was known only as a coloring agent for ceramic ware and as a substance to fix the dyes used in textiles and leather. The mineral's new uses in nuclear fission, recognized as the foremost fuel for power generation and for the Space Age, make it far too expensive to be used as a mordant or a coloring agent.

NAMESAKE

Uranium was discovered in 1789 by the German scientist, Martin Heinrich Klaproth and was named by him in honor of the 1781 discovery of the planet Uranus by Sir William Herschel. But only the oxide was first known, and it was not until 1841 that the metal was produced. The property of radioactivity, later found in many other elements, was first discovered in uranium in 1896. The atom-splitting experiments of the 1920's and 1930's led to the first sustained chain reaction during the World War II days. Since that time, uranium has been successfully used in produc-

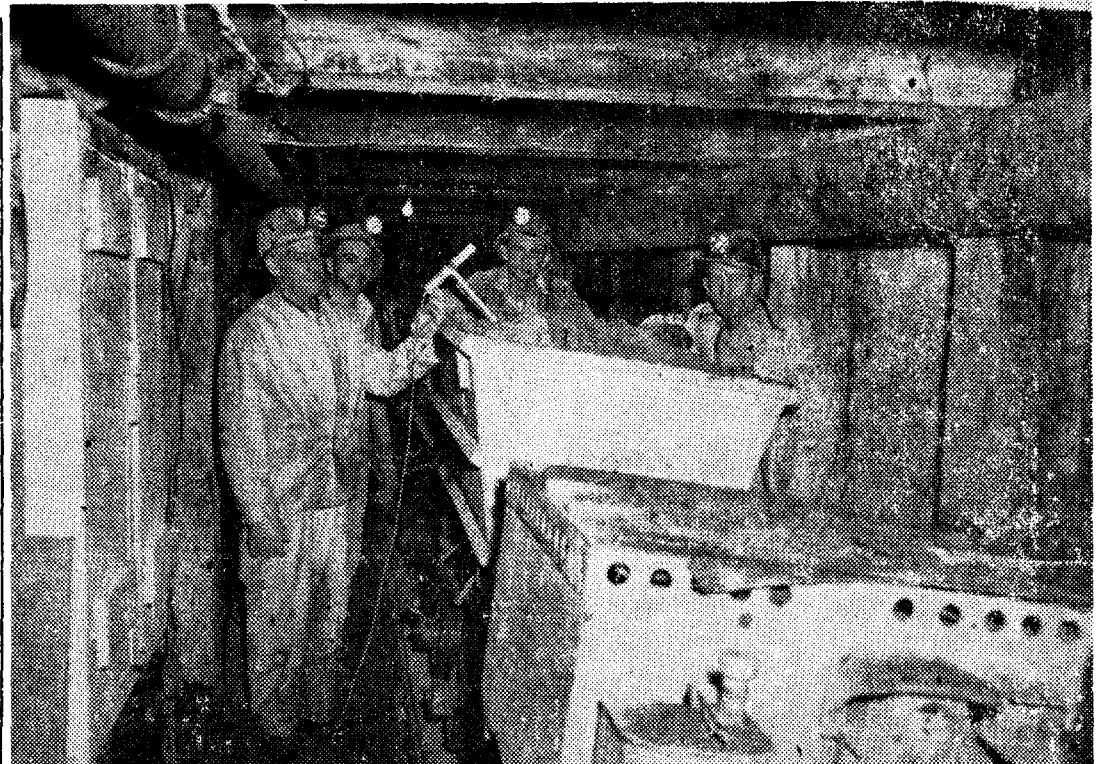
plant there.

A contract for sale of uranium oxide from the Lake county deposits was signed with the Atomic Energy Commission on November 18, 1957, and this was the green light for construction of a \$3,000,000 reduction plant here. Acting as its own contractor, with plans and designs prepared by the Galigher Company, of Salt Lake City, the Lakeview Mining Company built the mill during the summer and fall of 1958, the first White King ore entering the plant on November 29 and the first yellowcake emerging on December 15. At the close of 1958, this mill was one of 23 uranium reduction plants in the United States.

GEOLOGY

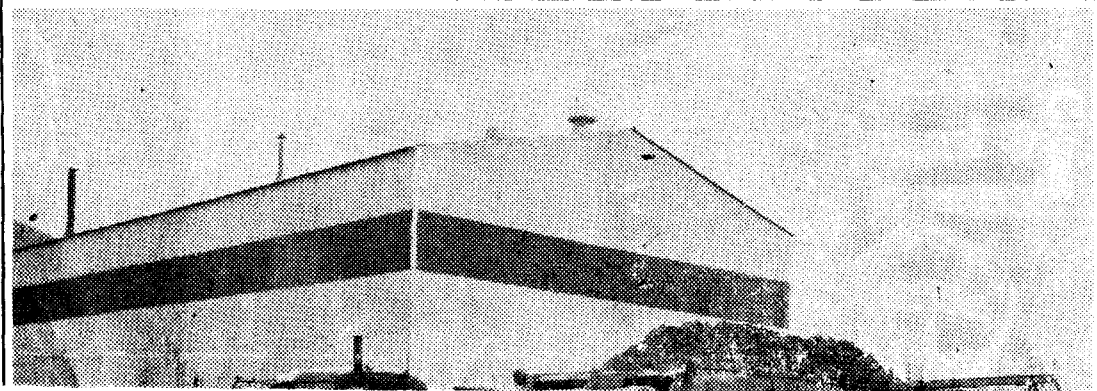
The general geology of the White King area was described in the December, 1958, issue of The Ore-Bin, monthly publication of the Oregon Department of Geology and Mineral Industries. The article, written by Norman V. Peterson, of Grants Pass, geologist for the department who has undertaken an intensive geological study of the Lakeview uranium area, stated.

"All rocks exposed in the general area are Tertiary age and consist of a great variety of volcanics. The oldest rocks in the mine area consist of a series of acid to intermediate tuffs, tuff breccias, crystal tuffs and welded tuffs which are promin-



Most White King ore for the uranium reduction plant has, until recently, come from underground. This group of miners is shown checking a carload of ore, at the 6130 station, for radioactivity to check its content of uranium oxide. A recent change

in Lakeview Mining Company's ore production program discontinued the underground mining in favor of an open pit operation. Left to right are W. E. Carnell, mine shift boss; Leroy Breshears, trammer; J. L. Shelton, miner; W. A. Ferguson, shift boss.



White King Uranium

ing power and its radioactive isotopes have put seven league boots on scientific and medical research.

Early arrivals in Oregon and Lake county, intent as they were on gold or silver, would not have recognized the uranium ores nor would they have paid them any attention. Most likely they didn't even know the name, Uranium.

Today, Lake county's uranium deposits are producing the ore, and Lakeview Mining Company's reduction plant is producing the oxide to be turned into uranium metal for the nation's stockpile of peace power. And certainly the hope of all is that this uranium will be used entirely for the greater benefit of mankind.

DISCOVERY

Uranium in Lake county was discovered in the spring of 1955 by Don and Irma Tracy. Joining forces Leehmann Sr. and Jr., the with John and Wayland Roush and with Walter partnership leased their White King properties to Thornburg Brothers, of Grand Junction, Colo., and associates. Dr. Garth Thornburg and his brother, Vance, together with the Richardson-Bass partnership of Fort Worth, Tex., and the Murchison Trusts, of Dallas, Tex., formed the Lakeview Mining Company to explore and develop the White King and other leased properties here. One of these was the Lucky Lass, discovered shortly after the White King by Don Lindsey, Bob Adams Jr., Choc Shelton and Clair Smith. The Lakeview Mining Company owners also own the Gunnison Mining Company, at Gunnison, Colo., which has a uranium reduction

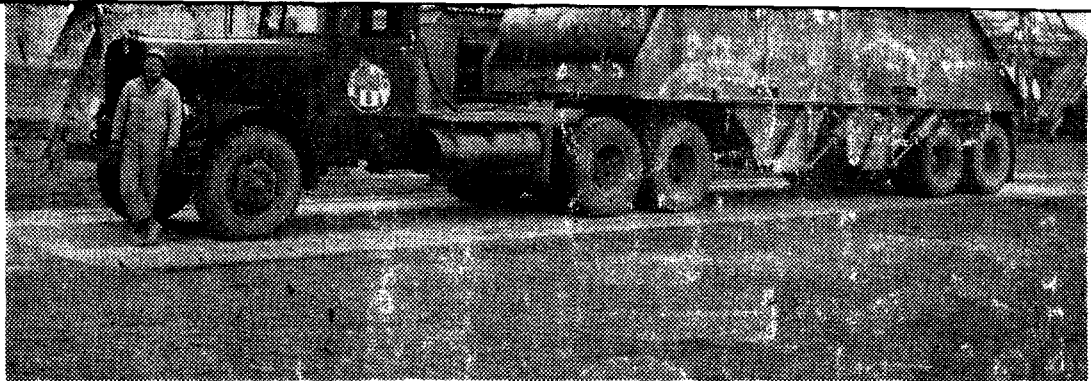
plant. The plant is situated in the north-trending with steep north-east-facing fault scarps. A fossil phinoceros tooth found in this sequence in the summer of 1958 has been identified as being of early Miocene age. These tuffs are overlain by less indurated agglomerates, clayey tuffs and a thick section of tuffaceous lake beds. The younger, less indurated tuffs are in turn usually covered by thin to thick olivine basalt flows. The tuffs and basalt have been intruded by glassy flow-banded rhyolite.

"Except for a small amount of commercial-grade material containing secondary minerals in the oxidized zone near the surface, all of the ore is found in a roughly rectangular area about 400 feet wide and 1200 feet long. Ore bodies are roughly tabular and extend downward and eastward from the original discovery point.

"The mineralization appears to be directly related to the intrusive rhyolite, and localization of the mineralization is the result of faulting. The mineralization is found in a host of younger tuffs and agglomerate surrounded on all sides by down-faulted basalt flows. A variety of minerals indicates the possibility of at least two periods of mineralization. The earlier mineralization period contains low temperature minerals such as cinnabar, realgar, stibnite and opal. A suite of medium-temperature minerals including sooty pitchblende, coffinite, galena, pyrite and jordisite is believed to have originated at some later time."

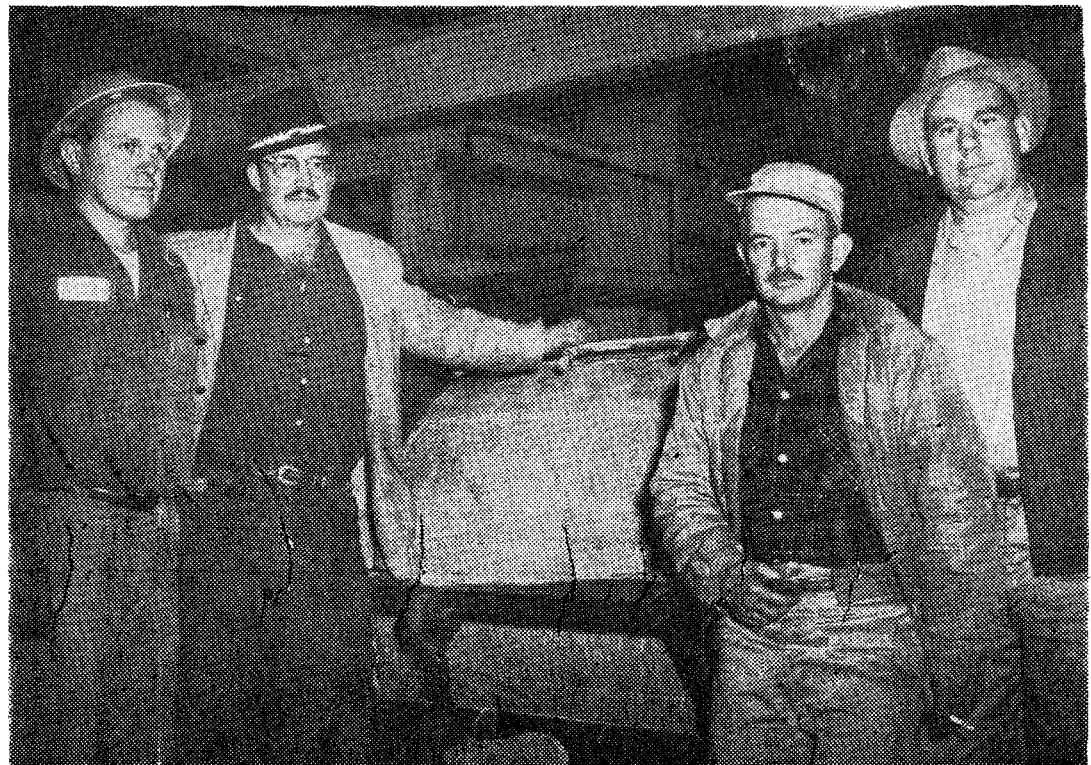
EXPLORATION

Signing of the White King, Lucky Lass and other leases (Continued on Page 10)



The Lakeview Logging Company, under contract, hauls the ore from the mine to the reduction plant, using this specially built all-steel ore bed which averages 55 tons per load. It has brought in 60 tons in one load, and the overall weight of truck

and ore runs up to 80 and 85 tons. The haul is made over roads built and owned by the logging company. Shown with the truck, here parked on the 100-ton scales at the plant, is Lew Holland, driver.



THE REDUCTION process had completed the circuits in Mid-December when this picture was taken at the yellow cake filter. Left to right are C. Oliver Hower, plant sup-

erintendent; Dr. Garth Thornburg, president; Burr Johnson, construction superintendent; and James F. Poulos, general manager. (Bennett Photo)

Thickener Tanks

One of the many processes to which the ore is subjected in extracting its uranium oxide, takes place in the six huge thickener tanks, located outside the reduction plant. Before reaching this stage, the uranium has been taken into solution by sulphuric acid, and in these tanks the liquid with its load of uranium is separated from the remaining solids. The loaded liquor goes back into the plant where a kerosene-amine solution extracts the uranium from the sulphuric, a sodium carbonate solution strips the uranium from the kerosene, caustic soda and more sulphuric precipitate the oxide from the carbonate. The resulting yellowcake is then dried, ground to powder, and packaged for shipment to the AEC. The whole process, from the time ore enters the plant until the yellowcake emerges, takes about three days.

Uranium

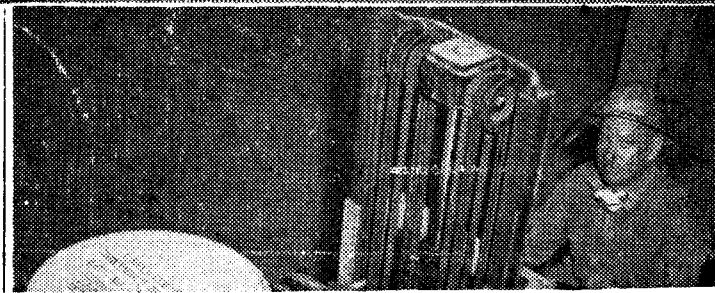
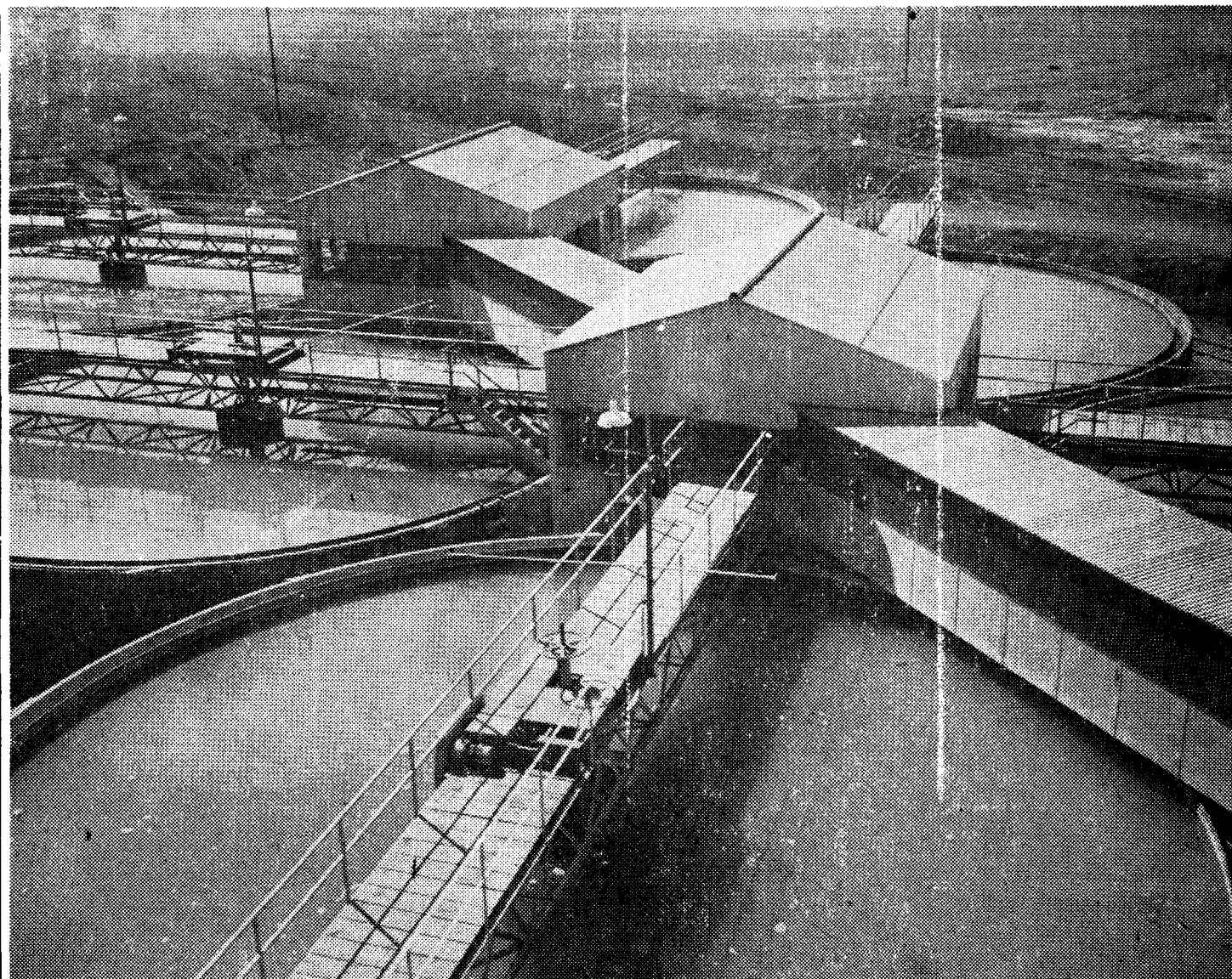
(Continued from Page 7)

by the Lakeview Mining Company. Thornburg, Bros. start of extensive exploration in the area signaled the drill rigs and drillers were brought from their Colorado and Arizona fields to begin the business of looking underground, and core drilling went forward throughout the winter of 1955 and the following year. The truck-mounted Sullivan rotary drills explored the findings of geologists, and in 1956 the company went to Texas and bought a large Mayhew 2000 rig to sink 14-inch holes as deep as 1700 feet. All drill holes totaling upwards of

early this month the decision was made to abandon all underground mining, turning the entire White King operation to open pit. On April 12 a contract for stripping and open pit mining was signed with Isbell Construction Company, of Reno, and on April 13 underground ore production was

away the uranium. The kerosene, or solvent organic, is then circulated through sodium carbonate which in turn takes the uranium into solution, leaving the organic to be re-circulated.

The final chemical step is the precipitation of the uranium from the carbonate which is done in two batch



125,000 feet, were probed for mineral presence, and cores were systematically checked with Geiger counters.

The first White King shaft was started in 1956, a two-compartment shaft with stations at the 70, 160 and 260 foot levels. Drifts, rises and other exploratory underground works have totaled more than 4000 feet, and in addition to the exploration feature of the No. 1 shaft and its companion works, all White King ore production until recently has come from there.

DEVELOPMENT

The No. 1 shaft was sunk for two main purposes, exploration to prove the results of the core drilling and to secure ore for amenability tests to determine what type of reduction plant would be built. Ore recovered during this work was stockpiled against the day a reduction plant would be in operation; but the company knew that once the plant was working, production from the small shaft would have to be supplemented by ore from another shaft or source.

So in June, 1958, with the plant construction well under way, work was started in sinking a 7 by 18 foot, three-compartment shaft. With a 96-foot, all-steel headframe and double-drum electric hoist, this shaft was intended for a depth of 700 feet with five working stations.

Underground mining problems made slow work of the No. 2 shaft, and production from the No. 1 fell far short of supplying the 300-tons per day needed at the plant. So in March of this year an open pit operation was started to augment production from the small shaft, and

ceased, starting the salvage of equipment and machines used in the underground works.

Underground mining at the White King was by stope development, with square sets and sand backfill. A new method of introducing sand into the stopes for backfilling was developed by the company, with eight-inch drill holes sunk from the surface to the filling area. The sand, from a nearby deposit, was fed into the holes by slushers, and in the mined-out stopes it was spread by slushers and air blast.

Investment in exploration and development has totaled some \$3,000,000.

The ore is hauled to the mill by the Lakeview Logging Company, under contract, a job for which the logging firm had a special body constructed for one of its huge Kenworth logging trucks. This outfit hauls about 55 tons at a time (a load has totaled 60 tons) and the gross weight of truck and ore is usually 75 to 80 tons.

MILL CIRCUITS

The reduction plant uses the acid leach and solvent extraction processes. Ground finely in the rod mill and ball mill, the pulp goes first into the eight leach tanks where the uranium oxide is oxidized by sodium chlorate and leached from the ground ore by sulphuric acid. Next it goes to the six outdoor wooden thickener tanks where separation of the solids and aqueous liquor is achieved. The solids are pumped to tailing ponds, and the liquor returns inside the mill where it is first clarified in a filter then is circulated through a solution of kerosene and amine, the latter taking

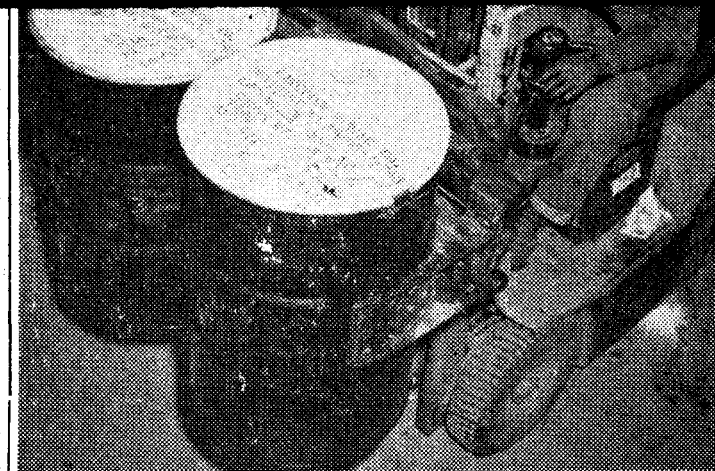
tanks by sulphuric acid and caustic soda. The resulting yellowcake is settled out in a conical-bottom thickener tank, from where it is pumped to a filter before dropping into a large dryer, for which heat is supplied by steam and batteries of heat lamps.

The dried yellowcake is ground in a hammermill, then drops into 55-gallon drums in which it is packaged for shipment to the AEC at Grand Junction, Colo. The reduction process, from the time the ore enters the mill until the yellowcake emerges, takes about three days.

At all stages throughout the milling process, tests are made in the company's complete laboratory at the plant site. Technicians work around the clock to make sure that all processes secure the correct results, plus carrying out extensive research to improve on the processes wherever possible.

With Dr. Thornburg as company president, officials of the Lakeview Mining Company are James F. Poulos, general manager; Howard Dutro, chief geologist and assistant general manager; Kenneth Kutz, mining superintendent; Carroll Flick, assistant mining superintendent; John Vecchies, assistant plant superintendent; Dale Cutting, chief chemist; Hugh Stapleton, office manager.

Of the more than \$6,000,000 so far invested by the company in plant construction and in mine exploration and development, most was furnished by a loan from the Chase Manhattan Bank, of New York City, in which the First National Bank of Oregon, with a branch at Lakeview, participated.



The final product at the reduction plant, U 308 or uranium oxide which is called yellowcake, is packaged in 55-gallon drums for shipment to the Atomic Energy Commission's field office at Grand Junction, Colo. Here two of the filled drums are moved to storage by D. E. McPherson, plant safety engineer and warehouseman.

Geology Dept. Reports On Preliminary Study Of Area

A report on the 1958 field study of the Lakeview uranium area appears in the February, 1959, issue of the Ore-Bin, monthly publication of the Oregon Department of Geology and Mineral Industries.

The report was written by Norman V. Peterson, field geologist for the department stationed at Grants Pass, who made the study last summer. The account is accompanied by a geologic map of the area made by Peterson from his field notes and studies.

The report is part of the department's continuing uranium project intended both to enlighten and encourage the uranium prospector and to obtain basic stratigraphic information in areas of mineral significance that may lead to additional mineral

discoveries. The study area, starting with the White King and Lucky Lass properties, Oregon's only commercial uranium discoveries to date, covers about 140 square miles in Townships 37, 38 and 39 South, and Ranges 18, 19 and 20 East.

The maps detail the area's principal faults and geologic formations, the latter ranging from alluvium of the Pleistocene and Recent ages to the older tuffs of the Miocene.

The geologist adds: "After determining favorable geological locations, there are many geochemical prospecting methods such as soil sampling and testing of ground water or surface stream waters that may lead to the discovery of concealed deposits."

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State Department of Geology and Mineral Industries

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702 Woodlark Building
Portland 5, Oregon

Preliminary Report:

STATE DEPT. OF GEOLOGY
& MINERAL INDS.

WHITE KING URANIUM CLAIM

Lake County

Locators: John and Wayland Roush, Don & Irma Tracey, and Walter Lehman Jr. & Sr., all of Lakeview, Oregon.

Location: T. 37 S., R. 19 E., sec. 30. Lake County, Oregon.

Geology: The main pit is located in a bed of opalized tuff or rhyolite which shows definite flow structure. The flow structure forms a small anticline in the west face of the pit, trend of the fold being about N. 50° E. This structure can be traced for about 125 feet along the surface. The rock on each side of the pit shows varying degrees of alteration; some opaline and some weathering of the tuffs to clay. These rocks are tuffs and rhyolites (?). They are exposed in dozer cuts as narrow bands trending about the same as the mineralized structure. None of these rocks show the flow structure as does the tuff in the pit.

A general reconnaissance to the W. & SW. up the low hill shows a vesicular lava (andesite or basalt) with elongated gas holes. The rock is very fine-grained and dark gray. In other sections of the country this bed is underlain by an extensive tuff bed. This bed may be present in a thin layer. It is probable that the andesite unconformably overlays the rock of the White King pit. On the Thomas-Augur Creek drainage divides, a dacite porphyry overlays the andesite, probably nearly conformably. From the brief examination of the regional geology, it is believed that the White King pit lies in an older acid volcanic complex mapped by Waring (1908) in other parts of Lake County. These rocks are overlain by basic lavas and tuffs of Miocene age (Waring) and later basaltic

Pleistocene lavas. Much more work will be needed to validate these conclusions.

Mineralization: A greenish-yellow mineral coats tight fractures in a silicified tuff showing remnant flow structure. The fractures also show some opal along them making at least two stages of silicification of the rock. The first stage, completely altering the bed is characterized by a hard, "flinty" appearance. A thin fracture filling of opaline material coats fractures and this is coated with autunite (?). In some samples the later opaline material does not appear to be present.

Autunite (?) is accompanied by sparse realgar, orpiment and cinabar. The relations between these minerals and the autunite (?) has not been found.

This assemblage is typically low-temperature, low-pressure. The sequence has not been determined.

The area has copious amounts of ground water. A hole drilled 4' into altered volcanic rock near the White King pit encountered water. The rocks as they are uncovered near the surface are usually very wet to damp. Elsewhere in the region, springs are present, the water evidently flowing between volcanic beds. The White King, therefore must be very near the present water table (July 23).

Elsewhere, near the main pit, a white, hard silicified tuff has a green mineral on fracture planes and filling small openings. The mineral does not have the yellowish cast of the mineral in the pit and is not so strongly fluorescent. About 100 feet NW from the main pit, autunite (?) fills fractures in a clayey tuff. This mineralization is exposed in a dozer cut.

- 3 -

Conclusions: The silicified tuff bed is the most important so far as present development shows. A very slight anomaly can be discerned with scintillation detectors even in the marshy area of the creek bed 125 feet NE of the pit, along the strike of the mineralized layer. It is probable that uranium deposition occurs more extensively along this mineralized layer than has yet been uncovered. The exposed layer is about 200 feet long. This entire length shows an appreciable radioactive anomaly. At the lower end (NE) it is covered by the stream deposits of Augur Creek and at the upper end by later lava flows. The mineralization is along tight fractures and is sometimes intimately associated with opaline material and cinnabar, realgar and orpiment, the whole being typical of an epithermal mineral assemblage.

Large amounts of ground water are present and may be originating from the contact of steeply dipping beds under the later basic flows or may be confined to the dipping layer drilled. This narrow layer is about 30 feet to the NW of the mineralized layer. The first conclusion is favored. Hence the water table is very near the mineralization in the pit. Four-foot holes in the pit are very radioactive. These holes must be near the top of the water table. Hence the presence of the water table may not have any immediate effect on the character of the mineralization.

A sample of ore from the pit after exposure to air for several hours, turned partly reddish from oxidation of Fe. This phenomena might indicate the presence of similar chemical conditions for considerable depth along the dip of the altered bed.

The mineralization appears to be hydrothermal in origin. There may have been some transportation of the uranium minerals, and probably some

alteration (oxidation) from the original state. If this conclusion is true, the ore may extend to considerable depth. There are several arguments against this.

Recommendations: Development work to delineate the extent of the deposit is the prime consideration. Test pits or trenches should cut the main pit structure at right angles to the strike. Other areas of high radioactivity should be investigated to determine extent and grade of ore with the purpose being to tie the whole group of occurrences together geologically.

Depth may have to be explored by drilling methods. Coring bits would give more information, and it is possible that diamond bits may be necessary to drill the formations present.

Much development work can be done before the lateral and vertical depth of the deposit is fully explored.

Assays: Picked high-grade sample from Roush main pit (P-18562) assayed .548% U_3O_8 ; a 12' channel sample from Roush main pit (P-18563) assayed .458% U_3O_8 .

Visited: July 20-23, 1955 by Max Schafer; F. W. Libbey & H. M. Dole 7-23-55.

Report by: Max Schafer, Aug. 11, 1955.

* * * * *

GEOLOGY OF THE LAKEVIEW, OREGON URANIUM AREA

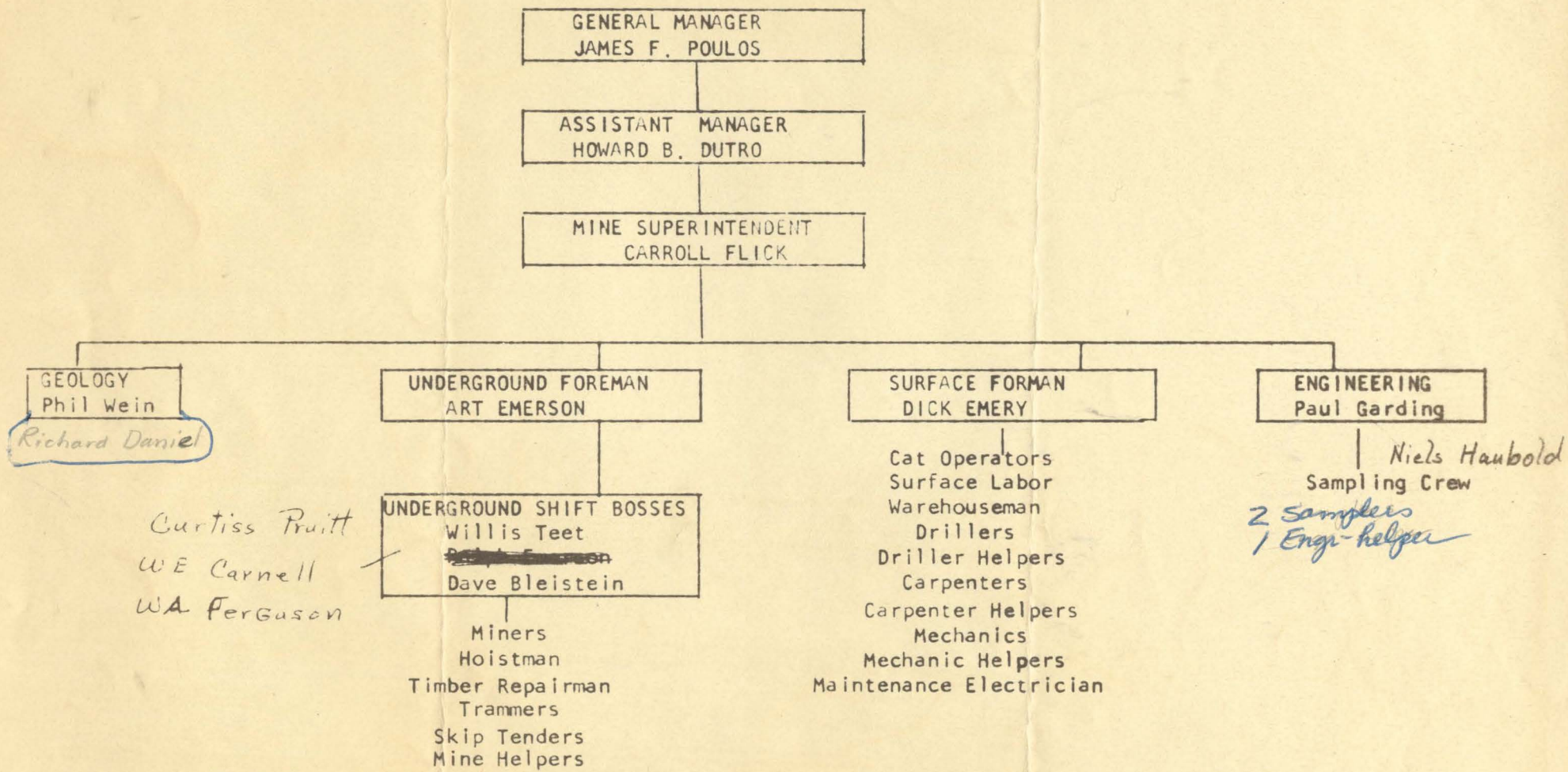
Abstract

Economic occurrences of uranium were discovered near Lakeview in southwestern Lake County, Oregon in 1955. As a part of a continuing uranium project the Oregon State Department of Geology and Mineral Industries has conducted reconnaissance and semi-detailed mapping in the vicinity of the White King and Lucky Lass deposits and the mapping has been extended in all directions to cover an area of about 150 square miles. The Lakeview uranium area is in the southern part of the Fremont Mountains and just west of the northern part of the Goose Lake Valley.

The rocks in the area are all of volcanic origin and range in age from Tertiary to Quaternary. A series of older tuffs and tuff breccias overlain by less indurated agglomerates, tuffs, and lake beds are capped by flows of olivine basalt. Intrusive rocks include plugs and dikes of glassy rhyolite and dikes and sills of basalt.

A northwest and northeast trending fault pattern is the dominant structural feature and controls both the topography and drainage. A broad northwest trending anticlinal fold is also present.

Black uranium oxides (uraninite, sooty pitchblende) occur with realgar, stibnite, pyrite, cinnabar, molybdenite, galena and chalcedony at the White King Mine. Meta-heinrichite, a barium uranium arsenate, and other yellow secondary minerals are found at the White King and other deposits in the area. The epithermal mineralization including widespread kaolinization and silicification is associated with a dike of glassy flow banded rhyolite at the White King Mine.



MINE ORGANIZATION CHART
September 3, 1958

Mine

6 to 8 ft of snow
in summer

Gen. Mgr - Jimmy Tolous
Asst. Gen. Mgr - Howard Dutto
Mine Supt - Carroll Glisk

Crew buses - 3 buses
no bunks 3 shifts

Geology	Underground	Surface	Engineering
Phil Wein	Art Emerson	Dick Emery	Paul Garding
Dick Daniel		2 samplers	Niel Harbold
		1 engineer, asst	

3 shifts 6 days

One being mined at 100 tpd

probe longholes 30' in face - 1 foot intervals
scan face - Geiger
scan truck - Geiger
channel sample each face each round

Spray can - marks
"ore" or "waste" at
face

Binary scales - chem analysis at interval
5 minute count - correction factor for equilibrium
6130 level to connect with 2 shaft

3 Sullivan 4 1/2" Truck Mounted Rotam
1 Mayhew 2000 - 6-8" tri-cone bits

100 to 125,000' of drilling - vertical holes - 250 holes
500' ave.

faces are drilled and blasted - normal method
some ^{soft} ground enables the use of spade type bit on the air leg drills

Mill Supt. - C. Olive, Hower
Asst. - John Vecchies
Chief Chemist - Dale Cutting
- Mike -

Maint. Supt. - Al Segard
Sonora California
30,000 tons

Employees - 35 - 10 days on & off. White King Data

Will buy Amenable ore - 30% of Capacity

Mt. grade .25 - check this

Cannot exclude any body. If there are many - each
shall have 5% of the 30% capacity!

Will be about 6 weeks before first yellow cake is
produced - Mg U₂O₇ - Yellow Cake must be above 75%
- This will be about 8% \rightarrow U₃O₈

Mill capacity = 500 tpd. (?) Contract call for 210 tpd. Will run 300 tpd. Slays
Lakeview Mining Co. Oregon Corporation. 4 people

Recovery of U₃O₈ will approximate 90%

Water Supply - Deep Well - hot water - 90°

Chemicals used:

H₂SO₄ - 80 #/ton

Na chlorate - 5 #/ton

Flocculating agent - .75 lb/ton

Na₂CO₃ 10 lb/ton

MgO - .1 lb/ton

Small amt kerosene - intrinsic ment 105°

lauryl-amine

lauryl amine - \$400.00 per 50 gal. drum.

Water use - 100 gal/min to feeding pans.

5% - 95%

Heinrichite, $\text{Ba}(\text{VO}_2)_2(\text{AsO}_4)_2 \cdot 10-12\text{H}_2\text{O}$ and metaheinrichite $\text{Ba}(\text{VO}_2)_2(\text{AsO}_4)_2 \cdot 8\text{H}_2\text{O}$, occur as tabular, yellow to green, fluorescent, transparent to translucent crystals belonging in the tetragonal system. Optically the minerals are uniaxial (-), sometimes anomalously biaxial with a $2V$ up to 20° . The refractive indices of heinrichite are: $\omega = 1.605 \pm .002$ and $\epsilon = 1.573 \pm .002$. Those for metaheinrichite are: $\omega = 1.637 \pm .001$ and $\epsilon = 1.609 \pm 0.002$. The calculated specific gravity of metaheinrichite is 4.09 and measured g is 4.04. The space group of metaheinrichite is $P4_2$, $P4_2M$, or $P4_222$; $a_0 = 7.07 \text{ \AA}$, $c_0 = 17.74 \text{ \AA}$, and $a_0:c_0 = 1:2.509$, $Z = 2$.

The minerals have thus far been found near Lakeview, Oregon and in the Black Forest of Germany. They are named for Professor E. William Heinrich, University of Michigan.

Optics

Metaheinrichite

Tabular {001}

Cleavage perfect on {001} and distinct on {100}. ∇

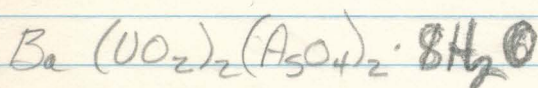
Pleochroism - yellow to colorless.

$\omega = 1.637$ pale yellow

$\epsilon = 1.609$ colorless

Uniaxial (-) sometimes anomalously biaxial with $2V$ up to 10° .

Formula



Physical properties.

Transparent to Translucent

yellow to green

vitreous to pearly luster

fluoresce bright green to yellow green

Tabular {001} up to 1 mm on a side

not more than .1 mm thick.

Cleavage perfect on {001} and

distinct on {100}. The forms

observed are {001}, {100}, and

{110}.

Hardness = 2.5

$G = 4.04$



White King Mine file

State of Oregon Department of Geology and Mineral Industries
1069 State Office Building, Portland, Oregon 97201

AGG-14 Sb, Mo, U
AGG-15 Sb.

REQUEST FOR SAMPLE INFORMATION

Date: June 22, 1972 Sec. _____ Twp. _____ R. _____ County: Lake County
(For your records)

Please print name and address in space below

Norman V. Peterson
P.O. Box 417
Grants Pass, Oregon 97526

A copy of the law governing this service is printed on the back of this sheet. Please fill out this form in triplicate and submit with your sample and analysis fee. One copy will be returned with the results entered in the space below.

Customer's Sample No.	Assay for	(for your records, if desired)		
		Grab	Channel (length)	Source of Sample
AGG-14	Sb, Mo, U	X		Hole X-4 325' depth
AGG-15	Sb	X		Hole X-4 390' depth

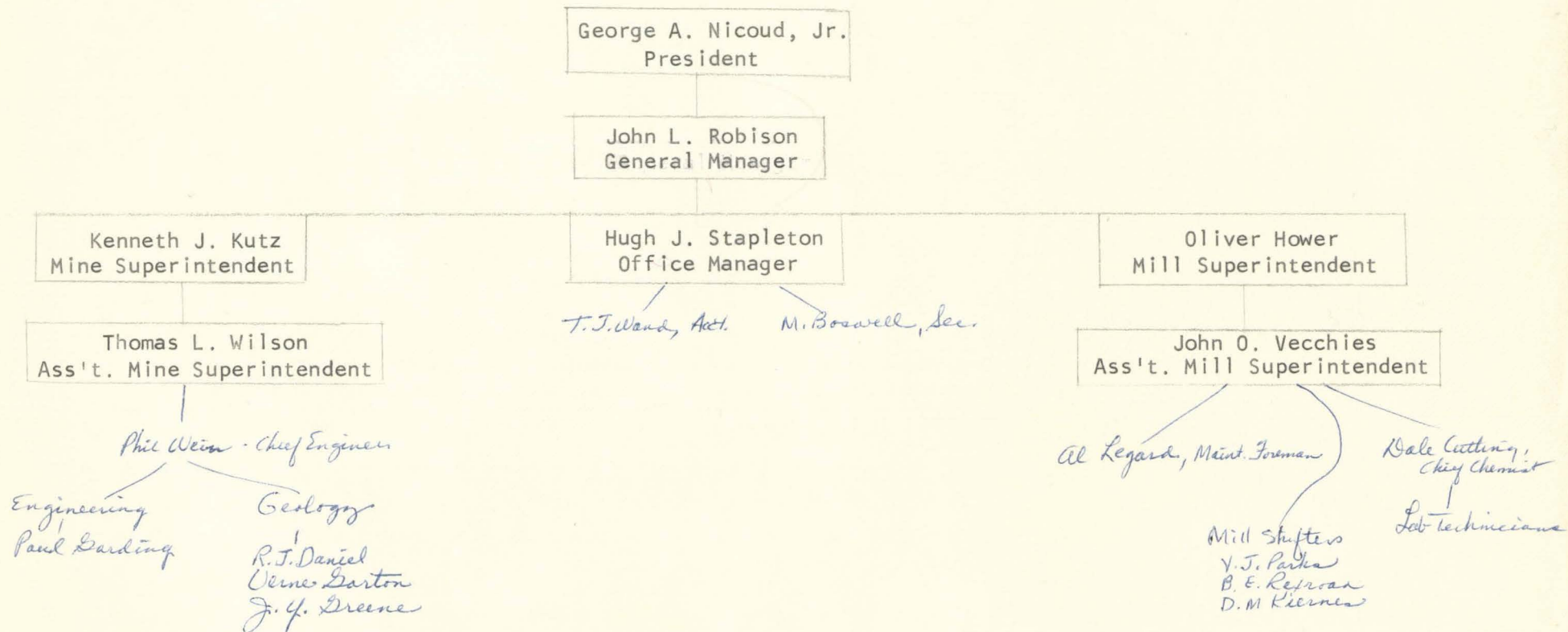
Samples should weigh at least one pound and be dry. Fee for analysis must accompany sample.
Date Rec'd: _____ Amount Rec'd: _____ Analysis Mailed: _____

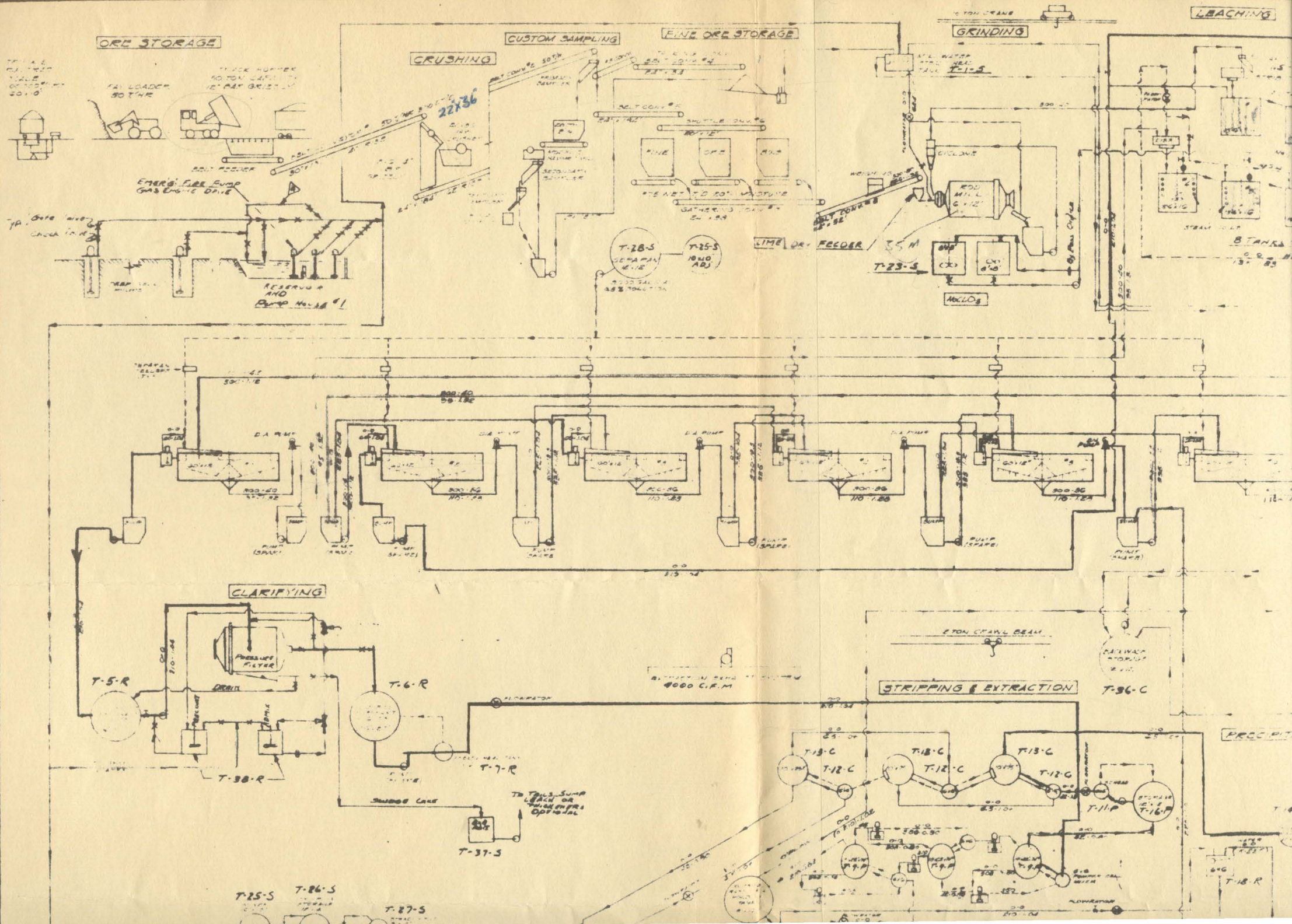
Lab. No.	Cust. No.	Gold oz/ton	Silver oz/ton	Molybdenum	Antimony	Uranium
P 38252	AGG 14			0.1%	1.00%	Nil
P 38253	AGG 15			Nil	1.74%	Nil

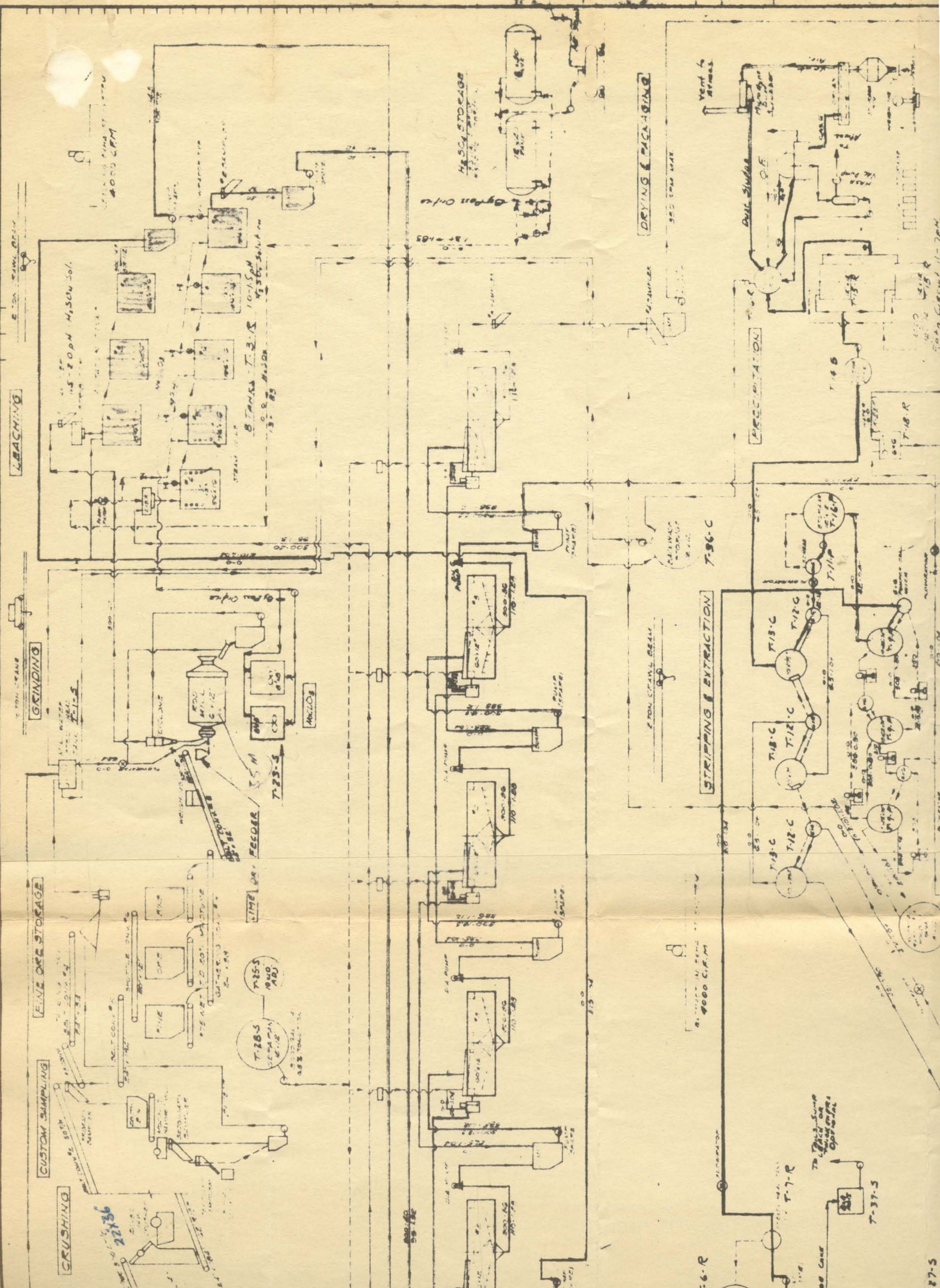
NOTE: The Department assumes responsibility only for the analytical results and not for the validity of any samples submitted.

Analyzed by L. C. Hoagland

ORGANIZATION CHART







Pumice tufts - 175' from east end - strike $N70^{\circ}W$ - dip $40^{\circ}SW$.

230' from east end to drill holes.

30' wide from east end to 230'

west end pit is 75' - 80' wide - face trends $N55^{\circ}W$ -

rather arcuate - fault zone at face - west up - east down.

70' from west end to drill holes - water source -

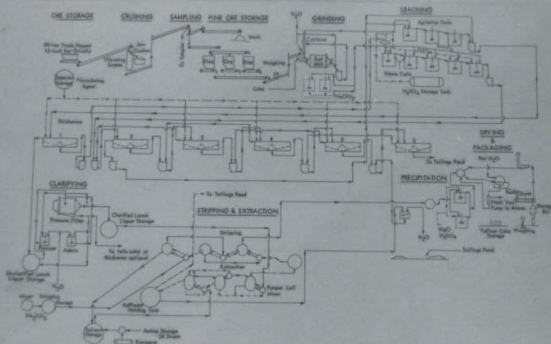
dozer cut 30' wide - from west end 55' to 85' - trend $N40^{\circ}W$.

70' from west end face to
drill holes.

along north side - large
cut from ^{30' wide} 55' west end to 85'
west end trend $N40^{\circ}W$

Main cut trends $N25^{\circ}E$

LAKEVIEW MINING COMPANY URANIUM MILL SIMPLIFIED FLOW SHEET





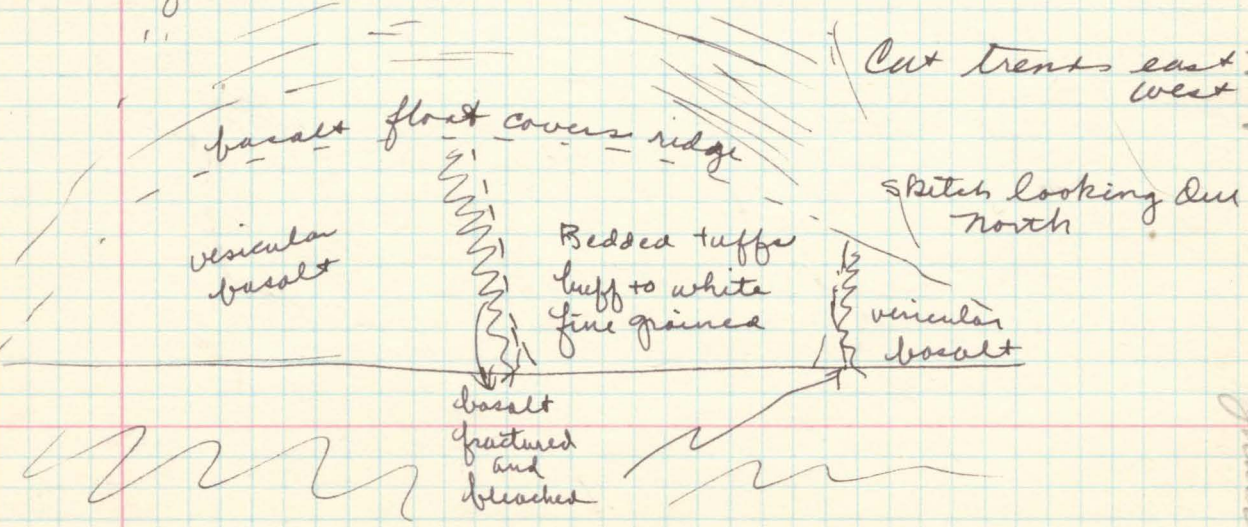






#5 Claim - Pic 1 owned by Jim Myers

Development - One Bulldozer cut 25' long 10' wide and about 10 feet of bedrock is exposed. at the east end of the cut there are about 12 feet of bedded tuffs exposed between vesicular basalt - The basalt is somewhat bleached near the contact. Presuming that the tuffs are older they would represent a ~~fault~~ horst (?) This is rather a small scale feature but it has also been found at prospect #2.



68.9 - Applegate - Thompson Creek Junction

- 1 White King
 - 2 Lucky Lass
 - 3 Lucky Day 00
 - 4 Marty K
 - 5 Big Enough
 - 6 Pie 1 - Hammersley
-

- ✓ Location
- ✓ Date of Discovery
- ✓ Period or Periods when actively
- ✓ operated - by whom
- ✓ ~~Amt of production~~ Present Status
- Development - Condition of pit
- Est. of Reserves

Geology

Nature of ore-body rocks

Struct or Strat.

ore-minerals if any

Est. future potential

P. J. J. J.

Bill Sloan
~~Terry Vance~~
~~Craig Lathrop~~ }
Photos — Roll #1

#1-4 Cinder Pit at Buckeye Butte
1 mi W. of Diamond Lake Junction. —

#5 - Lump pumice - Chemult
Gr. Sub. —

#6 Old pumice pit at Pannina

#7 .

#8 Hole - in the ground. —

Roll #2

Ash Flow Tuff - N side Dry creek
#4

#5 Ash flow tuff - Embury Flat road

#6 Hager Mt

#7 Hager Mt.

Roll #3

1, 2, 3 & Silver Lake Graben

Slide Mt - Landslide topog.

6, 7, 8 - Diorite at Paisley

40

N 15° E fault - west side up - east side down (?)

White King Shale - Strong NE trending fault. trend N 10° - 15° E
fault breccia & gouge 50' to 75' wide & rocks to west of fault
are - tuff breccia - agglomerate - brown fine grained material
with large frags & small lapilli size of all varieties
& colors of rock - called in White King Pit - Xmas tree aggr.

fine-grained silicified flow breccia rhyolite mass trend
N 45° W and is exposed in pit wall but does not reach
the surface. on the SW edge etc - the rhyolite is a
dark bluish gray - contains common to abundant realgar
and orpiment - moly - blue stain at water line.

The NE-trending fault gouge contains pyrite-moly
sulfides and arsenic sulfides.

The Rhyolite intrusive mass appears to be later than
the NE-trending fault as it is not cut off by the
fault at least not at the west fault plane.

Questions to ask Lakeview Mining Co.

Total Underground workings - \$000

Reserves? -

Fault Pattern at the mine area? -

Rock Types in the mine area -

Ore Minerals - ~~coffinite, pitchblende~~ - ^{5 pm} Lakeviewite - Autunite, Torbernite

Mining Methods - ~~Top slicing~~ - Square setting

Drilling Footage - about 175,000'

Lucky Lass -

How large? -

promise of more?

Uranium minerals -

Faulting -

Mine Organization -

Mill Organization -

Buying Policy for custom ore!

Employees - 75 at mine.

Water supply -

Friday - June 13 - Leave Grants Pass about 8:30 A.M. - via US 99 - Dead Indian Road - Lake of the Woods - Klamath Falls Dairy - Bonanza (Inspected some road cuts + R.R. cuts for occurrence of Yonna formations) - Quartz Mountain - took a look at the Western Minerals Inc. Mine + mill in the SW 1/4 of sec. 32, T. S., R. E. operated by Loy Matchett, Phil Parks, and G.I. Bryant. Arrive Lakeview about 7:30 P.M. - Stay at the Ball Motel.

Saturday June 14 - Checked in with Leslie Shaw - Editor of the Lake County Examiner - caught up on current activity of interest - next visited the office of the Lakeview Mining Co. to make arrangements to see the White King Mine - Went to the White King and met Phil Wine^{man} #2 geologist and Paul Garding Mining engineer. Inspected the lower levels of the White King - (casually) - checked over some maps of the mine and also looked over the original discovery where secondary mineral still show up. Spent the rest of the afternoon along Thomas Creek ~~and~~ collected a few rock samples.

Sunday June 15 - Church in the A.M. - The afternoon was spent in reconnaissance in the Dog Lake - Drews Reservoir area - The area generally is underlain by massive to well bedded tuffs - some waterlain and capped with a vesicular ~~about~~ lava flows. Dikes and other intrusives are common. also.

Monday - June 16 - Leave Lakeview 7:00 A.M. to meet Tom Day of California Division of Mines at Alturas, Calif. - Day showed me the area to the south and west of Goose Lake - mainly the area called the Devils Garden. We also crossed into Oregon and looked over Yokum Valley, Fall Valley, Young Valley and along Dry Creek. The Dry Creek area appears ~~to be a good one~~ have a variety of pyroclastic rocks as well as volcanic extrusive and intrusive rocks - There are also some sedis. Return to Alturas via Lakeview, New Pine Creek, Davis Creek etc.

Sunday June 29 - Arrive Lakeview 8:45 and contacted Ed Larson
& Bob Lively - made arrangements for meeting on ^{Mon. Morning}

Monday - June 30 - Met with Ed Larson and Bob Lively of Humble Oil
and compared notes on large scale geology of Lake County.
They have many of the same ideas and the same section
except possibly for two ages of massive tuffs.

P.M. With Larson & Lively visited some ^{tuffaceous} sedimentary rocks
in the Elder Creek area - a section of some 300' to 400'
can be seen here - The beds range from fine-grained to
coarse-grained, thin to thick, massive beds. The rock
fragments are in part rounded, part angular - some
fragments are dense, black, vesicular basalt, and all
other pyroclastic frags. 1 bed 20 to 30 feet thick is
made up almost entirely of pumice fragments.

Also on Monday two other Humble geologists arrived -
Dick Bray and Joe Martinez. Wh. are doing Paleo-
magnetic studies on basalts of Albert Rim - Hart Mt.
etc.

Also on Monday contacted Bill E. Bales and
Bill Kohinauer (Sp!) of the AEC - who will be in
the area for the summer.

Tuesday July 1 - Started out at 7:00 A.M. to locate Gerald
Haddock in the field - Did not find him at home left
a note - Took off for Coffeepot Creek to try to find
another section of sed. Tuffs - Got rained out - soaked
in fact.

Returned to Lakeview to find that Haddock had been
here and would return later - spent from 3:00 to 5:00 p.m.
at the SCS scanning aerial photos.

Met with Haddock for dinner and discussed the area -
will get into the field with him later in July.

After dinner through Les Shaw met with Arthur Johnson and
Jack McWhinney in regard to a prospect inspection.

Wednesday, July 2 - With Fred MacWhinney to Horsehead Mountain to inspect Mercury Prospect. 10 claims on the north slope - near the base. The mineralization occurs in a fault zone in which a tuff has been opalized - the cinnabar occurs as fracture fillings and coatings. Assays have shown 12 to 17 lbs/ton. The zone in which cinnabar is found is rather restricted. It occurs in discontinuous veinlets and stringers 4' by 10' - along the strike it is found in other places as part in the opal. The rocks are probably of the Danforth formation - mainly pyroclastics - Pumice tuffs, Tuff breccias, Crystal tuffs, and welded tuffs overlain by acid flow rocks - rhyolite, dacite(?), and andesite with abundant lithophylae.
1 each rattlesnake -

Thursday, July 3 A.M. Road traverse along US 66 mainly in Drews Reservoir section - see notes. Begin traverse at Little Muddy Creek. 2:00 P.M. Start for Grants Pass - for long weekend 4, 5, 6.

Monday - July 7 - Enroute to Lakeview record in Quartz Mt, Drews Gap, Booth State Park, ^{flats} 10 mi W. Lakeview. arrive 6:30 p.m.

Tuesday July 8 - In field early - missed JH so worked in sec. 28, 29 west of Fox flat - Basalt plug(?)

Wednesday - South end of Cox Flat - Northeast slope of ridge bedded tuffaceous sediments - maybe older rocks - found 1 vertebrate tooth in these and 1 possible bone.

Thursday - With J. Saddock ^{west of} upper Cox Flat.

Tuesday - Reconnaissance with Tom Gay (Calif. Bm. of Mine) in the Cedarville, Fort Bidwell, High Grade Mining District, Cowdell Lake, Jandango Pass areas. The two days were spent in going over rock types in the California section in the hope that they can be carried through into Oregon. The pyroclastic rocks or equivalents are definitely across the border and one "diktytaxite" basalt was also recognized. The Dry Creek area ~~rocks~~ rocks especially resemble the rocks across the Lake (Boose Lake) in the Willow Creek area. A small quicksilver prospect was also examined.

Wednesday - Reconnaissance and checking of photogeologic work in the Cottonwood Creek, Selphenstein Creek areas.

Thursday - Check with the Soil Conservation Service and find that complete Aerial coverage is available on Lake County at both 3" to mile and 4" to mile. I will plan to spend some time with them on these photos. Traversed an area from lower Cottonwood Meadow northeast to Thomas Creek - this included walking out a 2 1/2 mile ridge made up of a biotite dacite tuff. ~~Rock~~ trend N35W and dips ? -

Friday - Traverse to NE of Auger Creek Meadow to check on Photogeology - spent all morning up till 1:00 p.m. in the area to the NE of White King Mine. Leave for Grants Pass 2:30 P.M. - Contact Mr. Bob Hunt in Klamath Falls in reference to an inspection of his property south of Quartz Mountain! Arrive Grant Pass 7:30

Monday - In office - office visitor - made arrangements to meet with Roseburg.

Tuesday
Wed Roseburg -
Thurs. A.M. Roseburg -

Friday - In office - Monthly Report's etc.

Outline for Lakeview Area

Since the discovery of the White King Mine in 1955

Location & general description

Introduction - History from discovery to present date

Discovered by - partners

Leased to -

- Systematic development by Lakeview Mining Co.

drilling, underground working etc.

General Geology - Topographic expression - Basin +

Range? Age of the area General stratigraphy

Fault Pattern Structure - Mineralization - Ore Body - Ore Mineral
Controls of mineralization + Periods of mineralization

Mining -

Normal drilling + blasting - spade bits

Probing - scanning - sampling - determine ore or waste

Assaying - Scales - mark faces with paint O-W

Haulage to Mill -

Mill

History

Ore contract - ore in sight from Sonora, Calif.

Size -

operate 10 days on 4 off

Flow sheet

Organization diagrammatic

35 employees

General description of process

History of the Mill

1963 Jan + Feb. Lava Tube project with Jack Green - Derrick Cave

May - USGS trip through central Oregon - Snavely, Elston,
Mazursky, Walker - Ralph Watson GNR

June - mapped surface trace of Derrick Cave

June - Collected 200# of guanine for Hal Mazursky of USGS.

July 10, 11. Tour of volcanic area with representatives of
the Boeing Co.

Aug. 5 Diamond Crater study -

8 Showed Jack Green the Diamond Craters.

9 " " " Standard rock localities

13 Collected the serpentine for the standard
sample - Shipped 40 to 150 lbs of Serpentine

to: Arthur D. Little

Tels Instrument

Acorn Park

P.O. Box 5474

Cambridge, 40, Mass.

Dallas 22, Tex.

Jack Salisbury

AF Cambridge Res. Lab.

Belford, Mass.

Dr. R. Roy

Penn State Univ.

University Park

Phila. Pa.

Aug. 21 Photo flight over Diamond Craters.

Sept. 2 Newberry Volcano recon.

Sept. 5 Crack-in-the-Ground recon.

Oct. 1 Governing Board meets at Bena

Friday June 19 -

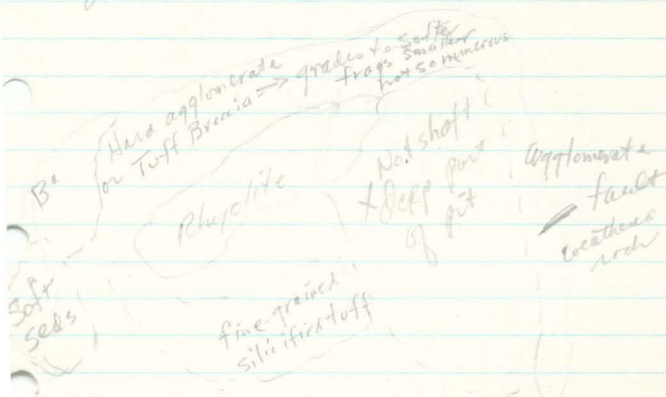
Check in at Lakeview Mining Co. - Has a nice long talk with Howard Butts -

Check with Howard on thin sections - also bring microscope along next time for a few days.

Send Howard address of Von Suenen.

Visit to Lakeview Mine with Phil Wein

New geologist Verne Carson(?)



Discussed the possibility of the agglomerate being an intrusion

breccia with both H.O. and
the vein - found some fragments
of charred wood and this would
eliminate the possible origin
of the breccia as intrusive
probably a type of ash flow

Again in the basaltic dikelet
of the perlite tuff are seen
this is the first time this
has been found at the
White King.

Sum 0 25 50

→ 240' width

150 days
estimate

July 8, 1908

250, 100

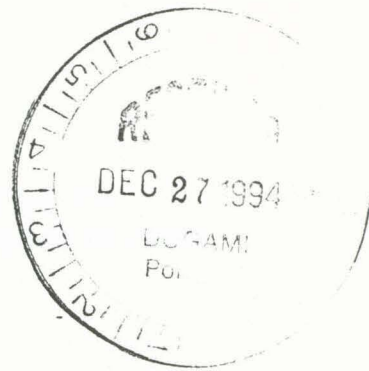
2-5-17

7.5 (N)

Box 5 file 125th
at 25 + 40 = 50

Tom W

White King and Lucky Lass Uranium Mines Cleanup



Update

It is time to provide an update on the cleanup of the White King and Lucky Lass uranium mines on the Fremont National Forest in Lake County, Oregon. Several factors have altered the process the Forest Service is using in the cleanup.

First of all, let's note some of the activities which have occurred or are occurring since the release of the DEIS-RI/FS (Draft Environmental Impact Statement-Remedial Investigation/Feasibility Study):

- The mines site was proposed for listing on the National Priorities List on June 23, 1993. Sites on the list, which is compiled by the U.S. Environmental Protection Agency (EPA), are priorities for long-term remedial evaluation and action due to uncontrolled releases of hazardous substances. Final listing is pending.
- A Memorandum of Agreement between the Forest Service, State of Oregon and EPA was executed in October 1994 to proceed with cleanup of the mines site. Roles of the agencies are still being defined.
- Forest Service contact with potentially responsible parties (PRPs) in an effort to obtain PRP funding and/or performance of cleanup at the site continues.
- Forest Service activities will follow laws and regulations specific to hazardous waste cleanup, more specifically, the amended Comprehensive Environmental Response, Compensation, and Liability Act and the National Contingency Plan. As these provide for a process which is the functional equivalent of the analysis required by the National Environmental Policy Act, including public participation, NEPA documents are not required.

What Is Planned For 1995?

On the ground, the Forest Service's main focus will be conducting cleanup activities at the Lucky Lass Mine. On September 21, Forest Supervisor Chuck Graham authorized the completion of a document called an Engineering Evaluation/Cost Analysis (EE/CA) for a Non-time Critical Removal Action at the Lucky Lass. The Forest Service has contracted with Dames and Moore, Portland, to develop the document. Various approaches for treating the contaminated water and soil at the mine, including a preferred approach, will be included in the document. The document will be available for public review and comment sometime after the first of the year. A notice of availability will be published in local newspapers and will be mailed through the project mailing list.

The Forest Service anticipates additional site investigations will be conducted in order to complete a Remedial Investigation/Feasibility Study.

We Want To Hear From You

The Forest Service is committed to ensuring that the public has input to decisions about cleanup activities and is well-informed about the progress of those activities. We are interested in your concerns and issues and information needs regarding the cleanup and invite your comments on how we can provide opportunities for public participation. We invite your comments by writing to Forest Supervisor, c/o Lakeview Ranger District, HC 64 Box 60, Lakeview, Oregon, 97630. For further information, please contact Norm Day, Acting Project Manager, R6 Regional Office, Portland, at 503-326-2921 or Janine Cannon, Environmental Coordinator, Lakeview Ranger District, at 503-947-3334.

Drill Hole #17
White King Mine

S₆₀W₁₄ NE₁₄ Sec. 30, T35S, R.19E.

Drilled by Western Nuclear in
1969/71

15.4m 50

Layered pumiceous tuffs & tuff breccias
part waterlain, part airlain, lapilli tuff
layers, yellow waxy clays present.

Some conglomerate or agglomerate present

25m 82

appreciable amount of core missing
80-100' clayey tuffs

some fractures & slickensides
present throughout.

Some iron-min staining,

37.3 122

gray lapilli tuff
light weight & punky

49.6 162

61.9 202

clayey-iron stained
tuff breccia

clayey-altered
tuff & tuff breccia

yellow iron clay

bas. vesicular at top

slightly altered basalt lava flow -
massive at 241' yellow green clay
and gelidite alteration common.

74.2 242

ves. zone, maybe base of flow

greenish clay & carbonate coatings
more clay at base

86.5 282

greenish clay + carbonate coatings
 more abundant
 slight to moderate fracturing
 moderate to heavy alteration
 reddish-black altered vesicular bas.
 in part flow breccia - blue-green
 clay coatings, siderite in vesicles
 olivine altered to iddingsite
 more massive gray-brown altered
 basalt, brown clay, siderite abundant
 more massive less altered phase
 of the above bas. - on fresh break
 rock appears black + fresh - medium
 grained olivine basalt. A thin section
 from here would be good.
 slightly more altered than above.
 vesicular to scoriaceous zone of breccia
 to agglutinate reddish-brown color.
 more greenish clay in this zone.
 breccia zone may be flow breccia - core
 considerably broken.

98.8 322

grades into more massive phase
 may still be flow breccia with
 fractures.
 same as above but appears
 somewhat fresher,
 rock changing color to gray.
 brownish to black.

111.1 362

rock appears fresher
 fine grained, minor alteration
 vesicles partly to filled with
 carbonate - siderite (?)

123.4 402

color changes to reddish in more
 vesicular zone - maybe flow breccia
 same alteration product, green clay,
 some silica coatings, carbonate fillings

135.7 442

grades from vesicular to more massive
 red brown + gray color - maybe
 flow breccia - same alteration product
 abrupt change to massive tan buff breccia
 purple fragments up to 1" may be clastic explos.
 we like. No alteration.
 Dark gray fractured basalt as above, clay
 alteration heavy fresh break shows black color
 tan tuffaceous siltstone, thinly laminated,
 probably fine grained lake sed. some fracturing +
 black frag. + blebs may be carb. concretions.
 detected of purple tuff breccia.
 abrupt contact with fractured, iron-stained,
 vesicular basalt, dirty texture, brown clay coat.
 fracture, brownish carbonate vesicle fillings.

148 482

Same as above vesicular zone alternating
 with less vesicular zones + breccia, brown flint,
 clay abundant

135.7

433

437

442

457

148

482

503

160.3

522

172.6

562

175m

575

T.D. 580

abrupt change to massive tan tuff breccia,
perlite fragments up to 1" maybe clastic ex-
posed. No alteration.
Dark gray fractured basalt as above, clay
alter. ~~basalt, fresh, black, ch.~~ black color
tan tuffaceous siltstone, thinly laminated,
probably fine grained, some fractures +
clastic fragments. blue-gray clay + silt. + quartz.
black frag. + black may be carbonaceous.
breccia of perlite tuff breccia.
Abrupt contact with fractured, iron-stained,
vesicular basalt, dirty texture, brown clay coat
fracture, brownish carbonate vesicle fillings.

Same as above, vesicular zones alternating
with less vesicular zones + breccia, brown flint,
clay abundant

altered vesicular basalt, moderately fractured
same alteration as above.

Contact with a gray pumiceous tuff
some frag coated with thin carbonate film

yellow-brown perlite tuff breccia
fine grained clayey, tuffaceous - thin layers

Coarse perlite tuff breccia - clastic dikes?

Clayey, tuffaceous silt, grading from coarse
to siltstone.

gray to brownish lapilli tuff
attined to clay, Fe stain in frag.

grades quickly to light gray ash flow tuff
pumice clast + crystal common to abundant.

Core samples described 6/27/72 N.D. Peterson
Grant Pass office
Oregon State Dept of Geology

CRIB MINERAL RESOURCES FILE 12

RECORD IDENTIFICATION

RECORD NO..... W017078
 RECORD TYPE..... X1M
 MAP CODE NO. OF REC..

REPORTER

NAME..... WEEKS, ROBERT
 DATE..... 76
 UPDATED..... 81 03
 BY..... FERNS, MARK L. (BROOKS, HOWARD C.)

NAME AND LOCATION

DEPOSIT NAME..... WHITE KING MINE

MINING DISTRICT/AREA/SUBDIST. LAKEVIEW AREA

COUNTRY CODE..... US

COUNTRY NAME: UNITED STATES

STATE CODE..... OR

STATE NAME: OREGON

COUNTY..... LAKE

DRAINAGE AREA..... 18020001 CALIFORNIA

PHYSIOGRAPHIC PROV..... 12 BASIN AND RANGE

LAND CLASSIFICATION..... 41

QUAD SCALE

1: 24000

QUAD NO OR NAME

COX FLAT (1964)

LATITUDE

42-19-57

LONGITUDE

120-31-15W

UTM NORTHING

4689400.0

UTM EASTING

704245.0

UTM ZONE NO

+10

TWP..... 037S

RANGE..... 019E

SECTION.. 30

MERIDIAN. WILLAMETTE

ALTITUDE.. 6300 FT

COMMODITY INFORMATION

COMMODITIES PRESENT..... U AS HG SB

POTENTIAL.....
OCCURRENCE..... AS SB HG PB MD

ORE MATERIALS (MINERALS, ROCKS, ETC.):

URANINITE, PITCHBLEND, AUTUNITE, NOVACEKITE

MAIN ORE MINERALS:

AUTUNITE, NOVACEKITE, REALGAR, CINNABAR, STIBNITE, ORPIMENT

MINOR ORE MINERALS:

PYRITE

EXPLORATION AND DEVELOPMENT

STATUS OF EXPLOR. OR DEV. 6

YEAR OF DISCOVERY..... 1955

BY WHOM..... DON TRACY

DESCRIPTION OF DEPOSIT

DEPOSIT TYPES:

MINERALIZED FAULT ZONES; LOW TEMPERATURE HYDROTHERMAL
FORM/SHAPE OF DEPOSIT:

SIZE/DIRECTIONAL DATA

SIZE OF DEPOSIT..... MEDIUM

DESCRIPTION OF WORKINGS

SURFACE AND UNDERGROUND

DEPTH OF WORKINGS BELOW SURFACE. 270 FT

OVERALL LENGTH OF MINED AREA.... 700 FT

OVERALL WIDTH OF MINED AREA..... 600 FT

COMMENTS (DESCRIP. OF WORKINGS):

THE OREBODY WAS MINED UNDERGROUND INITIALLY AND LATER BY OPEN PIT AS WATER AND CAVING GROUND WERE ENCOUNTERED

PRODUCTION

YES

MEDIUM PRODUCTION

CUMULATIVE PRODUCTION (ORE, COMMOD., CONC., OVERBUR.)

ITEM	ACC	AMOUNT	THOUS. UNITS	YEAR	GRADE, REMARKS
15 U308	ACC	00000350	LBS	1955-1955	RECOVERED FROM ABOUT 115,000 TONS OF ORE

SOURCE OF INFORMATION (PRODUCTION).. PETERSON AND MCINTYRE

PRODUCTION COMMENTS.... MOST OF THE PRODUCTION OCCURED IN 1958-1959

PERTINENT MINERALOGY..... PYRITE, REALGAR, JORDISITE, STIBNITE, ILSEMMANITE, CINNABAR, GALENA, CHALCEDONY,
CLAY MINERALS

IMPORTANT ORE CONTROL/LOCUS.. FAULT AND SHEAR ZONES

LOCAL GEOLOGY

SIGNIFICANT LOCAL STRUCTURES:

THREE PROMINENT FAULT TRENDS: N45W, N45E, N15E

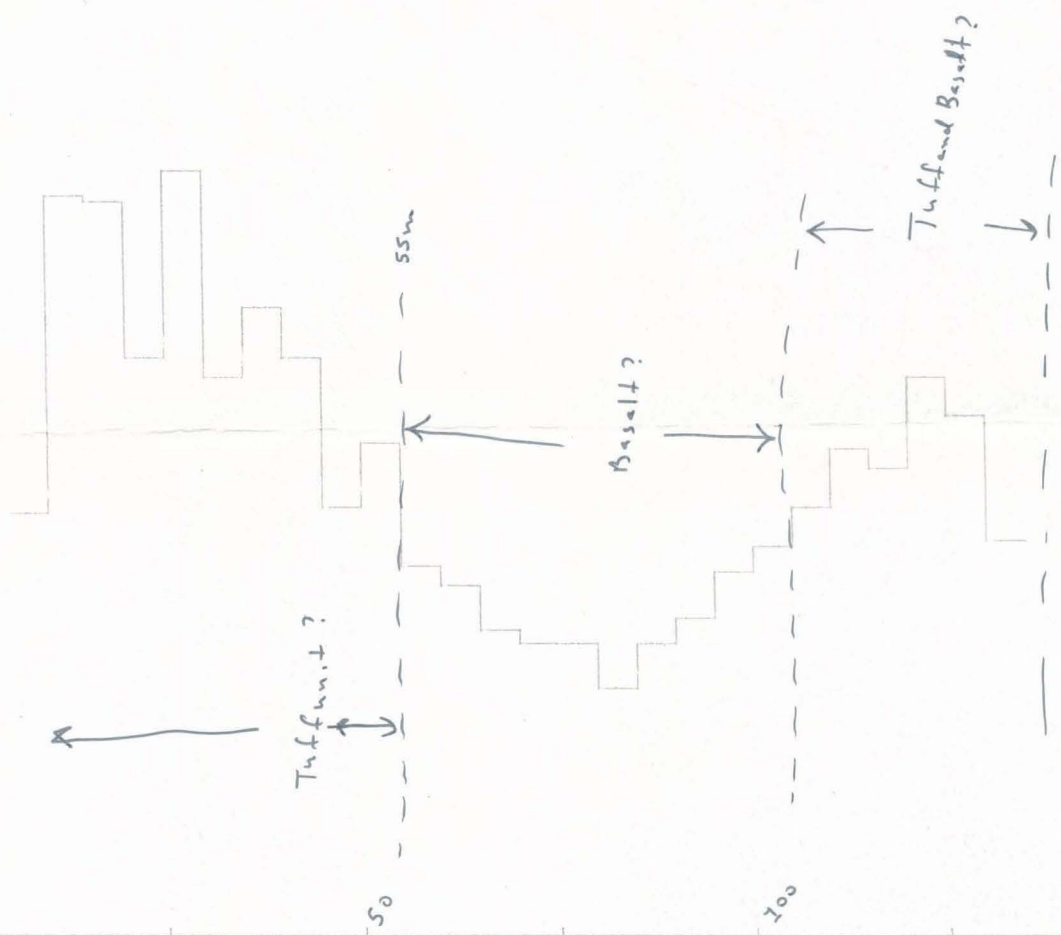
SIGNIFICANT ALTERATION:

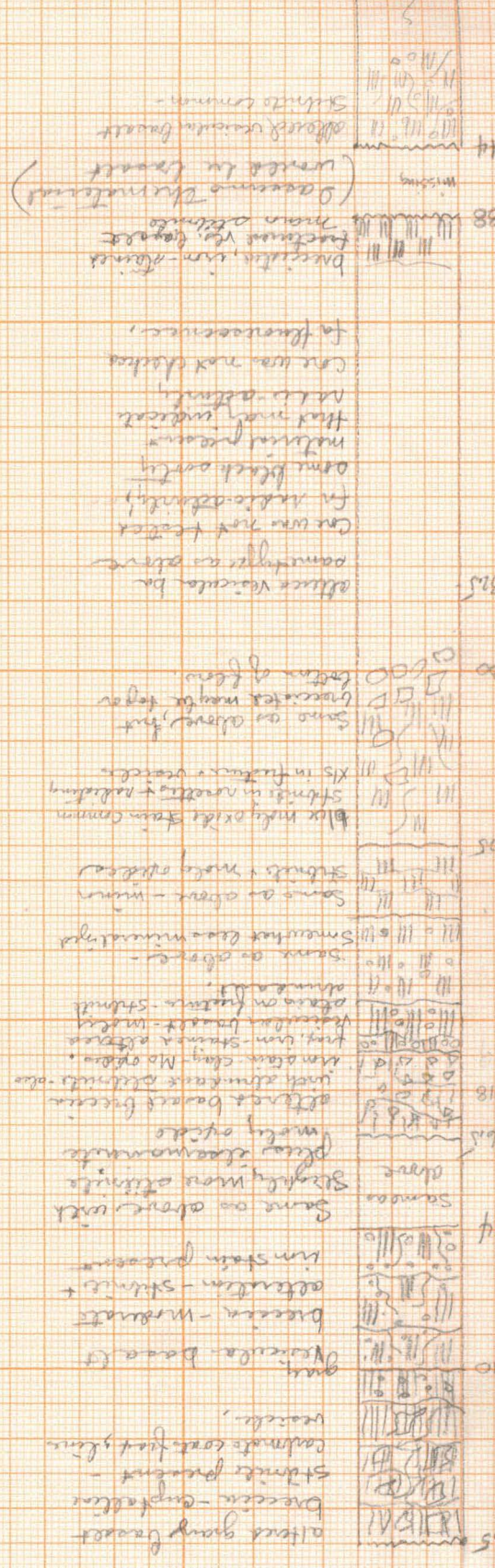
LOCAL OPALIZATION AND CLAY ALTERATION IN THE ORE ZONES

GENERAL REFERENCES

- 1) PETERSON, N. V., 1958, OREGON'S URANIUM PICTURE: ODGMI THE ORE BIN, V. 20, NO. 12, P. 111-116
- 2) PETERSON, N. V., 1959, PRELIMINARY GEOLOGY OF THE LAKEVIEW URANIUM AREA: ODGMI THE ORE BIN, V. 21, NO. 2, P. 11-17
- 3) PETERSON, N. V. AND MCINTYRE, J. R., 1970, THE RECONNAISSANCE GEOLOGY AND MINERAL RESOURCES OF EASTERN KLAMATH COUNTY AND WESTERN LAKE COUNTY, OREGON: ODGMI BULL. 66, P. 45-47

LAKELAND, OFFSHORE
DOH-11K11
2/9/72





Same as above
highly vesicular - stibnite
common.

same ves. ba.
alteration varies
with vesicularity
and fracturing

acta

380 iron stained, fractured
vesicular basalt,
stibnite common.
maybe top or bottom of flow.

clayey pumice tuff
breccia
back to vis. basalt
with stibnite.

same as above
some molybdenite

400 pumice tuff
breccia, etc.
identical rock fragments

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2033 First Street, Baker, Oregon

714 East "H" Street, Grants Pass, Oregon

WELL LOG

Date June 26-27 1972 Number X-4

Recorded by				Source
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County	Area
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Quadrangle	$\frac{1}{4}$	$\frac{1}{4}$	sec.	T	N/S., R	E/W.
------------	---------------	---------------	------	---	---------	------

(Drilling Company and Address)

Method of Drilling	3" core	Date	19
--------------------	---------	------	----

(Property Owner and Address)

Land surface, datum _____ ft. above _____
below _____

[illegible]

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Field Offices:

2033 First Street, Baker, Oregon

714 East "H" Street, Grants Pass, Oregon

WELL LOG

Date _____ 19____ Number _____

Recorded by _____ Source _____

County _____ Area _____

Quadrangle _____ $\frac{1}{4}$ $\frac{1}{4}$ sec. _____ T _____ N/S., R _____ E/W.

(Drilling Company and Address)

Method of Drilling _____ Date _____ 19____

(Property Owner and Address)

Land surface, datum _____ ft. above
below

Material	Thickness (feet)	Depth (feet)	Remarks
alters ves basalt - Stibnite common -	2.5	344 - 346.5	
same as above	3.5	346.5 350	
same as above - highly vesicular - stibnite common	2.5	350 - 352.5	
same as above - less vesicular less altered - center of flow (?)	2.5	352.5 - 355	
same as above - stibnite abundant	2.5	355 - 357.5	
same as above - less altered less fractured - stibnite fractures	2.5	357.5 360	
same as above -	3	360 - 363	
	mineral	363 - 365.5	
alters ves. basalt - fractures some stibnite on fractures	2.5	365.5 368	
same as above in part flow breccia	2.5	368 - 370.5	
same as above	2.5	370.5 373	
highly vesicular basalt - stibnite common in vesicles	3	373 - 376	
alters vesicular slightly altered Basalt - iron - stained	3	376 - 379	Minor stibnite
same as above	6	379 - 385	
bag marked 380 - 382.5 may be marked	2.5	380 - 382.5	same as above - more vesicular - top bottom of flow more mineralized

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2033 First Street, Baker, Oregon

714 East "H" Street, Grants Pass, Oregon

Date _____ 19____ Number _____

Recorded by			Source
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County	Area
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Quadrangle	$\frac{1}{4}$	$\frac{1}{4}$	sec.	T	N/S., R	E/W.
------------	---------------	---------------	------	---	---------	------

(Drilling Company and Address)

Method of Drilling		Date	19
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(Property Owner and Address)

Land surface, datum _____ ft. above _____
below _____

WL-28

Head Office: 702 Woodlark Bldg., Portland 5, Oregon

2033 First Street, Baker, Oregon

714 East "H" Street, Grants Pass, Oregon

Date 19 Number

Recorded by		Source
-------------	--	--------

County		Area
--------	--	------

Quadrangle	$\frac{1}{2}$	$\frac{1}{2}$	sec.	T	N/S., R	E/W.
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(Drilling Company and Address)

Method of Drilling	Date	19
--------------------	------	----

(Property Owner and Address)

Land surface, datum _____ ft. above _____
below _____

WL-28

STATE DEPARTMENT OF GEOLOGY & MINERAL INDUSTRIES
Head Office: 702 Woodlark Bldg., Portland 5, Oregon

Field Offices:

2033 First Street, Baker, Oregon

714 East "H" Street, Grants Pass, Oregon

WELL LOG

Date June 7 19 72

Number X-4

Recorded by J. J. Peterson

Source _____

County Lake

Area _____

Quadrangle _____

1/4 1/4 sec. T N/S., R E/W.

Western Nuclear

(Drilling Company and Address)

Method of Drilling Cone - Diamond Bit

Date 19 72 (?)

White King Drilling - Western Nuclear, Inc.

(Property Owner and Address)

Land surface, datum _____

ft. above
below

Material	Thickness (feet)	Depth (feet)	Remarks
altered - iron stained vesicular basalt	2.5	535 537.5	fairly high % of crystalline stibnite in fractures + vesicles some radioactivity
light gray to gray vesicles partially filled			
Same as above -	2.5	537.5 540	same as above
altered vesicular - dirty tuffite basalt - iron stained fractured	5	545 - 550	not quite as much alteration - some stibnite present
Same altered ves. basalt - iron stain - realgar + orpiment + stibnite	5	550 - 555	arsenic mineral common to abundant in fractures and in ves. also black sandy U mineral and/or pyrite.
altered vesicular to amygdaloidal basalt - iron stained, fractured	5	555 560	arsenic mineral abundant, stibnite present.
Highly altered vesicular basalt as above - more clay - changing to a coarse gray tuff breccia	5	560 - 565	
back to altered (highly) gray vesicular basalt with some tuff breccia included.	5	565 - 570	arsenic mineral + stibnite pyrite - calcite + siderite (?) mineralization not quite as heavy
Clayey tuff breccia not well sorted	2.5	570 - 572.5	perlite fragments
highly altered gray vesicular basalt (abundant stibnite)		530 - 532.5	

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WELL LOG

Date June 19 76

Number Hole # 7

Recorded by N. V. Peterson

Source Western Nuclear Drilling project.

County Lake

Area Fremont Mtns.

Quadrangle SW 1/4 NE 1/4 sec. 30 T 37S R 19E

		X	

(Drilling Company and Address)

Method of Drilling Rotary - Core

Date 19 69

White King Mine - Western Nuclear - Don Tracy, et al.
(Property Owner and Address)

Land surface, datum 5950' ft. above seal level
below

	Material	Thickness (feet)	Depth (feet)	Remarks
	Surface to 50' missing			
Bot 1	layered pumiceous tuffs + waterlain ash-lain lapilli tuff + breccia -	22'	50 - 72	yellow waxy clays present in section - some limonite a few basalt fragments.
Bot 2	same as above - with coarse tuff breccia + congl. in last 10'	39'	72 - 111	Much core missing from 80' to 100'
Bot 3	layers white to light gray tuffs become a massive tuff breccia	41.5'	111 - 152.5'	pumice & rhyolite frags abundant - yellow clay abundant
Bot 4	same as above - gray lapilli tuff breccia	26.5'	152.5 - 179'	very light weight pinky -
	same as above	4'	179 - 183'	
Bot 5	highly altered pumice-pelite tuff breccia - some ves. basalt fragments - completely clayey - iron-stained tuff breccia similar to above no Mn.	7'	183 - 190'	bleached - yellow clay + manganese oxide staining fractures and in ves.
	same as above - with minor ves. basalt alt. with yellow clay in ves.	20'	190 - 210'	(check for radiis - actively negative)
Bot 6	yellow brown clay - may be top of basaltic lava flow		210 - 230'	the br may be large frag. in the tuff.
	only slightly altered - lava flow - basalt ves. at base - massive at 241'	6'	230 - 235'	
Bot 7	massive basalt as above - moderate to highly altered	7'	235 - 241'	yellow green clay + zeolite alteration common to abundant.
	vesicular zone at base of above flow	7'	241 - 248'	greenish clay more abundant
Bot 8	same as above with some dense material near center, maybe bottom	9'	248 - 251'	+ top of successive flows - moderate to high alteration - green clay minor
Bot 9	reddish-black altered vesicular basalt - in part flow breccia	8'	251 - 260'	bluish green clay - siderite in vesicles - clayey + some altered
	same as above		260 - 268'	grades into grayish red to dark gray
			268 - 270'	

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Field Offices:

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714 East "H" Street, Grants Pass, Oregon

WELL LOG

Date _____ 19____ Number _____

Recorded by _____ Source _____

County _____ Area _____

Quadrangle _____ $\frac{1}{4}$ $\frac{1}{4}$ sec. _____ T _____ N/S., R _____ E/W.

(Drilling Company and Address)

Method of Drilling _____ Date _____ 19____

(Property Owner and Address)

Land surface, datum _____ ft. above _____ below _____

	Material	Thickness (feet)	Depth (feet)	Remarks
Bot 10	grayish-brown altered basalt brown clay - siderite abundant	7	270- 277	sliving completely altered siderite - massive except at base 270-277
	Same as above	2	277- 279	
Bot 11	more massive less altered phase of above - rock almost fresh (thin section needed to determine this rock type)	7	279- 286	yellow brown clay + siderite on occasional fracture fresh rock black!
Bot 12	same as above slightly more frayed than above + siderite	9	286- 295	
Bot 13	same as above	4	295- 299	slightly more altered than the above
	vesicular to to scoria zone - reddish brown in color	5	299- 304	base of the above flow? more greenish clay in this zone
Bot 14	same as above - dark brown clay common - slight alteration	13	304- 317	core considerably broken this may be in part flow breccia
Bot 15	same as above - vesicular + scoria zone	6	317- 323	greenish clay on fracture + floating vesicle - moderate alteration
	grades into more massive rock of same type partly breccia + fractured	5	323- 328	flow - only slightly vesicular - brown clay + siderite on frax + vesicle coating
Bot 16	same as above - fracture coated with brown clay - vesicle filling	9	328- 337	siderite coated with min stain fresh break - rock has a brown color
Bot 17	same as above - rock appears fresher	7	337- 344	small vesicle filled with brown carbonate - moderately altered color
Bot 18	same as above - rock changing color to reddish gray to black	8	344- 352	more fractures - almost all vesicle filled - clay coats fracture
19	grades into more vesicular zone rock type same - siderite common	9	352- 361	as fracture coating + vesicle filling moderate alteration
20	same as above - highly fractured massive some calc lat grade with	14	361- 375	fine grained - fresher appearing rock -
21	massive - medium grained dark gray brown to black basalt - minor vesicularity	11	375- 386	vesicle filled with carbonate - moderate fracture - brown stain clay on frax

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2033 First Street, Baker, Oregon

714 East "H" Street, Grants Pass, Oregon

WELL LOG

Date _____ 19____ Number _____

Recorded by _____ Source _____

County _____ Area _____

Quadrangle _____ $\frac{1}{4}$ $\frac{1}{4}$ sec. _____ T. _____ N/S., R _____ E/W.

(Drilling Company and Address)

Method of Drilling _____ Date _____ 19____

(Property Owner and Address)

Land surface, datum _____ ft. above
below

	Material	Thickness (feet)	Depth (feet)	Remarks
Bor 22	same as above - at 393 rock changes color to reddish more vesicular zone may be flow breccia		386- 391	
Bor 23	reddish vesicular zone as above then grade into more massive reddish brown to dark gray ta.		391- 393 393- 396 396- 401	same alteration products with greenish clay moderately altered with minor vesicularity vesicles mostly filled + fractured cores with clay + siltstone
Bor 24	same as above - ^{partly missing from this block} grades into vesicular zone reddish + brown to flow		401- 402	
Bor 25	grade back into less vesicular more massive gray brown ta.		402- 411	breccia zone - altered as above
Bor 26	reddish vesicular zone then grade into less ves. more		411- 418 418- 420	same alteration products reddish brown color at 418 massive brownish gray ta. - clay + siltstone common
Bor 27	massive brownish gray ta - same as above -		420- 427 427- 433	
Bor 28	abrupt change to the massive tan tuff breccia - perlitic frags.		433- 436	Common - variety of accidental rock frags. + some tuff of White King
	same as above - this must be		436- 437	an explosive dike in the basal slip.
	dark gray fractured basalt as above - clay alteration heavy		437- 440	fresh break shows black less altered ta.
	contact with a tan tuffaceous siltstone - thinly laminated		440- 446	some black carbonaceous fragments present.
29	layers tan to brown silt + mud stone - may be fine lake sed. some dikelets of the perlitic tuff present - some coarser to med. ss.		446- 454	brown iron stain + blue green clay present on frag - some pyrite carbonaceous material present.

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714 East "H" Street, Grants Pass, Oregon

WELL LOG

Date 19 Number

Recorded by Source

County Area

Quadrangle sec. T N/S., R E/W.

(Drilling Company and Address)

Method of Drilling Date 19

(Property Owner and Address)

Land surface, datum ft. above
below

	Material	Thickness (feet)	Depth (feet)	Remarks
Brl 30	Clayey seds as above	3	454- 457	
	shrupt contact with highly vesicular basalt - fractured iron-stained	9	457- 466	dikty + apite fractures, cracks with brown clay - vesicle filling of iron carbonate
31	vesicular basalt - probably was a dikty - pahoehoe flow - top grading brown clay coat + fill fractures lines vesicles	9	466- 475	down into less vesicular - fairly fine grains - fresh break brownish color some carbonate and thin films of silica
32	same as above, vesicular zones alternating with less ves. zones	9	475- 484	2-2-2. brown clay abundant, some iron red at 484
33	same as above - moderately frag. dark brown limy clay concrete abundant	9	484- 493	carbonate vesicle lining same as above some silica amygdules
Brl 34	same as above - less vesicular - more highly fractured dark brown clay abundant	8	493- 501	iron-oxide coat frag. line vesicles
	basal vesicular part of above flow same alteration as above -	2	501- 503	
Brl 35	at 503 cts with a gray punky mineral tuff - thin carbonate coating	6	503- 509	on soluble salt coats frag.
	grade upward into the yellow- brown pearly tuff breccia.	2	509- 511	clay alteration moderate
Brl 36	"	1	511- 512	"
massive	grades upward into finer grained clayey tuff - fine layering	5	512- 517	indicates a dip of at least 10° - some layers sandy tuff.
Brl 37	same as above - except for one 1' interval of the coarse pearly tuff breccia		517- 519	may be dikty - otherwise fine tuffs to silt. no mineralization
Brl 38	clayey tuff. seds - grading from coarse ss to silt stone		519- 545	tan - gray - tan - all clayey last 4' brownish - coarse ss
Brl 39	same as above - generally coarser with punky frags.		545- 556	alter to clay - some accidental rock frags - and. etc.

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2033 First Street, Baker, Oregon

714 East "H" Street, Grants Pass, Oregon

Date	19
------	----

Number _____

Recorded by		
-------------	--	--

Source _____

County		
--------	--	--

Area _____

Quadrangle		
------------	--	--

$\frac{1}{4}$ $\frac{1}{4}$ sec. T N/S., R E/W.

(Drilling Company and Address)

Method of Drilling					Date	19
--------------------	--	--	--	--	------	----

(Property Owner and Address)

Land surface, datum _____ ft. above _____
below _____

[illegible]

STATE OF OREGON
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
Head Office: 1069 State Office Bldg., Portland 1, Oregon
Telephone: Capital 6-2161, Ext. 488

Field Offices

2033 First Street
Baker

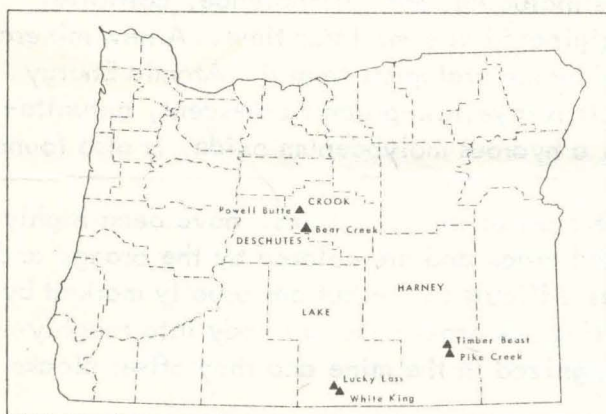
239 S.E. "H" Street
Grants Pass

OREGON'S URANIUM PICTURE

By
Norman V. Peterson*

The White King Mine

Location: The White King mine is located about 15 miles northwest of Lakeview, Oregon, near the center of sec. 30, T. 37 S., R. 19 E., Lake County. The mine is in the southern Fremont Mountains at about 6,300 feet elevation and receives 6 to 8 feet of snow in the winter. It is near the west edge of an upland meadow through which Augur Creek meanders. Heavy soil cover and abundant timber are typical of the area.



The discovery of secondary uranium minerals in a surface outcrop of opalized tuff was made by Don Tracy of Lakeview in June 1955. Limited exploration by trenching and drill holes indicated the possibility of a commercial ore body extending out into the Augur Creek meadow. In the fall of 1955, Tracy

and his partners, John Roush and Walter Lehman, leased the White King claims to the Lakeview Mining Company, an Oregon corporation. Lakeview Mining Company is headed by Dr. Garth Thornburg, Lakeview, Oregon, and is jointly owned by Dr. Thornburg, his brother Vance Thornburg of Paonia, Colorado; the Murchison interests; and the Richardson-Bass partnership of Fort Worth, Texas.

General geology: All rocks exposed in the general area are Tertiary age and consist of a great variety of volcanics. The oldest rocks in the mine area consist of a series of acid to intermediate tuffs, tuff breccias, crystal tuffs, and welded tuffs which are prominently exposed in northwest-trending ridges with steep northeast-facing fault scarps along Cottonwood Creek and Thomas Creek. A fossil rhinoceros tooth found in this sequence in the summer of 1958 has been identified as being of early Miocene age. These tuffs are overlain, apparently conformably, by less indurated agglomerates, clayey tuffs, and a thick section of tuffaceous lake beds. Fossil leaves have been found in both tuff sequences but have not yet been identified. The younger, less indurated tuffs are in turn usually covered by thin to thick olivine basalt flows which range from a few feet to 750 feet in thickness. The tuffs and basalt have been intruded by glassy flow-banded rhyolite. At some outcrops the rhyolite

* Geologist, State of Oregon Department of Geology and Mineral Industries.

is massive while at other places it has formed conical rubble cones. Cougar Peak, the highest peak in the area (7925 feet), is one of these cones built on a northwest-trending ridge of the older tuffs.

The topography and drainage are controlled by prominent sets of faults in three directions, N. 45° W., N. 45° E., and N. 15° E. Field work indicates the presence of a rather broad anticline trending N. 45° W., with the axis just east of the mine. The area near the axis of the anticline has been highly faulted. Vertical displacement along the faults does not appear to be great -- a few tens to a few hundreds of feet -- but the faults are so numerous that the stratigraphy and structure is complex.

Except for a small amount of commercial-grade material containing secondary minerals in the oxidized zone near the surface, all of the ore is found in a roughly rectangular area about 400 feet wide and 1200 feet long. Ore bodies are roughly tabular and extend downward and eastward from the original discovery point.

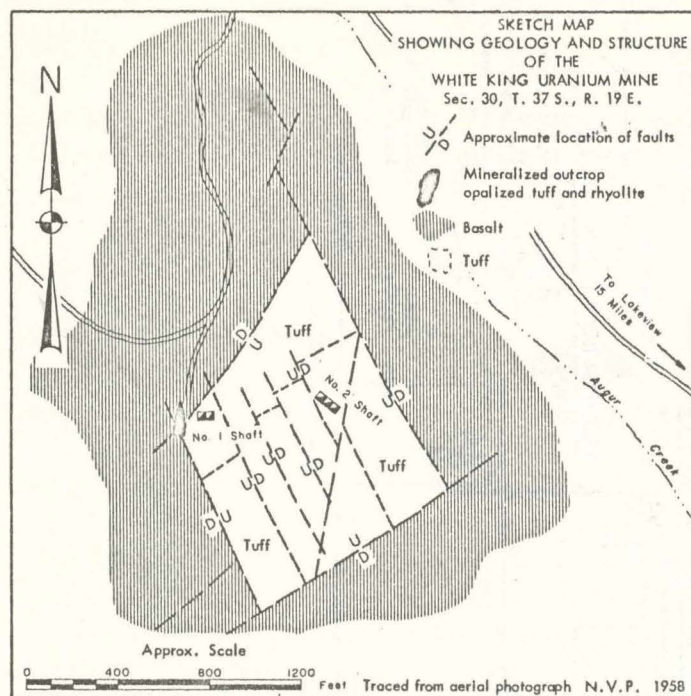
The mineralization appears to be directly related to the intrusive rhyolite, and localization of the mineralization is the result of faulting. The mineralization is found in a horst of younger tuffs and agglomerate surrounded on all sides by down-faulted basalt flows. Intrusive flow-banded rhyolite occurs both at the surface and underground in the mine. A variety of minerals indicates the possibility of at least two periods of mineralization. The earlier mineralization period contains low-temperature minerals such as cinnabar, realgar, stibnite, and opal. A suite of medium-temperature minerals including sooty pitchblende, coffinite, galena, pyrite, and jordanite is believed to have originated at some later time. A new mineral, lakeviewite, a uranyl arsenate, has been described by mineralogists from the Atomic Energy Commission from the oxidized part of the deposit. It is a yellow-green fluorescent, autunite-type mineral. A vivid blue mineral, ilsemmanite, a hydrous molybdenum oxide, is also found as an oxidation product of the jordanite.

The clayey tuffs and agglomerates, in which most of the ore occurs, have been highly altered. Underground the rocks are mottled gray and black and are colored by the orange and yellow arsenic minerals. Fault zones are sometimes difficult to see but are usually marked by a gouge zone of several inches of clay. Later faulting has broken the ore body into roughly tabular blocks. More than 30 faults have been recognized in the mine and they offset blocks of ore and complicate the geology underground.

Exploration and development: Early exploration by the Lakeview Mining Company was supervised by James H. Polous, General Manager, and Howard Dutro, Chief Geologist, (now Assistant General Manager). Surface exploration and a drilling program were followed by underground development.

Drilling in the mine area totals about 125,000 feet. More than 250 vertical drill holes averaging about 500 feet deep have explored the area mainly to the east of the original discovery. Company-owned truck-mounted "Sullivan" rotary drills are used for shallow holes (less than 500 feet) and a large "Mayhew 2000" rig sinks the deeper holes (to 1700 feet). Mineralization is determined both by probing the holes and interval checking of the drill cuttings with a geiger counter.

Underground exploration and development work now totals well over 4,000 feet. Development and mining through the No. 1 shaft are being carried out on three main levels at 70, 160, and 260 feet below the surface. The latest step in the development of the mine is the sinking of a Number 2 shaft about 600 feet east of the Number 1 shaft. This 3-compartment shaft will be about 700 feet deep and will tap haulage levels to permit mining of the deepest ore bodies. The Number 2 shaft required extensive new installations at the mine site. These included a hoist house, compressor building, change room, and an all-steel headframe 96 feet high. A station being cut at the 6130-foot level will be the main connection to the older mine workings to the west.



Mining methods: Normal mining methods are being used and there are no unusual safety hazards. Mining is conducted on a 3-shift basis, 6 days a week. Miners live in Lakeview and are transported by company buses. Ore is presently being mined by square-set stoping but plans call for extensive use of a modified top-slicing method. Since ore and waste cannot be determined visually the face drill holes and exploratory long holes are probed before blasting. Each face is then scanned with geiger counters and channel samples are taken after each round. After grinding and drying, samples are analyzed with a binary scaler, a device for determining equivalent uranium content. Since the ore has not reached equilibrium, a positive correction factor is applied to indicate the U_3O_8 content. Chemical

analyses are made at frequent intervals to check radiometric determination. Working faces are marked with paint from a spray can, "O" for ore and "W" for waste. In some areas soft ground enables the use of spade bits for mining ore or muck. Mucking machines load mine cars and the ore or waste rock is dumped into slusher pockets at the shaft station for loading into ore buckets and hoisting to surface ore bins. Each mine car is probed before dumping as a further check. Small dump trucks then haul the ore to appropriate stockpiles.

Haulage of ore from the mine to the mill in Lakeview has been contracted to the Lakeview Logging Company. Specially designed "belly dump" trucks with a 50-ton capacity will be used for the 15-mile haul over private roads.

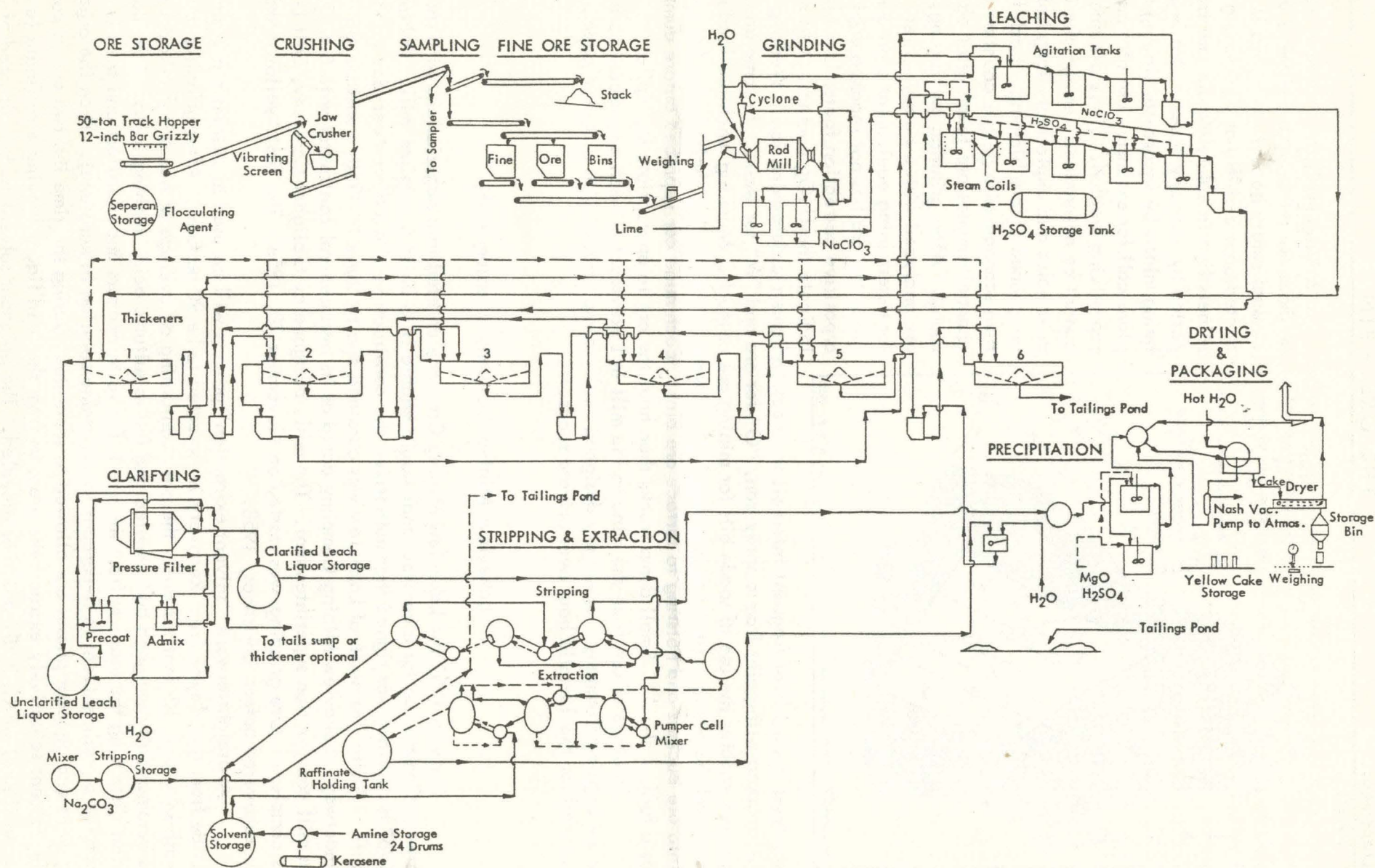
Lakeview Mining Company Uranium Mill

Early in 1957 the Lakeview Mining Company entered into negotiations with the Atomic Energy Commission for a contract that would enable it to build a uranium mill. In November 1957 a contract was signed that authorized the construction of a 210-ton per-day capacity mill. A site just north of Lakeview was obtained and by June 1, 1958, construction was well underway. Lakeview Mining Company acted as its own general contractor with Burr Johnson as mill construction superintendent. The mill, designed by Galigher Company, Salt Lake City, is complete. Ore grinding was started on November 28, 1958. The first "yellow cake" will be recovered before Christmas, 1958.

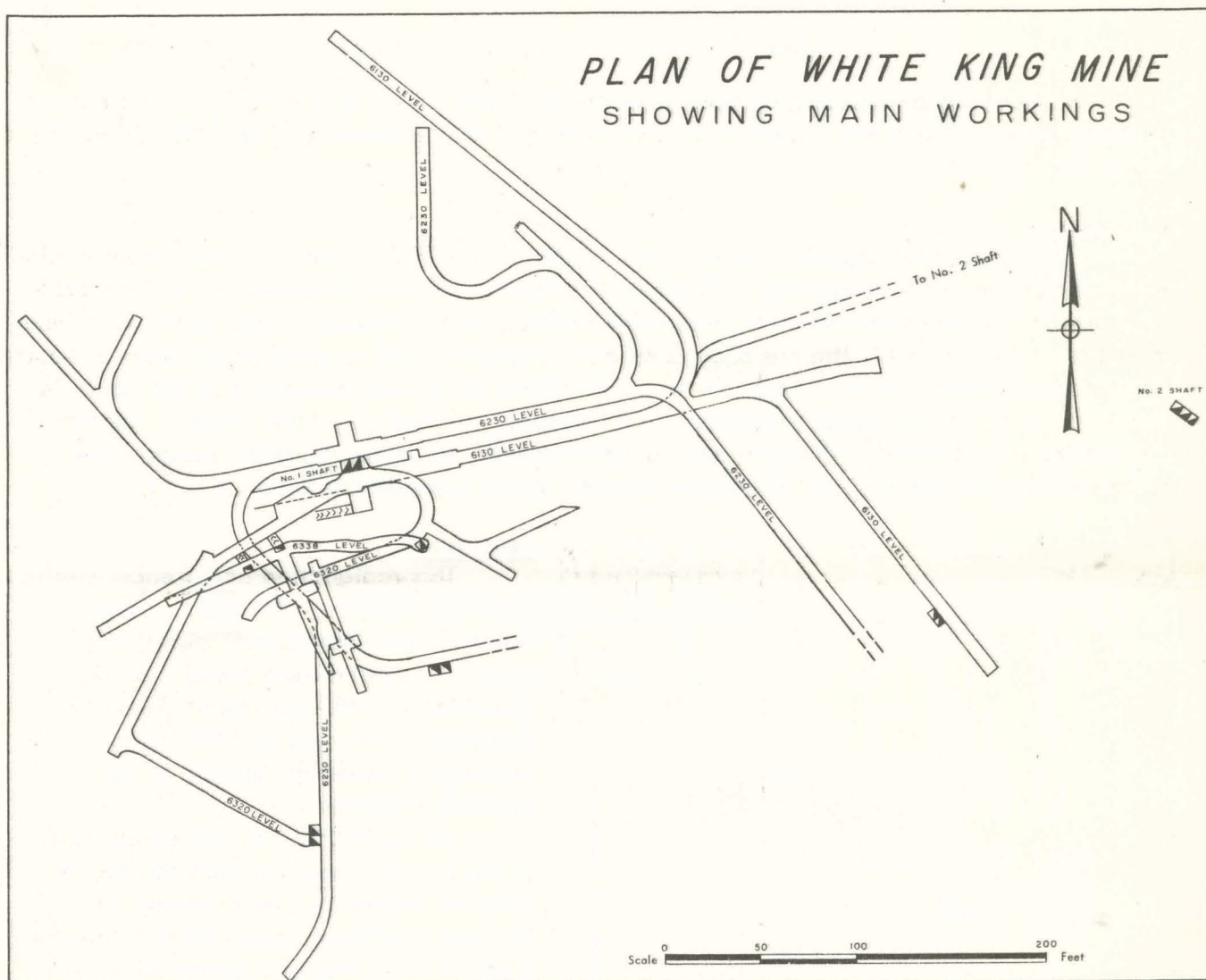
A straightforward "solvent extraction" process will be used to extract the uranium oxide from the clayey ore. Recovery is expected to be 90 percent. After grinding to minus-35 mesh in a 6 by 12-foot rod mill, the ore, containing an average of about 0.3 percent U_3O_8 , is automatically weighed and sampled and fed to sulfuric acid leaching tanks. The leach liquor after dissolving the uranium from the ore is fed to thickeners and clarifiers and then is mixed with an organic solvent (a 5-percent lauryl amine solution in kerosene). Then the organic solvent and aqueous phases are allowed to separate. During the time the two are in contact the solvent selectively extracts the uranium from the acid liquor leaving a raffinate (a barren leach liquor) which is discarded or recycled. The pregnant solvent is then stripped of its uranium by a sodium carbonate solution which has a greater affinity for the uranium than the

LAKEVIEW MINING COMPANY URANIUM MILL

SIMPLIFIED FLOW SHEET



solvent. The barren solvent from this step is recycled for further leach liquor extraction. To the now pregnant stripping solution that contains from 30 to 60 grams of U_3O_8 per liter, magnesium oxide is added which precipitates the uranium concentrate as "yellow cake." The "yellow cake" has a chemical composition of MgU_2O_7 and contains about 80 percent uranium oxide. After drying, the "yellow cake" is packed in metal containers for sale to the Atomic Energy Commission.



For typical operating conditions the consumption of chemicals is estimated to be:

- Sulfuric acid - 80 lbs/ton
- Sodium chlorate - 5 lbs/ton
- Sodium carbonate - 10 lbs/ton
- Lauryl amine solvent loss - small amount from entrainment
- MgO for precipitation - 0.1 lb/ton
- Flocculating agent - .75 lb/ton

Water supply for the mill comes from two deep wells which deliver water to the mill at 90° F.

The mill schedule has been set up to process 231 dry tons per day for continuous operation. The capacity of the mill will allow for processing of about 300 tons per day on a 10-day-on and a 4-day-off operating schedule. Mill superintendent C. Oliver Hower will

operate the mill on a 3-shift basis with a total of 35 employees. Other staff members are John Vecchies, assistant superintendent; Dale Cutting, chief chemist; and Al Legard, maintenance superintendent.

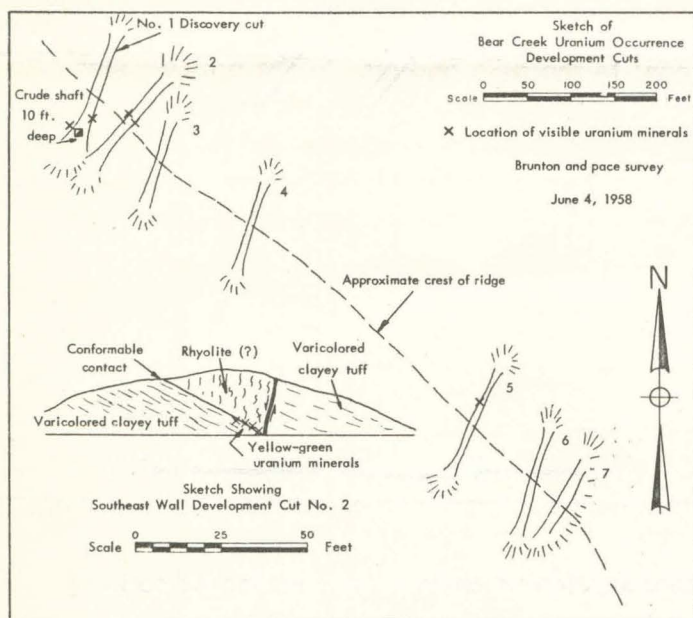
Under the contract with the Atomic Energy Commission, 30 percent of the mill capacity must be reserved for processing of custom ore. Custom ore must be amenable to the "solvent extraction" process.

Other Uranium Occurrences In Oregon

Other uranium and radioactive occurrences of small size have been discovered at several places in the State. Those that have been actively explored during 1958 are briefly described below.

Lucky Lass

The Lucky Lass deposit is in sec. 25, T. 39 S., R. 19 E., Lake County, about a mile northwest of the White King mine. A group of Lakeview people discovered it in June 1955 soon after the White King discovery was made public. A few thousand tons of ore have been mined from this deposit. The ore body is roughly triangular and bounded on all sides by faults. Secondary minerals similar to those found at the White King coat fractures and fill voids in the tuffs and vesicular basalt fragments which have been pulled into fault zones. The mineralization has lessened with depth and no more minable ore is known at the present time. A continuing drilling program is being carried on by the Lakeview Mining Company.



Bear Creek

This radioactive occurrence is in sec. 13, T. 18 S., R. 16 E., Crook County, near Bear Creek southeast of Bend. It showed some promise on its discovery in 1955 but intermittent exploration to November 1958 has not uncovered a minable amount of commercial-grade ore.

During 1958, Leonard Lundgren of Bend leased and explored the claims and, on deepening and cleaning out the older bulldozer excavations, found minor occurrences of uranium minerals (see sketch map). Individual samples in the 1-percent U_3O_8 range have been reported. The minerals found in small lenses of breccia in slickensided zones were identified by the Atomic Energy

Commission as primary uraninite (?) and secondary autunite. The zones containing the cemented breccia are very narrow, discontinuous, and show small horizontal displacements. Additional exploration included a detailed radiometric survey and a shallow drilling program. This work was supervised by James Barlow, a former AEC geologist. No new radioactive zones were encountered.

Powell Butte

The occurrence is on Powell Butte in sec. 13, T. 16 S., R. 14 E., Crook County, about 8 miles south of Prineville. The discovery of small amounts of mercury mineralization along with the moderate radioactivity has been the only encouraging development during 1958.

1958

The radioactivity occurs with iron-oxide coatings of fractures and joints in small isolated occurrences in the rhyolite flows that make up Powell Butte. The claimants, Harley Dosser and Eldon McCain of Redmond, plan further exploration as time permits.

Pike Creek - Kiska Mine

The mine is in sec. 20, T. 34 S., R. 34 E., Harney County, and is being explored by the Solar-X Corporation of Boise, Idaho. The radioactive occurrence is in the steep-walled gorge of Pike Creek, along the east scarp of the Steens Mountains. Exploration has been concentrated on the original discovery claim where uranium mineralization occurs in a banded rhyolite breccia along a high-angle, northeast-trending normal fault. Surface trenching has exposed the narrow brecciated zone for a distance of about 150 feet. Five samples of the rhyolite breccia from the fault zone recently analyzed by the Lakeview Mining Company varied from 0.14 to 0.95 percent U_3O_8 . A selected sample of the breccia from near the creek level assayed by the Department contained 0.37 percent U_3O_8 . Future exploration will be an attempt to discover minable widths of the mineralized breccia and associated tuffaceous sediments.

Timber Beast Claims

The prospect is located in secs. 8 and 9, T. 34 S., R. 34 E., Harney County, on Little Alvord Creek just north of the Pike Creek claims. During 1957-1958 the Timber Beast Mining Company, with the aid of a DMEA loan, drove about 270 feet of underground tunnels. A drift was driven along the west side of a fine-grained basic dike for 180 feet to intersect an east-west trending fault along which minor uranium mineralization had been found at the surface. A drift was then driven eastward along the fault for about 90 feet. No ore-grade material has been developed. The underground workings show zones of weakly radioactive material along fractures in the volcanics adjacent to the dike and also in the gouge zones along the intersecting fault. The radioactivity is generally associated with thin, but in places numerous and closely spaced, seams of ilsemanite (a hydrous molybdenum oxide). However, much of the ilsemanite-bearing material is not radioactive. The U. S. Bureau of Mines reports that the Company's DMEA contract was terminated by mutual agreement effective June 6, 1958.

DOMESTIC URANIUM RESERVES ESTIMATED

Measured, indicated, and inferred ore reserves of uranium in the United States were estimated by the Atomic Energy Commission to total 78,500,000 tons on June 30, 1958. These are determined in accordance with the definitions for measured, indicated, and inferred ore reserves as adopted by the U. S. Geological Survey and the U. S. Bureau of Mines and include only material metallurgically amenable to treatment. Distribution of ore reserves by states is approximately as follows:

	Thousand Tons	Percent U_3O_8
New Mexico	52,800	0.26
Wyoming	11,100	0.30
Utah	5,100	0.36
Colorado	3,700	0.29
Arizona	1,400	0.32
Washington, Oregon, Nevada	2,000	0.23
North and South Dakota	600	0.26
Others:		
Texas, California, Montana, Idaho, Alaska	1,800	0.23
Total Reserves	78,500	0.27

(From: U.S. Atomic Energy Commission Press Release No. 219 September 23, 1958.)

The U.S. Forest Service has filed an application for the withdrawal of 152 acres along the Illinois River, Curry County, approximately 2 miles south of Agness adjacent to Oak Flat. The Forest Service desires this land for a public recreation area. If the withdrawal is consummated, the land will be subject to valid existing rights but withdrawn from all forms of appropriation under the general mining laws. All persons who wish to submit comments, suggestions, or objections in connection with the proposed withdrawal should write to the State Supervisor, U.S. Bureau of Land Management, 809 N.E. Sixth Avenue, Portland, Oregon, before January 15, 1959. The lands involved in the application are located as follows: Sec. 19: Lot 7, NE $\frac{1}{4}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$; Sec. 29: Lots 5, 9, and 11, T. 35 S., R. 11 W., (approximately 151.88 acres).

CHEMICAL LIME CHANGES MANAGERS

Robert Vervaeke, General Manager of the Chemical Lime Company since 1956, resigned as of November 1. Appointed in his place is Hans Leuenberger, a native of Switzerland and, since 1950, Assistant Administrative Manager of Technology with a branch of Union Carbide Corporation of Niagara Falls.

The Chemical Lime Company is located 5 miles north of Baker. Owners are Tony Brandenthaler and Thomas Dant, Sr. According to the new General Manager, Leuenberger, both kilns are in operation at the lime plant and lime rock is still being transported from the quarry. The plant will continue to operate during the winter from the stockpile accumulated since spring.

AEC LIMITS URANIUM PURCHASE GUARANTEE

The Atomic Energy Commission has announced a change in its policy governing purchases of uranium concentrate. Effective November 21, the AEC said, its guarantee to buy concentrates produced and delivered between April 1, 1962, and December 1, 1966, will apply only to "appropriate quantities" from reserves already developed. Developed reserves, according to an AEC spokesman, include indicated and inferred reserves in known districts.

Purchases from already developed reserves in 1962-1966 will be at the previously established price of \$8 per pound of uranium oxide in an acceptable concentrate, the agency said. Production from reserves developed hereafter, the AEC added, will be bought in 1962-1966 only as needed and "on such terms and conditions and at such prices" as the AEC may determine.

The action was taken to "guard against overproduction" of uranium and "is not due to any forecast of a reduction in the Commission's uranium requirements or in the potential requirements for commercial atomic power," the AEC said. "However, it is in the best interest of both the industry and the Government to hold uranium production in reasonable balance with requirements."

Buying policies from now until 1962 are not affected by the new policy. Under existing contracts, annual concentrate production is expected to run about 20,000 tons by 1962, with privately owned uranium mills processing about 23,400 tons of ore daily.

(From: American Mining Congress Bulletin Service No. 23, November 28, 1958.)

FRED BARTELS

Fred J. Bartels of Springfield died November 12. He was 76 years old and had been a resident of the State since 1900. Long associated with the mining industry in the Bohemia District of Lane County, Bartels installed and operated a cyanide mill on the Evening Star claim in 1922-1932 and was associated with the H & H operation of the Champion mine 1939-1942. With a partner he again produced shipping-grade ore from the Evening Star, now part of the Champion group, 1945-1947. With a brother and nephew, co-owners, he mined both milling and shipping ores at the Champion 1948-1949 and retained an interest in the property to time of death.

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