DMEA Form 9

UNITED STATES
DEPARTMENT OF THE INTERIOR
Defense Minerals Exploration Administration

OFFICIAL DOCKET FILE

DMEA NO. 4405

Application (Denied ✓
(Withdrawn
(After disposition, delete items not applicable)

Contract (Terminated - not Certified
(Cancelled
(Terminated - Certified
(Royalty Agreement

This is the official contract file containing all official records of the project. The records contained in the files are checked and are arranged in this order:

Left Side

Interim Royalty Audits
Reports of Royalty Review
Certification of Discovery
Certificate of Audit (Final)
Interim Audit(s)
Report of Review
Termination Notice or Agreement
Recision Notice
Assignment of Contract
Contract Amendments (latest on top)
Contract with all exhibits and annexes
Owner's Consent to Lien
Subordination Agreement
✓Leases and assignments of leases
✓Application and attachments
(3) Envelope for maps

Right Side

✓Project summary
Work completed analysis
All other material is filed in chronological order with correspondence including the following reports as checked:

Final Field Team Report (Tab)
Operator's Final Report
(2R) Interim Reports
(2R) Operator's monthly reports and all attachments (latest on top)
✓On-site Exam Report(s) (Tab)
(4) Settlement Sheets

When the volume of records is expected to warrant additional folders, or when convenience of reference warrants separate folders for certain records, they should be set up in this order:

Left Side

Folder No. 2: (In chron. order) Interim Summary Reports by W. O. Engineers

Right Side

Operator's Semi-Annual Report for Certified Project, Field Team Interim Reports, Operator's Monthly Report with transmittal, narrative, maps, and Field Team review.

Folder No. 3: Maps (Use pocket folder or envelope. Fold maps with title block out and show reference to related document or correspondence.)

Folder No. 4: Settlement Sheets

Folder No. 5: Drill Logs

GAMMA

The OZARKS EXPLORATIONS COMPANY, INC.

(A MISSOURI CORPORATION)

CAMDENTON, MO.

The DECATURVILLE DOME
An Extinct Volcano
Containing Rare Minerals, Metals, Gems

RECEIVED
AUG - 3 1956

August 1, 1956

Mr. C. O. Mittendorf, Administrator
Defense Minerals Explorations Administration
United States Department of the Interior
Washington 25, D. C.

Dear Mr. Mittendorf:

You will recall my last visit to your office with my Attorney James P. Roach. Together we went over our project and discussed it in detail. Before leaving I understood Mr. Houk and Mr. Ellis stated, that if we made additional findings to submit to your office another application.

We have continued with our explorations and now have started down with our 31st hole. Now we have evidence pointing to what may be a sizeable ore deposit. We have located one fault NE and SW from the dyke and about 120 feet in width. The depth, and length is unknown. The fault is mineralized and carrying a quanity of Lead, Zinc, Monazite and a number of other minerals. The mineralization is going deeper to the SW. Further it looks like we have a cross fault running SE and NW crossing the other fault about 400 feet SW of the dyke. Also it looks like we have a deposit of minerals in a semi-circle to the South and West of the dyke possibly 200 to 300 feet in width and 700 to 800 feet long.

Surrounding the dyke is a circle, 150 feet in width, an area of extreme brecciation carrying the various minerals and rare earths. In this circle and in the fault the mineralization gets heavier in depth, present, present drill depth capacity is 800 feet. Our consulting geologists and State Department consultants all advise us to go deeper and to explore the length of the fault.

In view of our findings in the 15 core drill holes completed, the assays for which have been enclosed in our application, and the inspection of those holes which are not included in the assay reports we desire to drill deeper holes. Also make additional tests in the ore deposit to the South and West including the fault.

GAMMA

The OZARKS EXPLORATIONS COMPANY, INC.

(A MISSOURI CORPORATION)

CAMDENTON, MO.

The DECATURVILLE DOME
An Extinct Volcano
Containing Rare Minerals, Metals, Gems

August 1, 1956

Mr. Mittendorf: (continued)

If we receive a grant from your department all test holes will be put down according to the advise of your field geologist and with the assistance of our company geologist and the records we have on the test holes already completed.

We are forwarding to you the orginal and two (2) copies of the application for DMEA assistance in our explorations. One copy of the application is being forwarded to Mr. Clinton C. Knox, Executive Officer, DMEA Field Team, Region IV.

Very respectfully,

H. B. Hart, President

HBH/abh

cc: Clinton C. Knox

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Form Approved.
Budget Bureau No. 42-R1035.2.

RECEIVED
AUG - 3 1956

APPLICATION FOR AID IN AN EXPLORATION PROJECT, PURSUANT TO DMEA ORDER 1, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

Not to be filled in by applicant

Docket No. 4405
Metal or Mineral Uranium
Date Received 8-3-56
Estimated Cost $52,384
Participation (Government %)

INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: The Ozarks Explorations Company, Incorporated, A Missouri Corporation
Camdenton, Missouri
H. B. Hart, Camdenton, Mo., ----President
Gardner E. Hart, 3388 Mayo, Topeka, Kansas---Vice-President
James A. Franklin, Camdenton, Mo. Secly & Treas.

(*b*) If other than an individual, add to your name above whether a corporation, partnership, etc., and the name of the State in which incorporated or otherwise organized. A. Missouri Corporation

(*c*) If a corporation, add to above statement, titles, names and addresses of officers. See attached sheet

(*d*) If a partnership, add to the above statement the names and addresses of all partners. none

2. *General.*—Read DMEA Order 1, "Government Aid in Defense Exploration Projects," before completing this application. Submit this application and all accompanying papers in quadruplicate (four copies), with your name and address on each sheet of the application and on all accompanying papers. Where sufficient space is not provided on the form for all required information, state it on an accompanying paper, with a reference in each case to the instruction to which it refers by number. Comply with all applicable instructions; or, if not applicable, so state. File the application with Defense Minerals Exploration Administration, Department of the Interior, Washington 25, D. C., or with the nearest field executive officer thereof.

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract See attached sheet

(*b*) State any mine name by which the property is known. Decaturville Dome (Wheeler Mine)

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise
The Ozarks Explorations Company, Inc., owns the leases in full

(*d*) If you are not the owner, submit with this application a copy of the lease, contract, or other document under which you control the property. See attached sheets

(*e*) If you own the land, describe any liens or encumbrances on it We own the leases and the leases provide we may protect the title of the property, to take over any mortgage or pay taxes.

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. NONE

4. *Physical description.*—(*a*) Describe in detail any mining or exploration operations which have been or now are being conducted upon the land, including existing mine workings and production facilities. State your interest, if any, in such operations. Also describe accessibility of mine workings for examination purposes. See attached sheets

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades. See attached sheets

(*c*) Describe the geologic features of the property, including mineralization, type of deposit (vein, bedded, etc.), and your reasons for wishing to explore. Illustrate with maps or sketches. Send with your application (but not necessarily as a part of it) any geologic or engineering report, assay maps, or other technologic information you may have, indicating on each whether you require its return to you. See attached sheets

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points. See attached sheets

(*e*) State the availability of manpower, materials, supplies, equipment, water, and power.
See attached sheets

16—66551-1

5. *The exploration project.*—(*a*) State the mineral or minerals for which you wish to explore Uranium, Thorium, Lithium, Mica, Rare Earths, Lead and Zinc

(*b*) Describe fully the proposed work, including a map or sketch of the property showing a plan (and cross sections if needed) of any present mine workings, and the location of the proposed exploration work as related to such features as contacts, veins, ore-bearing beds, etc. See attached sheets

(*c*) The work will start within 30 days and be completed within 18 months from the date of an exploration project contract.

(*d*) State the operating experience and background of the applicant with relation to the ability to carry out such exploration project, and also that of the person or persons who will supervise the operations. See attached sheets

6. *Estimate of costs.*—Furnish a detailed estimate of the costs of the proposed work (you will have to use a separate sheet), under the following headings. Add the totals under all headings to give the estimated total cost of the project: See attached sheets

(*a*) *Independent contracts.*—(Note.—If the applicant does not intend to let any of the work to contractors, write "None" after this item. To the extent that the work is to be contracted, do not repeat the cost of the contract-work in subsequent items.) State the cost of any proposed independent contracts for the performance of all or any part of the work, expressed in terms of units of work (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved, etc.). See attached sheets

(*b*) *Labor, supervision, consultants.*—Include an itemized schedule of numbers, classes and rates of wages, salaries or fees for necessary labor, supervision and engineering and geological consultants. NONE

(*c*) *Operating materials and supplies.*—Furnish an itemized list, including items of equipment costing less than $50 each, and power, water and fuel. NONE

(*d*) *Operating equipment.*—Furnish an itemized list of any operating equipment to be rented, purchased, or which is owned and will be furnished by the Operator, with the estimated rental, purchase price, or suggested use-allowance based on present value, as the case may be. NONE

(*e*) *Rehabilitation and repairs.*—Furnish a detailed list showing the cost of any necessary initial rehabilitation or repairs of existing buildings, installations, fixtures, and movable operating equipment, now owned by the Operator and which will be devoted to the exploration project. NONE

(*f*) *New buildings, improvements, installations.*—Furnish a detailed list showing the cost of any necessary buildings, fixed improvements, or installations to be purchased, installed or constructed for the benefit of the exploration project. NONE

(*g*) *Miscellaneous.*—Furnish a detailed list showing the cost of repairs to and maintenance of operating equipment (not including initial rehabilitation or repairs of the Operator's equipment), analytical work, accounting, workmen's compensation and employers' liability insurance, and payroll taxes. See attached sheets

(*h*) *Contingencies.*—Give an estimate of any necessary allowances for contingencies not included in the costs stated above. NONE

NOTE.—No items of general overhead, corporate management, interest, taxes (other than payroll and sales taxes), or any other indirect costs, or work performed or costs incurred before the date of the contract, should be included in the estimate of costs.

7. (*a*) Are you prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation (Sec. 7, DMEA No. 1)? YES

(*b*) How do you propose to furnish your share of the costs?

[X] Money [ ] Use of equipment owned by you [ ] Other

Explain in detail on acompanying paper.
See attached sheet

CERTIFICATION

The undersigned, whether as an individual, corporate officer, partner, or otherwise, both in his own behalf and acting for the applicant, certifies that the information set forth in this form and accompanying papers is correct and complete, to the best of his knowledge and belief.

Dated July 30, 1956

The Ozarks Explorations Co., Inc.
(Applicant)

By James A. Franklin, Sec'y

Title 18, U. S. Code (Crimes), Section 1001, makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

U. S. GOVERNMENT PRINTING OFFICE 16—66551-1

The Ozarks Explorations Co., Inc.
Camdenton, Missouri

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DMEA APPLICATION

1. (a) Name of applicant. The Ozarks Explorations Company, Incorporated.
Camdenton, Missouri

(b) Name of the State in which incorporated. A Missouri Corporation

(c) Names and addresses of Officers.
H. B. Hart, Camdenton, Missouri,----------President
Gardner E. Hart,3388 Mayo, Topeka, Kansas-----Vice President
James A. Franklin, Camdenton, Missouri--------Sec'y-Treasurer

(d) Not applicable

3. (a) Legal description of land to be explored. See EXHIBIT 3a, Leases: Mineral gems, oil and gas, 10-year leases with renewal provisions, lessors names and description of properties. Also See EXHIBIT 3d.

(b) Mine name by which property is known; Wheeler Mine or Decaturville Dome

(c) Interest in the land; The Ozarks Explorations Company, Inc., owns the leases in full.

(d) For copy of the lease See EXHIBIT 3d.

(e) Liens or encumbrances on the properties; NONE

(f) Unpatented claims; NONE

4. (a) Physical Description of previous prospecting & exploration

General -- The deposit known as the Decaturville Dome on the Wheeler lands is exposed as a vertical pipe of pegmatite roughly square with rounded corners in plan, sharply defined from the surrounding dolomites on the surface, approximately 185 feet East and West by 100 feet North and South and occupying an area of roughly 18,500 square feet.

Old Workings
Previous to 1894: The following work was done on this deposit. According to Otto Ruhl, in Vol. I Part I, Bulletin of the Bradley Geological Field Station of Drury College, issued by the Departments of Geology and Chemistry, 1905, pp 36-40, several shafts were put down on this pegmatite which he examined. These shafts are mentioned by Arthur Winslow in "Lead Zinc Deposits of Missouri", Vol II, Missouri Geological Survey, Vol,VII, 1894, but not described. In 1904, one of these, marked A 1 on survey map attached, was examined by Otto Ruhl. It was then 30 feet deep and sitting four-square to the compass. This shaft was on the North part of the East side of the pegmatite and its top can still be seen. At that time its west side skirted the pegmatite and exposed largely pegmatite with a breccia of pegmatite, mica "schist", and quartsite described as liquid quartz pebbles cemented in chert. The South and East sides were similar but with less pegmatite, and more kaolin, quartz, and chert. The North side was similar to the South and East sides but with distinctly more mica "schist".

At present this shaft is filled to within a few feet of the surface, and shows a jumble of all the rocks mentioned in the above description.

Apparently the miners who put down these shafts were looking for lead and zinc and abandoned them and moved 750 feet to the Southwest.

Here they put down some shafts, three of which were seen by Ruhl in 1904, and traces of two of which remain today, marked B 1 and B 2 on survey map attached. These showed pyrite and a little earthy lead zinc ore in a country rock of much brecciated dolomite. Analysis of ore from these shafts is given in Winslows book referred to above, p. 717 as follows:

$CuFeS_2$	0.0071%
FeS_2	3.8308%
PbS	63.9950% (by difference)

Silver ½ oz. to the ton.

4. (a) contiued

About a quarter mile still further to the Southwest another shaft was put down, marked C 1 on survey map attached, and according to Winslow similar ore was found in it, but there is no report of of proximity of any pegmatite.

Old Workings
About 1917: During the First World War, the old workings, B above, were cleaned out, retimbered and possibly deepened. At that time at least, one core-drill hole, marked C1 on map, was put down about 163 feet Northwest of the shaft B 1 to 965 feet. It was reported to have inclined to the Southeast and found no mineralization except pyrite in dolomite all the way. Little other work seems to have been done.

Old Workings
Today: All old workings are now caved and filled. A slight depression marks A 1, B 1, and B 2 are filled to near the surface and water flooded, have been used for years as a cattle pond. The dumps around them are now largely covered by recent excavations but where the old dumps can be seen they show besides iron pyrite, more significantly muscovite mica similar to that occuring in the main pegmatite 500 feet to the North east, thus confirming Ruhl's observation that pegmatite was met in on of these shafts.

Present Workings
1955: In late 1954, Mr. H. B. Hart's attention was drawn to these deposits, which he prospected in 1955. He recognized that if the main outcrip was a pegmatite, that it might carry nuclear elements and besides be valuable as a source of feldspar, mica and quartz, all materials that had no value to the old miners or to any until recently, in this area.

Hart prospected the whole neighborhood with a geiger counter and found that especially to the north of the outcrip, and to a lesser degree in various other scattered locations that radiation significantly above background was detected, of the nature of 0.5 to 1.0 Mr./hour.

He founded a Company, largely of local men, called The Ozarks Explorations Company, Ind., that began prospecting the deposit as follows:

1. Rehabilitated an old farm house nearby, as a field office;
2. Repaired the road to the field office, built a road to the pegmatite outcrop; and another from the office, South to the Camdenton-Lebanon Highway #5;
3. Cleared round the quartz outcrip of the pegmatite until its boundary with the surrounding dolomites was met, of soil and debris, thus roughly delimiting it;
4. Trenched about 14 feet deep by 12 feet wide round the South, West and North sides, (the East side had a water storage pond near it) and exposed the near vertical walls of the pegmatite. At most places a skin of high muscovite pegmatite was met but especially on the North. The dolomites surrounding were often green colored possibly due to chloritization. On the North side a band of rock about 1 - 3 feet thick was exposed, consisting of clear quartz pebbles in a dark siliceous and argillaceous cement with abundant mica flakes. This band was found to give a higher radiation than elsewhere, of at least 1.0 MR/Hour.
5. Had a metallurgical test conducted on a sample of surface material from the vicinity of the quartz outcrop with the following result:

Rougher Concentrates by Flotation

	% Weight	SiO_2 %	Al_2O_3 %	Fe_2O_3 %	Na_2O %	K_2O %
Iron concentrate	3.0					
Mica concentrate	5.5					
Feldspar concentrate	48.1	73.90	14.89	0.13	8.13	2.17
Quartz Tailing	30.0	95.22		0.11		
Slime	13.4					

6. Sampled carefully the whole cleared top of the pegmatite by channelling across every 10 feet, and after cutting down the bulk sample in the standard way, sending one sample to the Keldon Research Laboratories for spectro-chemical analysis and another to the U. S. Bureau of Mines at Rolla for petrographic analysis. The Report of the Keldon Labs (See Exhibit 4a-2) report 7659-1, marked 100.17, of June 3, 1955, was as follows:

	Mayor constituent	
Silican		
Aluminum	2.0 %	20.0%
Magnesium	1.0	10.0
Iron	0.5	5.0
Calcium	0.5	5.0
Sodium	0.3	3.0
Potassium	0.3	3.0
Lithium	0.03	0.3
Lead	0.005	0.05

4. (a) continued

Manganese	0.01 %	0.01 %
Gallium	0.001	0.01
Vanadium		0.03
Yttrium	0.003	0.03
Copper	0.005	0.05
Silver	0.0003	0.003
Titanium	0.01	1.0
Zirconium	0.03	0.3
Uranium	0.003	0.03

7. Sunk a shaft on the North side of the pegmatite on the black rock, about 19 feet below trench and 30 feet from top of pegmatite at elevation about 1055 feet; shaft 10 feet square, four-square with the compass, (See_____ _____). This shaft showed on its North face massive cream colored dolomite that appeared to have a true dip of about 25° North east; on its East side about the middle, green shally looking slickenslided boulders of dolomite and to their South the band of black rock about one foot wide and dipping 80° to the South appparently cutting into the pegmatite. To the South was pegmatite with a mica skin. This shaft showed the boundary of the pegmatite about 5 feet further to the north than as exposed in the trench, but the pegmatite was receeding again to the South due to the black rock cutting into it. On the West, the same conditions as to the East showed but in sequence a few feet more South on this wall. There was pyrite present in the lower part of the black rock, and considerably more radioactivity. Samples of this were out for extraction tests, to isolate the radioactive mineral if possible and for assay, and a report from Root and Simpson, Denver, Colo., dated 6-11-55 gave the following results:

V_3O_8	.021%
Li_2O	.04
ThO_2	.14

In combination with the spectro-chemical assay given in para. (6) above, it seems probable that the radioactive mineral in this material is largely monazite.

8. Drill holes were proved with a geiger counter but owing to their water filling so rapidly, could not be carefully logged. No. 4 hole showed a high spot about 37 feet down and No. 5 showed one about 25 feet down.

9. The whole area was laid out in a grid of 50 feet squares orientated to the compass, and a radiometric survey made with a bismuth tube counter at each stake with the usual precautions. The exposed pegmatite was squared in 20 feet squares and similarly logged. Lines of equal radiation were plotted on accompanying survey map.(See Exhibit 4a)

10. (See EXHIBIT 4a) Survey & Drill Map. To date since the start of operations by The Ozarks Explorations Company, Incorporated, beginning in 1955 and to July 1956, twenty-eight (28) test holes have been put down in an area around the exposed Dyke. The test holes being mostly in a Southwest direction covering a distance of about 2,300 feet in length (NE-SW) and being about 550 feet in width near the Dyke. From logs on part of the test holes we have located one fault SW of the Dyke having about 300 feet displacement and going deeper to the Southwest. It is mineralized with pyrite, lead, zinc, titanium, manganesium in the heavier percentages. There is lithium showing in eight (8) test holes with heavier percentages showing in three (3) of the eight (8) holes. In addition no assays, as yet, have been made on three other good test holes. There is marketable percentage of uranium showing in three (3) test holes and a good showing of lead and zinc in four (4) test holes. There is an operating percentage of lead and zinc in three (3) test holes in an area extending North and West of holes C-15, C-17, C-14, C-13, and an area South of C-3. It is believed this area should be further tested and additional test holes put down.

See EXHIBIT 4a-1 for assays

4.2 (a) continued

INTEREST IN THE OPERATION
The Ozarks Explorations Company, Inc., had no interest at all in the work done in 1894, in 1904, or in 1917, all of which was directed towards lead and zinc discovery.

The Ozarks Explorations Co., Inc., has financed in its entirety all the work donw in 1955 & 1956, which is directed towards finding the ore reserves of the pegmatite exposed, discovering the economic minerals present, especially the nuclear elements that give rise to the radioactivity of the deposit, also lead and zinc and to discover further pegmatites that exist.

Accessibility of the workings:
All workings previous to 1955, are caved and inaccessible. All work subsequent to 1955 is accessible.

4. (b) PREVIOUS PRODUCTION
Some lead ore seems to have bee taken out in 1894 from shafts B 1 and B 2. No production figures are available since.

Current Production
There is no current production

Ore Reserves
The following ore reserves estimates are conservatively based upon the test holes already completed and the assays we have covering 15 core drill holes and five plunger drill holes. Further our estimate is based upon the percentages showing in the assays and the estimated cubic feet of the particular strata from which the assays were obtained.

Lead and Zinc
Using test holes C-1, C-20 and C-13 as the sides of a triangle; there is estimated to be 15,100 tons of lead and 8,600 tons of zinc within the area of this triangle. It is expected that further tests will enlarge the area carrying lead and zinc and thereby increase the tonnage.

Uranium
According to test holes C-15, C-4, and C-2 we have a showing of approximately 0.11 of 1 percent of Uranium at depths as follows: C-15 192 feet, C-4 255' and C-2 at 525 feet. These cover a distance in length of approximately 200 feet in length. Also we have a showing in hole C-8 and the 30 foot shaft nearby. From all of the afore-mentioned we estimate the sand strata as being 200 feet in length, 3 feet wide and 2 feet thick or having 66 tons of material carrying 0.11 of 1 percent Uranium according to tests already completed. We cannot at this time make an estimate on the ground not tested as to width, length, or depth.

Note

Rare Earths
Using test holes C-17, and C-20 on the Southwest; C-12 and C-8 on the Southeast we have a strata of rare earths 20 feet in thickness, 180 feet in width and 400 feet in length. This strata will produce 79,950 tons of material carrying the rare earths. We cannot give an exact estimate of the percentages of rare earths in this material.

We are not making an estimate on the other minerals or metals discovered and are shown on our assay sheets. You will note that any mining project will be done on an open pit basis. We have a large tonnage of Glauconitic-Magnesium Dolomite carrying from 3% to 5% potash. Present plans call for a large fertilizer plant along with the mineral plant. In the fertilizer plant we will dispose of and sell the calicum limestone, the top rock, as fertilizer and the glauconitic-magnesium dolomite. This material would be about 90% actural weight of the contents coming out of the pit. The balance of the material would be run through the mineral plant saving and selling the lead and zinc, re-running the feldspar back into the fertilizer plant and for the present stock-piling the other minerals.

4. (c) GEOLOGICAL FEATURES OF THE PROPERTY See EXHIBIT 4c and 4c--1
The deposit is a high alkali pegmatite shaped as a long prism of unknown depth, but at least 405 feet deep vertically on the North side, (where No. 2 drill hole showed typical silicified wall rock and mica), and at least 100 feet deep on the West side (where No. 3 drill hole showed the same), and at least 26 feet deep on the North side where the shaft has exposed pegmatite.
The sruface of the surrounding country rock is an oval of Eminence Dolomite, circumscribed by Van Buren dolomites and Gunter sandstones and dolomites, this again circumscribed by Gasconade dolomites; as can be seen on the Geological Map of Missouri, 1939.

4. (c) continued

This surrounding country shows many signs of the general uplift in an oval completely surrounding the pegmatite, with the pegmatite at one focus of the oval and the long axis of the oval running about 50° West of South, to the Southwest of the pegmatite. In this area rocks are generally dipping away from the pegmatite on a strike roughly parallel to the periphery of the above described oval.

The long axis of the pegmatite to the Southwest of the pegmatite shows more disturbed conditions. The dips on this axis are in places very steep, and in other places reversed to the directions described above, showing folding or more extreme compression. Folding can be seen readily on a hillside 1 mile to the Southwest of the pegmatite and elsewhere.

In addition, the two mine shafts B and C were reported to have found extremely broken conditions, fractures and intense brecciation, with the sheet like lead deposits slopping up to the pegmatite, and to have met a pegmatite somewhere near the fifty foot level.

The pegmatite exposed therefore is in the focal area of a powerful uplift associated with folding and fracturing, on an axis bearing 50° West of South.

Petrographically the pegmatite is a mixture of the following constituents:

1. Graphic granite with high feldspar and little quartz, quartz being mostly wedges of ¼" or less. The feldspar is mostly microcline. Associated with the graphic granite is muscovite mica and black tourmaline.
2. Segregated massive feldspar usually a perthitic mixture of albite and microcline in a ratio of about 4 to 1;
3. Segregated massive clear quartz, among which is the original outcrop where boulders over a yard in diameter occur;
4. A high muscovite mica graphic granite skin that shows particularily on the North side;
5. A recemented breccia of pegmatite quartz with mica and tourmaline cemented in a silicious and argillaceous matrix with a little pyrite. It is black when wet and shows consistent radiation and a content of rare earths, thorium, titanium, zirconium, and vanadium and uranium. The minerals that carry these have not yet been isolated but there is reasonable probability that one of them is monazite. (See Keldon Report 7602-1 of 5/28/55 and Bruce Williams Report 710483 of 6/4/55 and Root and Simpson Report of 6/11/55). See EXHIBIT 4a-2

   In addition to the minerals mentioned above, spectro-chemical analysis showed that appreciable quantities of lithium minerals are present on the surface, although these have not been identified visually. Work is going on to separate and identify these.

REASONS FOR WISHING TO EXPLORE:

1. The deposit uncovered is radioactive and contains radioactive elements. Of the various minerals and metals found so far in this deposit is Uranium, Thorium, Lithium, Mica, Rare Earths, Lead and Zinc. Economic amounts of Uranium have been found (0.11 of 1 percent) in three test holes, also a fair showing of Thorium has been found in three test holes. A good quantity of Rare Earths has shown up in eight test holes. Lead and Zinc, running from 2% to 3%, has been found in three test holes. This deposit should be further tested so as to determine the full extent of the afore-mentioned deposits.
2. The deposit shows abundant mica on the surface were it is decomposed and friable. It also shows to a depth of 300 feet in the dyke. Also mica has been found in four test holes 300 feet to the Southwest of the Dyke. It is expected that we will find stragetic mica in some portion of the area not yet tested.
3. We have a good percentage of Lithium showing in five test holes.
4. The deposit is a pegmatite which is known to be the type of rock that carries almost all primary deposits of Rare Earths, Radioactive Minerals and Mica.
5. Some pegmatites are well known to be segregated in width and in depth, in zones of particular composition where certain minerals are concentrated. This pegmatite is zoned as there exists a quartz core which is the usual central zone of a zoned pegmatite. Zoned pegmatites are usually those that carry certain late deposits deposited minerals, especially albite and tourmaline. These occur here. In zoned pegmatites, rare earth minerals tend to concentrate in zones. In zoned pegmatites books of large strategic mica can be expected. Lithium minerals are also to be expected concentrated in certain zones and so are feldspars.
6. Explorations so far show us that economically sufficient tonnage of pegmatite does exist. Geologically proven to us that this deposit has come from great depths below. This area around the dyke is a zone of great facturing. This condition may allow the pegmatite to have considerable enlargement below the surface and to great length in the existing proven fault. There by increasing the tonnage.

4. (c) continued

7. Similar conditions from service indications leads us to expect other pegmatites especially in this zone of great disturbance to the Southwest and the Northeast from the already known pegmatite.
8. The explorations of the Uranium, Thorium, Lithium, Mica, Rare Earths, Lead and Zinc is rendered attractive since the nature and size of the deposit and geological location is such as far economic recovery of these minerals and metals. Especially in view of the fact that we have several million tons of potash, glauconitic-magnesium dolomite rock, open pit mining, to supply this large tonnage of fertilizer rock to the farming area nearby.
9. It is desired to explore the area to greater depths, since the area is brecciated and of one distinct fault. This area is mineralized and continues beyond the depths of present and past operations. Further is is the opinion of the geologist that have been on the ground that the mineralization will be heavier and tonnage much greater at or near the point of contact with the dolomite and granite. This is estimated to be near a depth of 1,500 feet.
10. It is desired to futher explore the fault, following it out and also to further extend the explorations work for the lead and zinc.

4. (d) ACCESS ROAD
There easy access to the property. It is reached by a good public road west from Decaturville 1.9 miles and from Highway 5 at a poin .6 mile South of Decaturville on Highway on Highway 5, and then West by an improved private road 1.5 mile.
Shipping Point; The nearest rail connection is a Lebanon on the St. Louis San Francisco Rail Road. Lebanon being 16 miles by road from the mine.
Supply Point; The nearest local supply point is Camdenton, which is 12 miles by road. General supply point is Springfield, Missouri, 80 miles by road/or rail.
Residence; Locally there are numerous retable accomodations.

4. (e) Manpower
See EXHIBIT 4e , letters from the Chamber of Commerce in both Camdenton, and Lebanon, Missouri stating adequate manpower for our project.
Materials; supplies and equipment amply available locally or from Springfield, Kansas City, Joplin or St. Louis.
Water: Water is plentiful at about 200 feet in local wells and in nearby springs at about 250 gallons per minute minimun, and a consierable catchment basin exists on the property.
Power; Is available at 33,000 volts, 2 miles away. At present, a line comes into the property at 7,500 volts.

5. (a) THE EXPLORATION PROJECT
We wish to explore for Uranium, Thorium, Lithium, Mica, Rare Earths, Lead and Zinc.

5. (b) PROPOSED WORK
It is proposed to core-drill as follows:
1. Six (6) core drill holes surrounding the Dyke to a depth of 1500 feet. This is the depth indicated by geologists in order to reach granite. These core drill holes properly spaced to test Dyke and Fault.
2. Twenty-two core drill holes to a depth of 600 feet to test out additional acreage for lead and zinc and to further run out the fault.
3. All core drill holes to be located according to the advise of your DMEA Field Geologist and our Company Geologist and using the records in our files as reference and guide material.
4. The number, type, and selection of the samples to be assayed from the core drill holes will be made according to an agreement by the geologists.
5. The actual cost of assaying to be born ½ by The Ozarks Explorations Company, Inc., and ½ by the Government.

5. (c) The work will begin within 30 days after signing a contract and will be completed within 18 months from the date of the contract.

5. (d) Operating Experience & Background of Applicant
H. B. Hart, President of The Ozarks Explorations Co., Inc., will be Supervisor of operations. He has had eight years experience in mining and milling of barite and lead in Morgan and Camden Counties, Missouri. He is a former State Representative and State Senator. He has been recently engaged in building, contracting and real estate development in Morgan and Camden Counties.

5. (d) continued

Lee W. Farmer, an officer in the Corporation will be an assistant Supervisor. He is a banker and state highway construction contractor with a number of years experience in construction contracting.

Al G. Elam, an officer in the Corporation will be an assistant Supervisor. He is a civil engineer, a realtor, and a contractor with heavy earth moving equipment.

Philip L. Jones, will be a consultant in geologyand mining engineering. He is a graduate engineer, A.R.S.M. of the Royal School of Mines, London University, a member of the A.I.M.E. and a registered professional engineer of Missouri; with 28 years general mining, geological and milling experience. For the last fifteen years, he has been engaged in consulting, design and erection of mining and milling plants in U.S.A. and South America.

E. V. Peterson, Plant Metallurgist, DuPont Plant, Dana, Indiana, will also be a consultant. He has B.S. in Mining Engineering from the University of Idaho, and a M.S. in Mining Engineering from the University of Utah. He has worked as a geologist and metallurgist for DuPont for the last 13 years.

6 (a) Independent Contracts

6 core-drill holes 1 1/8" core, 9,000' @$2.90--------	$26,100.00	
22 core-drill holes 1 1/8" core, 13,200' @$1.80------	$23,760.00	
	$49,860.00	$49,860.00

6 (b) Labor Supervision, Consultants----------NONE

6 (c) Operating Material & Supplies----------NONE

6 (d) Operating Equipment----------NONE

6 (e) Rehabilitation----------NONE

6 (f) New Buildings & Improvements----------NONE

6 (g) Miscellaneous, including repairs, Assaying, Accounting & Payroll

ASSAYING, 1,500' holes, 4 samples per 100' below 600', or a total of 36 samples per hole.		
Spectro-graphic assay @$5.00 per sample, $180.00 per hole. 6 holes @ $180.00 each----------	$ 1,080.00	
Chemical assay, for four mineral, 2 samples per 100' below 600' level @ $6.00 per sample, $108.00 per hole, 6 holes @ $108.00 each----------	$ 648.00	
ASSAYING, 600' holes, 10 samples per hole. Chemical assay, lead & zinc, @$3.00 per sample,$30.00 per hole. 22 holes @$30.00 each----------	$ 660.00	
Freight and postage on assay samples @.25¢ each, total of 544 sample from all holes----------	$ 136.00	
	$ 2,524.00	$ 2,524.00
	TOTAL	$52,384.00

6 (h) Contingencies----------NONE

TOTAL	$52,384.00

7 (a) We are prepared to furnish our share of the cost of proposed project according to Government regulations.

7 (b) We propose to furnish our share in money. We will meet the contract price, payroll and assay costs and then the government can pay us their share of the expenses.

The Ozarks Explorations Co., Inc.
Camden, Missouri

EXHIBIT 3a

RECEIVED
AUG - 3 1956

MINERAL, OIL, AND GAS LEASES

10-Year Contract with Renewal Provisions

Albert Moore and Cleo Moore, his wife
Description:
County of Laclede--The North half of the Northwest quarter of Section 11, Township 36, Range 17. Also the Southwest quarter of the Northwest quarter of Section 11, Township 39, Range 17, the South half of the Northeast quarter Section 10, Township 36, Range 17, All containing in all----------200 acres

George Burns and Nancy F. Burns, his wife
Description:
County of Camden--The west half of the Northeast quarter of Section (31) Thirty-one, Township (37) Thirty-seven, Range (16) Sixteen. Except 2 acres off southwest corner of said tract deeded to the Mount Horrb Church and Cemetary, Counting 78 acres more or less.
All of the North Half (N½) of lot number one (1) of the Northwest quarter (NW¼) of Section Thirty one (31), Township Thirty-seven (37), Range Sixteen (16), containing forty acres (40) more or less, with the exception of all the mineral rights to said forty acres, title to which is to remain with parties of the first part.
Also W½ of S½ of lot 1 SW¼ of Section 30, Township 37, Range 16. Said land containing in all approximately 138 acres, less mineral rights on 40 acres.---------- 138 acres

B. H. Looney and Ollie Looney, his wife
Description:
County of Camden--The northeast quarter of the Northeast quarter of Section (31), Township (37), Range (16) in Camden County Missouri.
The Northwest quarter of the Northwest quarter of Section (32) Township (37), Range (16) in Camden County.
The Southwest quarter of the Northwest quarter of Section (32) Township (37), Range (16) in Camden County, Missouri.
The Southeast quarter of Northeast quarter of Section (31), Township (37), Range (16) in Camden County, Missouri.
Containing in all----------160 acres

Lealand E. North and Genevieve North, his wife
Description:
County of Laclede--The South half of the southeast, southwest quarter, Section 5, containing 20 acres.
The North half of the Northwest quarter and 20 acres off of North side of the south half of the Northwest quarter Section 8, containing approximately 100 acres, Twp 36, Range 16.
The Northeast quarter of the Northeast quarter of Section 7, Township 36, Range 16, containing 40 acres.
The Northwest quarter of the Northeast quarter and the North half of Lot 1 of the Northwest quarter of Section 7, Township 36 Range 16 containing 80 acres.
The Northwest quarter of the Northeast quarter and the North half of Lot 1 of the Northwest quarter of Section 7, Township 36, Range 16 containing 80 acres.
The east half of Lot 1 of the Northeast quarter, The Southeast quarter, all of Section 6, Twp. 36, Range 16, Containing 200 acres more or less.
The Southwest quarter of the Southwest quarter of Section 5, Township 36, Range 16, containing 40 acres. The legal description above containing in all about----------480 acres

James Bruce Salley and Goldie Salley, his wife
Description:
County of Laclede--The North half of the Northwest quarter and the southwest quarter of the Northwest quarter, all of Section12, Township 36, Range 17 in Laclede County. Containing--------120 acres

Dale Esther and Helen L. Esther, his wife
Description:
County of Laclede--East haof Southeast quarter and the Northeast corner Southwest Southeast of Section 7, Township 36, Range 16 in Laclede County. The North half southwest, Southwest Southwest, South 3/4 South half North west. The southeast Southwest, Northwest Southeast, Section 8, Twp. 36 Range 16, Containing in all, ore or less----------341 acres

Ira Mizer and Alma Mizer, his wife
Description:
County of Laclede--The south half of the southwest quarter and the southwest quarter of the southeast quarter of Section 12, Township 36, Range 17. Also the Northwest quarter of the Northeast quarter Section 13, Township 36, Range 17, Containing in all----------160 acres

Charles H. Olds and Velma L. Olds, his wife
Description:
County of Laclede--The south half of the Northeast quarter, and the North half of the southeast quarter and the southwest quarter of the southeast quarter, Section 14, Township 36, Range 17 in Laclede County, Missouri, more or less---------200 acres

Zeph Waters and Hazel Waters, his wife
Description:
County of Laclede--S½ SE¼, Section 23, Township 36, Range 17, in Laclede County, Missouri. Also the Southeast quarter of the Southwest quarter of Section 23, Township 36, Range 17. Containing in all one hundred and twenty acres----------120 acres

Charles B. Ginnings and Sadie Ginnings, his wife
Description:
County of Laclede--Twenty acres, part of the south half of Lot 2 southwest Section 6, Township 36, Range 16; Forty acres, the Northeast of the Northeast Section 12, Township 36, Range 16; Fifty-four acres in the Northwest corner of Lot 2 Northwest, Section 7, Township 36, Range 16, containing in all approximately----------114 acre

Hubert Rogers and Wilda Rogers, his wife
Description:
County of Laclede--The North half of the Southwest quarter and the east half Lot 1 Northwest and west half Lot 1, and 2 Northeast. Except 10 acres in the West part of Lot 2 Northeast. Containing in all approximately----------190 acres

J. L. Stephens and Martha C. Stephens, his wife
Description:
County of Camden--South half of Lot 1, Northwest and the Northwest of the Southeast of Section 31, Township 37, Range 16, Containing----------80 acres

Harold Wheeler and Mary Wheeler, his wife
Description:
County of Camden--The south half of the Southwest quarter Section 32, Township 37, Range 16 in Camden County containing~~666~~---80 acres
County of Laclede--Lot 2 of the Northwest quarter Section 5, Township 36, Range 16 in Laclede County, containing approximately 83.46 acres. The west half of Lot 1, Northwest quarter Section 5, Township 36, Range 16 in Laclede County, containing 40 acres. The west part of the southwest southwest Section 4, Township 36, Range 16, lying west of State Highway No. 5, containing approximately 15 acres. The north half of the Northwest quarter of the northeast quarter of Section 8, Township 36, Range 16 in Laclede County, Containing approximately 20 acres. The Southeast quarter and the South east of the northeast of Section 5, Township 36, Range 16 in Laclede County, containing 200 acres. Total Laclede County-----359 acres
All said tract containing approximately----------439 acres

Mrs. Fay R. LaBlank
Description:
County of Laclede--The West half of the Northeast Quarter ($W\frac{1}{2}$ $NE\frac{1}{4}$) and the Northeast Quarter of the Southeast Quarter ($NE\frac{1}{4}$ $SE\frac{1}{4}$) Section eleven (11), Township thirty-Six (36), Range Seventeen (17), Containing 120 acres more or less South $\frac{1}{2}$ of Section 11, Township Thirty-Six (36), Range Seventeen (17).
Containing in all----------400 acres

Maude M. Martin
Description:
County of Laclede--The North half of the Northeast quarter Section 6,; West half Lot 1, Northwest quarter Section 5, South 24.02 acres of West half Lot 2, Northwest quarter Section 6, all in Township 36, Range 16. Containing in all approximately----------304 acres

Alfred North and Zetta M. North, his wife
Description:
County of Laclede--The Northeast quarter of the southwest, The Northwest quarter of the Southeast quarter, The South half of the Northeast quarter, the south half of lots 1 and 2 of the southwest quarter, one acre off of the northeast corner of the southwest southeast quarter, containing in all 248.94 acres more or less, lying in Section 7, Township 36, Range 16. Approximately----------248.94 acres

Winston O. Esther and Nellie B. Ester, his wife
Description:
County of Camden--All that part of Southwest quarter of Southwest quarter, Section 33, Township 37, Rang 16 Camden County--lying West State Highway No. 5----------30 acres
County of Laclede--Also the Northeast quarter of Northeast quarter, Section 5, Township 36, Range 16, Laclede County, Missouri----------40 acres

Harrison M. Miller and Ella May Miller, his wife
Description:
County of Laclede--North half of the Southeast Southwest, Section 5, Township 36, Rang 16, Southwest Northeast, West half Southeast Northeast, South half Northwest Northeast, Southwest Northeast Northeast, 90 acres 8-36-16. Southwest East of road & south branch 61 acres. Containing in all approximately----------171 acres

Levie Rogers and Wallie Rogers, his wife
Description:
County of Camden--Northwest quarter of the Northeast quarter of Section (32) and the west half of the southwest quarter of the southeast quarter of Section (29) Township (37) Range (16). Containing 60 acres.
Twenty rods off of the west side of the southeast quarter of the southwest quarter of section (29) Township (37) Range (16) containing 10 acres.
East half of the southwest quarter of the southeast quarter of Section (29) Township (37) Range (16), containing 20 acres.
The south half of Lot 2 of the Northwest quarter, Section (7) Township (36), Range (16) in Laclede County, Missouri. Also south half Lot 1 Northwest quarter Section 7, Township 36, Range 16. Containing approximately----------168 acres

Bethena McCoy, widow
Description:
County of Laclede--The Northwest quarter of the Southwest quarter of Section 12, Township 36, Range 17, in Laclede County, containing approximately 40 acres----------40 acres

Laurence Chance and Pauline Chance, his wife
Description:
County of Laclede--The East half of Lot 1 Northwest, and the West half Southeast, and East half of the South west and the Southeast of the Southeast all in Section 1, Township 36, Range 17. Containing in all----------240 acres

James A. Riggins and Dortha H. Riggins, his wife
Description:
County of Laclede--All of the North Half of the Southwest quarter ($N\frac{1}{2}$ $SW\frac{1}{4}$) and the Northwest quarter of the Southeast Quarter ($NE\frac{1}{4}$ $SE\frac{1}{4}$), all in Section Twenty three (23), Township Thirty Six (36), Range seventeen (17), containing 120 acres, more or less.
Also the Southeast quarter of the Northeast Quarter ($SE\frac{1}{4}$ $NE\frac{1}{4}$) of Section 23, Township 36, Range 17, containing 40 acres more or less.
Containing in all----------160 acres

Maude M. Martin
Description:
County of Laclede--The west half of the Southwest quarter and the Northeast quarter of the Southwest quarter of Section 1, Township 36, Range 17. Also the South half of the Northwest quarter and the North half of the Southwest quarter in Section 13, Township 36, Range 17, Containing 280 acres more or less----------280 acres

Thomas Young and Grace Young, his wife
Description:
County of Laclede--The East half of the Southeast quarter of Section 13, Township 36, Range 17. The North half of the Northwest quarter of Section 14, Township 36, Range 17 in Laclede County, Missouri. Containing----------160 acres

Thomas J. De Fries and E. W. Brumbaugh
Description:
County of Laclede--Part of the Southeast $\frac{1}{4}$, Southeast $\frac{1}{4}$ of Section Twelve (12), Township Thirty-six (36), Range Seventeen (17). Containing----------10 acres

Delle Hocking and W. J. Hocking, her husband
Description:
County of Laclede--The Southeast quarter of the Northwest quarter (SE¼ NE¼) of Section eleven (11), Township thirty-six (36), Range Seventeen (17). Containing in all----------40 acres

Joel Grimes and Goldie Grimes, his wife
Description:
County of Laclede--Beginning at the Northwest corner of the Southeast quarter of the Southeast quarter of Section Twelve (12) Township Thirty-six (36), Range Seventeen (17); thence East 330 feet; thence South 330 feet, thence West 330 feet; thence North 330 feet and to the place of beginning. Containing, more or less----------10 acres

Fred Christner and Mildred Christner, his wife
Description:
County of Laclede--All of the West Half of the Southeast Quarter of Section Fifteen (15) in Township Thirty-Six (36) of Range Seventeen (17) containing, more or less----------80 acres

Robert E. Hogue and Golda A. Hogue, his wife
Description:
County of Laclede--That part of the west half of Lot 2 Northwest quarter Sectionl, Township 36, Range 17, that lies south and east of the branch. Also the west half of Lot 1 of the Northwest Quarter Section 1, Township 36, Range 17, Laclede County
The west half of Lots 1, and 2 of the Northeast quarter and the east half of Lot 2 of the Northwest quarter of Section 1, Township 36, Range 17 of Laclede County
The east haof of Lot 2, Northeast Section 1, Township 36, Range 17, of Laclede County. Containing in all approximately----240 acres
County of Camden--All of the south half of the southeast quarter of Section 36, Township 37, Range 17 West, also that part of the northwest quarter of the southwest quarter of Section 31 Township 37, Range 16 in Camden County described as follows, Beginning at the southwest corner of said northwest quarter of the southwest quarter of Section 31 thence run North along west line said quarter quarter section 31, 411/3 rods more or less to the intersection of the said west line with the south edge of the County road, thence run in a northeasterly direction along the south side of said road 36 rods, thence south to the south line said Northwest southwest quarter, thence west to the place of beginning, in Camden County. Containing approximately--110 acres

Bual Waters and Myrtle Waters, his wife
Description:
County of Laclede--All of the North one half of Lot two (2) of the Southwest quarter and the west one half of Lot one (1) of the northwest quarter of Section six (6), Township Thirty-six (36) Range Sixteen (16) and the east one half of the Northeast quarter and the Northeast quarter of the Southeast quarter of Section one (1), Township Thirty-six (36), Range Seventeen (17) and containing in all 160 acres, more or less., together with the rights of ingress and egress for road purposes beginning at the NW corner of the E½ Lot 1 NE¼ run north to the NW corner of the E½ of Lot 2 NE¼ of Section 36, Twp 37, Range 17 following the west side of Pt Lot 2 NW¼ and Pt. NW SE of Section 31, Twp 37, Range 16, thence across E½ Lot No. 2 NE of Sec. 1 Twp 36, Range 17, said roadway beginning in Laclede County and ending at the present County road in Camden County.
Also all of the southwest quarter of the southwest quarter (SWSW) of Section twenty-three (23), Township thirty six (36), Range 17, containing 40 acres more or less.
Total containing more or less----------210 acres

The Ozarks Explorations Co., Inc
Camdenton, Missouri

Clint Rogers and Vada Velma Rogers, his wife
Description:
County of Camden--All of the east half (E½) of the Northwest quarter (NW¼) of Section thirty-two (32), Township thirty-seven (37), Range Sexteen (16), Containing 80 acres more or less.
All of an undivided interest in and to the Northeast quarter (NE¼) of the Northeast quarter (NE¼) of Section Thirty-two (32) in Township thirty-seven (37) North, Range Sixteen (16) West. Containing in all, approximately----------120 acres

Euin Gregory and Ila Mae Gregory, his wife
Description:
County of Camden--That part of Northwest quarter of Southwest quarter Section 33, Township 39, Range 16, lying West of Highway, Also south half southeast quarter Section 32, Twp 37, Range 16 in Camden County. Containing more or less---------120 acres
County of Laclede--North 10 acres of Northwest quarter (NW¼) Section 5, Township 36, Range 16, in Laclede County---------10 acres
Containing in all approximately----------130 acres

Luther T. Burns and Leona Mae Burns, his wife
Description:
County of Laclede--80 acres of land being the North half (N½) of the Northwest quarter (NW¼) Section 13, Township 36, Range 17. Containing----------80 acres

F. S. Dauwalter and Mary Jane Dauwalter, his wife and
Helen Creagon and Harry A. Creagon, her husband, and
Elizabeth Buchanan and Richard O. Buchanan, her husband
Description:
County of Laclede--The West half of Lot 1 Northeast quarter and East half Lot 1 Northwest quarter and Lot 2 of Northwest quarter; all in Section Six (6), Township thirty-six (36), Range sixteen (16), in Laclede County, Missouri. Containing in all, more or less----------160 acres

FORM B
FOR SALE BY THE JOPLIN PRINTING CO., JOPLIN, MO.

RECEIVED AUG - 3 1956

EXHIBIT 3d

MINING LEASE

(Copy—Form of Lease signed and acknowledged by lessors)

THIS INDENTURE, Made this.....day of....., 19....., by and between

.....

.....

....., called lessor....., and

The Ozarks Explorations Company, Incorporated

....., called lessee.

WITNESSETH, 1. That said lessor....., in consideration of the premises and the sum of One Dollar, paid to lessor....., by lessee..... do..... hereby LEASE unto lessee for prospecting and mining for lead, zinc, coal, and other valuable mineral substances, for ten years from the date hereof, the following described tract of land (for purposes hereof considered as one parcel) situated in..... County, State of.....Missouri.....to-wit:

on one tract in the Camden-Laclede project

.....

.....

.....

.....

.....

.....

.....of Section.....Township.....Range.....

2. The lessor.....hereby give.....and grant.....unto lessee, for said term, the exclusive right and license to prospect and mine said land for lead, zinc, coal, and other valuable mineral substances; together with the right and license to prepare for market on said premises and remove and sell all lead, zinc, coal, and other valuable mineral substances and gems ~~mined~~ thereon; with the right to construct buildings or other structures and to make excavations, openings, stockpiles, dumps, ditches, drains, roads and other improvements upon said premises, including the use of water in said mining operations, and to place such machinery thereon as lessee may deem necessary for efficiently prospecting and mining said lands and preparing for market and disposing of ores and coal mined, with the right to lessee to remove all property so placed thereon at any time during or within one year after the termination of this lease.

3. **IN CONSIDERATION WHEREOF,** lessee agrees to pay unto lessor.....at....First National Bank.....Bank, at Camdenton....., State of.....Missouri....., on Wednesday of each week following sale of ore, a royalty of .....per centum of all moneys received for ores mined and sold from said land during the preceding week, with the privilege to lessee to consume such ore and pay said percentage of the market price as royalty thereon; for the protection of the lessor.....and to the end that there may be no dispute as to the market price of ore so consumed, it is expressly agreed that if the lessor..... .....not satisfied with the market price used in making royalty settlements, lessor.....shall have and hereby agree.....to take said percentage of said ore, or ore of like quality, in lieu of said royalty, at the ore bins on the property each week and further agree.....to give written notice at once in the event of.....not being satisfied as aforesaid.

4. Lessee agrees to pay lessor at the Bank, hereinbefore mentioned, on the tenth of each month, five per centum of all moneys received for coal mined and sold from said land during the preceding month with the privilege to lessee to consume such coal and pay said percentage of the market price as royalty thereon.

5. The lessee will keep accurate books showing quantities and kinds of ore mined from said lands, and sold or consumed, when and to whom sold, and the money received from sales and such books of account shall be open to inspection of lessor.....at all reasonable hours.

6. All mining operations shall be carried on in a miner-like and workman-like manner as the same are usually conducted in said locality.

7. The lessor.....shall have the right to enter upon said land for the purpose of inspection and examination, not unnecessarily interfering with the prospecting and mining operations.

8. The lessee shall commence prospecting or mining upon the lands within on or before January 1st 1956 days from the date and delivery hereof. Such prospecting or mining shall be carried on continuously and shall not be suspended at any time for longer than 30 days except on account of unavoidable accidents, strikes or other conditions beyond the control of lessee.

9. If prospecting or mining operations should not be commenced on said land within the time hereinbefore provided, the lessee shall pay or tender the sum of $ .25¢ per acre if the .25¢ has been paid on the oil lease then nor required on this, in the manner hereinafter provided, which payment or tender shall operate as a rental for one year ~~months~~ from and after the date last above stated, and the same shall also cover the right and privilege in the lessee to defer the commencing of said prospecting or mining operations for and during the said period. In like manner and upon like payments or tenders, the commencement of prospecting or mining operations may be further deferred or suspended after having been commenced, for like periods, successively during the term of this lease. Lessor.....expressly declares that the down payment or consideration received by him for this lease at the time of the execution thereof is a good, valid and substantial consideration and sufficient in all respects to support each and every covenant herein, including specifically the option granted the lessee to extend this lease from time to time during the term thereof upon the payment or tender of the rentals hereinbefore provided for. All rentals due hereunder may be paid by lessee's check mailed, postage prepaid, to lessor.....at....First National Bank....., or to the bank hereinbefore mentioned, or its successors, for lessor.....credit, on or before the date any such rentals shall become payable.

Said bank and its successors by a power irrevocable is hereby made the agent of lessor.....to accept all rentals and royalties herein provided for, and the same shall continue as a depository of such royalties or rentals during the life of this lease regardless of changes in the ownership of said land or said rentals or royalties.

10. After the expiration of the term hereinbefore fixed, this lease shall continue in force and effect so long as ore or coal shall be produced therefrom by the lessee, or he shall continue prospecting or mining operations on said land or any part thereof, in good faith, it being understood and agreed that in case the said lessee shall prospect the said land after the expiration of said term by drilling, he shall have the privilege of suspending such prospecting and mining operations for a period of ninety days after the completion of each hole drilled, without the payment of rentals.

11. Lessor.....hereby warrant.....and agree.....to defend the title to the lands herein described, and agree that the lessee shall have the right, at any time, to redeem for lessor.....by payment any mortgages, taxes or other liens on the above described lands, in event of default of payment by lessor....., and be subrogated to the rights of the holder thereof.

12. The lessee shall have the right to assign or sublet this lease or any portion of the acreage covered thereby.

13. Lessee shall pay for damages, caused by his operations, to growing crops on said land.

14. In case of failure of lessee to keep and perform the terms of this lease, lessor.....may give thirty days' written notice of the violation complained of, and if such violation or default is not removed within said period, said lease shall thereupon terminate, at the option of the lessor....., which remedy shall be exclusive, and the lessee agrees to execute and record at lessee's expense a proper release of this mining lease.

15. The lessee may at any time, if he desires to do so, pay all royalties or rentals then due, surrender and terminate this lease by giving seven days' written notice and thereupon he shall be relieved from all obligations hereunder with like effect as if this lease had not been made, by executing and recording at lessee's expense a proper release of this mining lease.

16. The terms and conditions of this lease shall be binding upon and inure to the benefit of the heirs, legal representatives and assigns of the parties hereto.

IN WITNESS WHEREOF, lessor.....ha.....duly executed this indenture the day and year first above written.

.....

.....

.....

ACKNOWLEDGMENT OF LEASE.

STATE OF....., COUNTY OF.....ss.

BE IT REMEMBERED, That on this.....day of....., in the year of our Lord, one thousand nine hundred and....., before me, a Notary Public, in and for said County and State, came..... and.....to me personally known to be the identical persons who executed the above and foregoing instrument, and who each duly acknowledged the execution of the same.

IN TESTIMONY WHEREOF, I have hereunto set my hand and official seal the day and year last above written.

My commission expires.....

.....
Notary Public.

ASSIGNMENT.

KNOW ALL MEN BY THESE PRESENTS: That..... of..... County, in the State of.....the within named grant.....in consideration of the sum of..... Dollars to.....in hand paid, the receipt whereof is hereby acknowledged, do.....hereby sell, assign, transfer, set over and convey unto....., heirs and assigns, the within grant.

TO HAVE AND TO HOLD THE SAME FOREVER, Subject nevertheless, to the conditions therein contained.

IN WITNESS WHEREOF, the said grant.....ha.....hereunto set.....hand.....this.....day of....., 19.....

.....

.....

ACKNOWLEDGMENT TO THE ASSIGNMENT.

STATE OF....., COUNTY OF.....ss.

BE IT REMEMBERED, That on this.....day of....., in the year of our Lord, one thousand nine hundred and....., before me, a Notary Public, in and for said County and State, personally appeared..... and.....to me known to be the identical person.....who executed the within and foregoing instrument and acknowledged to me that.....executed the same as.....free and voluntary act and deed for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my official signature and affixed my notarial seal the day and year first above written.

My commission expires.....

.....
Notary Public.

NO.....

MINING LEASE

FROM .....

TO .....

Dated ....., 19.....

Section....., Township....., Range.....

County.....

No. Acres.....

STATE OF..... } ss.
COUNTY OF.....

This instrument was filed for record on the..... day of....., 19..... at..... o'clock.....M., and duly recorded in Book..... Page.....of the records of this office.

.....

By....., Deputy

When recorded

Return to .....

THE JOPLIN PRINTING CO., JOPLIN, MO. 195136 500 8-45

ACKNOWLEDGMENT OF LEASE WHERE LESSOR SIGNS BY MARK.

STATE OF....., COUNTY OF.....ss.

On this.....day of.....A. D. 19....., before me, the undersigned, a Notary Public, in and for the County and State aforesaid, personally appeared..... and..... to me known to be the identical person.....who executed the within and foregoing instrument by.....mark....., in my presence and in the presence of.....and....., as witnesses, and acknowledged to me that.....executed the same as.....free and voluntary act and deed for the uses and purposes therein set forth.

IN TESTIMONY WHEREOF, I have hereunto set my hand and official seal the day and year last above written.

My commission expires.....

.....
Notary Public.

(KANSAS)
Form 88—(Producers)

B+

OIL AND GAS LEASE

KANSAS BLUE PRINT CO.
BLUE PRINTING • PHOTOSTAT WORK • OIL MAPS & FORMS
ARCHITECTS AND ENGINEERS SUPPLIES
141 North Market St.-Wichita Kansas

(COPY--Form of lease signed & acknowledged by lessors)

AGREEMENT, Made and entered into this _____ day of _____, 19____,

by and between _____

_____ Party of the first part, hereinafter called lessor (whether one or more) and

The Ozarks Explorations Company, Incorporated Part____ of the second part, hereinafter called lessee.

WITNESSETH, That the said lessor, for and in consideration of One DOLLARS, cash in hand paid, receipt of which is hereby acknowledged, and of the covenants and agreements hereinafter contained on the part of lessee to be paid, kept and performed, has granted, demised, leased and let and by these presents does grant, demise, lease and let unto said lessee, for the sole and only purpose of mining and operating for oil and gas, and laying pipe lines, and building tanks, power stations and structures thereon to produce, save and take care of said products, all that certain tract of land situated in the County of _____ State of ~~Kansas~~ Missouri, described as follows, to wit: _____

on one tract in the Camden-Laclede project

of Section _____ Township _____ Range _____ and containing _____ acres more or less.

It is agreed that this lease shall remain in full force for a term of 10 years from this date, and as long thereafter as oil or gas, or either of them, is produced from said land by the lessee.

In consideration of the premises the said lessee covenants and agrees:

1st. To deliver to the credit of lessor, free of cost, in the pipe line to which lessee may connect his wells, the equal one-eighth (⅛) part of all oil produced and saved from the leased premises.

2nd. To pay lessor for gas from each well where gas only is found the equal one-eighth (⅛) of the gross proceeds at the prevailing market rate, for all gas used off the premises, said payments to be made ~~to lessor at First Nat'l Bank~~ and lessor to have gas free of cost from any such well for all stoves and all inside lights in the principal dwelling house on said land during the same time by making his own connections with the well at his own risk and expense.

3rd. To pay lessor for gas produced from any oil well and used off the premises or in the manufacture of gasoline or any other product a royalty of one-eighth (⅛) of the market value, at the mouth of the well, payable monthly at the prevailing market price.

If no well be commenced on said land on or before the 1st day of January, 19 56, this lease shall terminate as to both parties, unless the lessee on or before that date shall pay or tender to the lessor, or to the lessor's credit in The First National Bank Bank at Camdenton, Missouri or its successors, which shall continue as the depository regardless of changes in the ownership of said land, the sum of .25¢ per acre DOLLARS, which shall operate as a rental and cover the privilege of deferring the commencement of a well for one year ~~months~~ from said date. In like manner and upon like payments or tenders the commencement of a well may be further deferred for like periods of the same number of months successively. All such payments or tenders of rentals may be made by check or draft of lessee or any assignee thereof, mailed or delivered on or before the rental paying date, either direct to lessor or assigns or to said depository bank. And it is understood and agreed that the consideration first recited herein, the down payment, covers not only the privileges granted to the date when said first rental is payable as aforesaid, but also the lessee's option of extending that period as aforesaid, and any and all other rights conferred.

Should the first well drilled on the above described land be a dry hole, then, and in that event, if a second well is not commenced on said land within twelve months from the expiration of the last rental period for which rental has been paid, this lease shall terminate as to both parties, unless the lessee on or before the expiration of said twelve months shall resume the payment of rentals in the same amount and in the same manner as hereinbefore provided. And it is agreed that upon the resumption of the payment of rentals, as above provided, that the last preceding paragraph hereof, governing the payment of rentals and the effect thereof, shall continue in force just as though there had been no interruption in the rental payments.

If said lessor owns a less interest in the above described land than the entire and undivided fee simple estate therein, then the royalties and rentals herein provided shall be paid the lessor only in the proportion which his interest bears to the whole and undivided fee.

Lessee shall have the right to use, free of cost, gas, oil, and water produced on said land for its operation thereon, except water from wells of lessor.

When requested by lessor, lessee shall bury his pipe lines below plow depth.

No well shall be drilled nearer than 200 feet to the house or barn now on said premises, without the written consent of the lessor.

Lessee shall pay for damages caused by its operations to growing crops on said land.

Lessee shall have the right at any time to remove all machinery and fixtures placed on said premises, including the right to draw and remove casing.

If the lessee shall commence to drill a well within the term of this lease or any extension thereof, the lessee shall have the right to drill such well to completion with reasonable diligence and dispatch, and if oil or gas, or either of them, be found in paying quantities, this lease shall continue and be in force with the like effect as if such well had been completed within the term of years herein first mentioned.

If the estate of either party hereto is assigned, and the privilege of assigning in whole or in part is expressly allowed, the covenants hereof shall extend to their heirs, executors, administrators, successors or assigns, but no change in the ownership of the land or assignment of rentals or royalties shall be binding on the lessee until after the lessee has been furnished with a written transfer or assignment or a true copy thereof; and it is hereby agreed in the event this lease shall be assigned as to a part or as to parts of the above described lands and the assignee or assignees of such part or parts shall fail or make default in the payment of the proportionate part of the rents due from him or them on an acreage basis, such default shall not operate to defeat or affect this lease in so far as it covers a part or parts of said lands upon which the said lessee or any assignee thereof shall make due payments of said rentals. If the leased premises are now or hereafter owned in severalty or in separate tracts, the premises, nevertheless, may be developed and operated as an entirety, and the royalties shall be paid to each separate owner in the proportion that the acreage owned by him bears to the entire leased area. There shall be no obligation on the part of the lessee to offset wells on separate tracts into which the land covered by this lease may hereafter be divided by sale, devise, or otherwise, or to furnish separate measuring or receiving tanks for the oil produced from such separate tracts.

Lessor hereby warrants and agrees to defend the title to the lands herein described, and agrees that the lessee shall have the right at any time to redeem for lessor by payment, any mortgages, taxes or other liens on the above described lands, in the event of default of payment by lessor, and be subrogated to the rights of the holder thereof.

_____ _____ (SEAL)

Whereof witness our hands as of the day and year first above written. _____ (SEAL)

_____ (SEAL)

Witness to the mark: _____ (SEAL)

_____ _____ (SEAL)

_____ _____ (SEAL)

_____ _____ (SEAL)

STATE OF_____
COUNTY OF_____ } ss. ACKNOWLEDGMENT FOR INDIVIDUAL (Kans. Okla. and Colo.)

Before me, the undersigned, a Notary Public, within and for said County and State, on this_____ day of_____, 19____, personally appeared_____ and_____

to me personally known to be the identical person___who executed the within and foregoing instrument and acknowledged to me that_____executed the same as_____free and voluntary act and deed for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year last above written.

My commission expires_____ _____
Notary Public

STATE OF_____
COUNTY OF_____ } ss. ACKNOWLEDGMENT FOR INDIVIDUAL (Kans. Okla. and Colo.)

Before me, the undersigned, a Notary Public, within and for said County and State, on this_____ day of_____, 19____, personally appeared_____ and_____

to me personally known to be the identical person___who executed the within and foregoing instrument and acknowledged to me that_____executed the same as_____free and voluntary act and deed for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year last above written.

My commission expires_____ _____
Notary Public

STATE OF_____
COUNTY OF_____ } ss. ACKNOWLEDGMENT FOR CORPORATION

Be it remembered that on this_____day of_____, 19____, before me, the undersigned, a Notary Public, duly commissioned, in and for the county and state aforesaid, came_____ _____, _____ president of_____, a corporation of the State of_____, personally known to me to be such officer, and to be the same person who executed as such officer the foregoing instrument of writing in behalf of said corporation, and he duly acknowledged the execution of the same for himself and for said corporation for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal on the day and year last above written.

My commission expires_____ _____
Notary Public

No._____

OIL AND GAS LEASE

FROM

TO

Date_____, 19

Section_____ Twp._____ Rge._____

No. of Acres_____ Term_____

County_____

STATE OF_____ } ss:
County of_____

This instrument was filed for record on the _____day of_____19____ at_____o'clock____M., and duly recorded in Book_____Page_____of the records of this office.

Register of Deeds.

By_____

When recorded, return to_____

THE KANSAS BLUE PRINT CO.
141 NORTH MARKET ST. WICHITA, KANSAS
PHOTOSTAT SERVICE UP-TO-DATE OIL MAPS

NOTE: When signature by mark in Kansas, said mark to be witnessed by at least one person and also acknowledged. For acknowledgment by mark, use regular Kansas acknowledgment.

STATE OF_____
COUNTY OF_____ } ss. ACKNOWLEDGMENT FOR INDIVIDUAL (Kans. Okla. and Colo.)

Before me, the undersigned, a Notary Public, within and for said County and State, on this_____ day of_____, 19____, personally appeared_____ and_____

to me personally known to be the identical person___who executed the within and foregoing instrument and acknowledged to me that_____executed the same as_____free and voluntary act and deed for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year last above written.

My commission expires_____ _____
Notary Public

ESHIBIT 4e

The Ozarks Explorations Co., Inc.
Camdenton, Missouri

Lebanon, Mo.
March 29 1955

RECEIVED
AUG - 3 1956

Defence Minerals Explorations Administration
Department of Interior
Washington, D. C.

Att. Mr. Clinton C. Knox, Executive Officer
DMEA Field Team, Region IV
P.O. Box 431, Joplin, Missouri

Re: Available man power
Decaterville Dome Area

Dear Sir:

After a consultation with the employment office here in Lebanon we believe this community and the immediate area-those living in driving distance we could supply the Ozark Explorations Company, Inc. (the Decaterville Dome Mine) with at least 300 common laborers. As for skilled they would be pretty scarce.

We will be glad to cooperate with your department in helping to carry out this project.

Very Respectfully
The Lebanon Chamber of Commerce

C. E. Clark, Sec.

The Ozarks Explorations Co., Inc.
Camdenton, Missouri

March 28, 1955

Defense Minerals Explorations Administration
Department of Interior
Washington, D. C.

Att: Mr. Clinton C. Know, Executive Officer
DMEA Field Team, Region IV
P.O. Box 431, Joplin, Missouri

Re: Available man power
Decaturville Dome Area

Dear Sir:

As a conservative estimate, we believe this community and the immediate area--those living in driving distance--could supply the Ozarks Exploration Company, Inc., (the Decaturville Dome Mine) with at least 400 common and skilled laborers.

We will be glad to cooperate with your department in helping to carry out this project.

Sincerely,

Camdenton Chamber of Commerce
by Marybelle Gardiner Sec'y.

THE OZARKS EXPLORATIONS CO., INC.
CAMDENTON, MISSOURI

RECEIVED
AUG - 3 1956

EXHIBIT 4a-2

(C O P Y)

LABORATORY CERTIFICATE
KELDON RESEARCH CORPORATION
Los Angeles, California

Date--May 28, 1955
Lab. No. 7602-1
Marking: No. 10038

Submitted by: Mr. Philip L. Jones
405 Miners Bank Bldg.
Joplin, Missouri
(from The Ozarks Explorations Company, Decaturville Dome Mine:)

Element	Not less than %	Not More than %	Element	Not Less than %	Not More than %
Silicon	Major Consitutuent %		Barium	0.03	0.3
Aluminun	2.0	20.0	Columbium		
Magnesium	1.0	10.0	Nickel		
Iron	1.0	10.0	Beryllium		
Calcium	0.3	3.0	Molybdenum		
Sodium	0.03	0.3	Vanadium	0.005	0.05
Potassium	0.1	1.0	Yttrium	0.005	0.05
Tellurium			Cadmium		
Gold			Copper	0.005	0.05
Boron	0.03	0.3	Silver		
Mercury			Tantalum		
Phosphorus			Zinc		
Lithium			Titanium	0.3	3.0
Thallium		0.01	Zirconium	0.05	0.5
Lead			Palladium	0.05	0.5
Tin			Rodium		
Chromiun			Rubidium		
Arsenic			Cobalt		
Antimony			Lanthanum	0.01	0.1
Manganese		0.01	Strontium	0.01	0.1
			Cerium	0.01	0.1
Gallium	0.001	0.01	Ruthenium		
Germanium			Tungsten		
Platinum			Indium		
Bismuth			Uranium		

1. Percentage ranges represent the probable concentrations of the elements found to be present.

2. Fire assay is the method of choice for Gold and Platinum group elements; general spectrographic techniques are limited to ore concentrations greater than one or two ounce per ton.

3. Spectrochemical analysis is only one of several factors required for the complete evaluation of an ore sample; it should be regarded as a "Coarse Screen" used to estimate the advisability of additional study. Economic and mineralogical considerations are also necessary for a true appraisal of the speciment.

4. Special attention: Uranium is absent or less than 0.02% in this sample.

Respectfully submitted,
(Signed) T. J. Rollins
Keldon Research Corporation

THE O[illegible]KS EXPLORATIONS CO., INC.
CAMDENTON, MISSOURI

(C O P Y)

LABORATORY CERTIFICATE
KELDON RESEARCH CORPORATION
Los Angeles, California

Date: June 3, 1955
Lab. No. 7659-1

Submitted by: Mr. Philip L. Jones
405 Miners Bank Bldg., Joplin, Mo.
Markings: 100.17 Decaturville Dome Mine

Element	Not less than %	Not more than %	Element	Not less than %	Not more than %
Silicon	Major Constituent %		Barium		
Aluminum	2.0	20.0	Columbium	- Not Detected--less than 0.1%	
Magnesium	1.0	10.0	Nickel		
Iron	0.5	5.0	Beryllium	- Not Detected--less than 0.005%	
Calcium	015	5.0	Molybdenum		
Sodium	0.3	3.0	Vanadium		0.03
Potassium	0.3	3.0	Yttrium	0.003	0.03
Tellurium			Cadmium		
Gold			Copper	0.005	0.05
Boron			Silver	0.0003	0.003
Mercury			Tantalum		
Phosphorus			Zinc		
Lithium	0.03	0.3	Titanium	0.1	1.0
Thallium			Zirconium	0.03	0.3
Lead	0.005	0.05	Palladium		
Tin - Not Detected--less than		0.005			
Chronium			Ruthenium		
Arsenic			Cobalt		
Antimony			Lanthanum		
Manganese	0.01	0.1	Strontium		
Gallium	0.001	0.01	Rubidium		
Germanium			Tungsten		
Platinum			Indium		
Bismuth			Uranium	0.003	0.03

Respectfully submitted

(Signed) T. J. Rollins

Keldon Research Corporation

THE OZARKS EXPLORATIONS CO., INC.
CAMDENTON, MISSOURI

(C O P Y)

THE BRUCE WILLIAMS LABORATORIES
Joplin, Mo.

Date: June 4, 1955

Submitted by:
Mr. Philip L. Jones
Miners Bank Building
Joplin, Missouri

Sample from Decaturville Dome

Our No.	Mark	Description
710483	Sample	#100-40

Phosphorus P 0.02%

(Signed) Bruce Williams

(C O P Y)

Date: 5-27-55

709643 Sample #100.37 Black Rock Wheeler Mine, Decaturville Dome

Radiometric assay (equivalent to % U_3O_8) 0.01%

Bruce Williams

(C O P Y)

Date 5-13-55

708485 Sample #100-7 Sand

Sodium Oxide Na_2O 0.04

Potassium Oxide K_2O 0.05

Bruce Williams

(C O P Y)

ROOT & SIMPSON, INC.
Denver, Colorado

Date: 6/11/55

Assayed for: The Ozarks Explorations Co., Inc.
Camdenton, Missouri

Sample: Rock from shaft

U_3O_8	Th O_2	Li_2O
0.021	0.14	0.04

EXHIBIT 4c-1

RECEIVED
AUG - 3 1956

Report

on

THE DECATURVILLE DOME MINE,

Property of

THE OZARK EXPLORATION COMPANY INC.,

Camdenton, Missouri

by
Philip L. Jones

Consulting Engineer

405 Miners Bank Building, Joplin, Missouri

B.Sc. London University, Associate of the Royal School Of Mines (A.R.S.M.), Member of the American Institute of Mining and Metallurgy (M.A.I.M.E.), Registered Professional Engineer Missouri (P.E. 6447),

1940-1953 Consultant, mine evaluation, and engineer, mill design, for C. Tennant Sons & Co. of New York
1934-1939 Chief Metallurgist at Marlu for West African Gold Corporation
1931-1933 Engineer and Geologist, Sumatra, for Borneo Company

February 14, 1956

Report No. JOP-131-2

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Figure I Map of the general location of the Decaturville Dome

Figure II Topographic Map of the Vicinity of the Decaturville Dome

Figure III Geological Map by Winslow with dips

Figure IV Mine Map of the Decaturville Dome

Figure V Drill Logs of the Decaturville Dome

Figure VI Geological Columnar Section

Figure VII Photographs of Original Exposure of Pegmatite

Figure VIII Spectrographic Assays of the Drill Hole Samples

Summary Report On

The Decaturville Dome Mine, Property of the Ozark Exploration Company, Inc.

Camdenton, Missouri

1 The Dome has attracted attention since 1869 due to its unusual rocks for Missouri, but has not been persistently examined until 1955 when the Ozark Exploration Company, Inc., prospected and drilled it.

2 Drilling and surface work showed that a small body of graphic granite pegmatite has been erupted into the upper Cambrian formations, which have been in the process brecciated, silicified, and pyritised, and thoroughly intermixed and inverted, in a limited area round the pegmatite, so that formations such as the Davis and the Derby Doerun outcrop, surrounded by Eminence dolomite as country rock.

3 Two smaller areas with similar structure occur near the pegmatite where no pegmatite has yet been found.

4 The principal economic mineral in the pegmatite is feldspar. A lithium mineral is present in the pegmatite and occasionally in lesser amounts in the dolomites near the pegmatite, and in two instances at some distance from the outcropping pegmatite. Thorium with the rare earth elements yttrium, cerium and lanthanum occurs in small amounts in a conglomerate partly composed of pegmatitic material on the edge of the exposed pegmatite and in one instance in the dolomite country rock, and in traces in the surrounding soil. Small quantities of zircon and ilmenite occur in the pegmatite and in adjacent dolomites and in traces in the soil.

5 It is suggested that the structures are of cryptovolcanic origin, that is, that they were caused by explosions following the contact of underlying igneous magma with the water filled Lamotte sandstone, at some time soon after the Pennsylvanian age when a considerable thickness of rocks covered this area. These explosions have blown up blocks of lower rocks as much as 1300 feet, but given rise to a general uplift of only about 350 feet. Subsequent to the formation of the structure about 4500 feet of rocks has been denuded off.

6 Such a theory of origin would suggest that there may be other bodies of pegmatitic material yet unexposed, and this is to some extent supported by the presence of lithium and thorium and rare earths that could be expected to be of pegmatitic origin in the faulted and brecciated dolomites not only near the exposed pegmatite but some distance away.

7 The feldspar is of interest as a possible source of potash as a fertiliser, and subject to acceptance by agriculturists should be worth about $6.00 per

ton after a rouch concentration costing about $1.00 in a plant costing about $20,000.

8 The Eminence dolomite which is the country rock in the immediate area is comparatively pure, and may be pure enough to be considered as a source of agricultural dolomite. This would cost about $1.25 per ton to produce and sell at about $1.85 per ton, when processed in a plant costing about $250.00 per ton day.

9 A combination of crude feldspar and dolomite might be made, subject to acceptance by agriculturists, to sell at about $2.50 per ton and be produced at about $1.25 per ton in a plant costing about $60,000.

10 Further exploration may discover further bodies of pegmatite and if these are substantial enough they might provide sufficient feldspar to be considered as a source of feldspar for the glass or ceramic industry that at present has to import this material from afar.

11 If this area is opened up for any purpose as for instance as a source of fertiliser as mentioned above any concentrated occurence of other materials such as lithium or thorium minerals could be stock piled for subsequent sale or treatment according to the amounts that are found.

12 It is suggested that for future exploration that magnetometric surveying be seriously considered in place of deep drilling to locate another pegmatite, since although the drilling has suggested that another might be present it has not indicated where.

13 If exploitation of feldspar and dolomite is contemplated, further shallow drilling, careful sampling, and chemical assaying would be needed.

14 A careful assessment should be made at this stage as to the course of future development.

February 14, 1956
Ref. No: JOP-131-2

Main Report On

The Decaturville Dome Mine, Property of the Ozark Exploration Company, Inc.

Camdenton, Missouri

First Part

Geological History 1869 - 1954

Purpose

This report is to review, correlate, and assess the present state of information on a part of the properties leased by the Ozark Exploration Company, Inc., commonly known as the "Decaturville Dome Mine", from the point of view of a mining engineer, which will include its development, geology, and future prospects.

Location

The site called the "Decaturville Dome Mine" is situated in Missouri about 1.3 miles S 52 W from Decaturville, which is on Mo. State Highway 5 between Lebanon (16 miles to the S.) and Camdenton (9 miles to the N.), see Fig. 1. The "Dome" and area in its immediate vicinity which has been most extensively examined is in Camden County S 1/2 of SW 1/4, S32, T37N, R16W, and the land immediately adjoining in Laclede County, N 1/2 of NW 1/4, S5, T36N, R16W, and NE 1/4, NE 1/4, S6, T36N, R16W. This limited area is the subject of this report, although the properties leased by the O.E.C.I. include, besides this area, considerable adjacent ones. The O.E.C.I. has driven in a center peg in the pegmatite that occurs in Camden County and for clarity this will be referred to as the "Center" of the "Dome" in the subsequent report, without quotation marks.

Access

The Dome is readily reached by a good public road W. from Decaturville 1.9 miles and from Highway 5 at a point .6 m. S. of Decaturville on Highway 5, and then W. by an improved private road 1.5 m. The nearest rail connection is at Lebanon on the St. Louis San Francisco R.R. from St. Louis to Springfield.

Facilities

The property has a substantial field office on the Dome with water and electric light laid on. A small power line at 7500v. comes on to the property. Water is obtained from a drill hole supplying about 10 gallons per minute. There is a small dam on the property which stores about 75,000 gallons when full, supplied by seepage and rain.

Description

The center of the Dome is a few feet to the W. of a quartz outcrop which is completely surrounded by about 45' of graphic granite pegmatite at a general elevation of about 1058', see figs. II and IV. The ground slopes in all directions except the S, into normally dry valleys and extends in a gently rolling upland to the S. for some miles. Just beyond the surrounding valleys and S. upland the land again rises to

elevations above the Dome of over 1100 feet, so that the Dome seems to be a hill ringed by higher hills. The immediate vicinity of the Dome is an open, grassy stretch with a few cottonwood trees. The surrounding ring of hills except for cultivation clearings is covered with typical Ozark oak forest. The open grassland round the Dome is used today for pasturing cattle and stated to be superior for that purpose to most of the surrounding land. Just E. of the Center is an old cattle feed silo and a few yards to the N. of that is an artificially made cattle pond. There are signs of old mine workings 45' E. of the Center, again in the valley about 480' S 51 W, and still farther on, about 1710' S 58W just on the other side of the next hill.

History of the Property previous to the formation of the Ozark Exploration Company, Inc.

1869

In this year Samuel Wheeler did some work on the Dome. He was the grandfather of the present owner, which latter furnished some of this information. The work done was described in Refs. A, B, and C listed in the References that follow this report. The most complete description is in Ruhl's work and supplemented by Winslow's and local information it was as follows:

The work was undertaken because of the presence of massive quartz boulders considered by the early miners to be good evidence of mineralization. Several shafts were put down about 45' E. of the Center, one of which could be seen early in 1955 when further work was prosecuted, but is not now distinguishable. One of these shafts was 30' deep in 1904 when Ruhl examined them. It contained a broken and confused mass of pegmatite, quartz boulders, quartz pebbles in "chert" and "mica schist". The miners were probably looking for lead and zinc which did not appear in these shafts.

They transferred to an area 525' away, S 51 W, probably because in the draw nearby further quartz pebbles were found and some can still be seen. Here three shafts were sunk. The top of two of these can be seen today as later reworked, and are referred to on the plans as the "B" shafts, B1 and B2, see figs. II, III, and IV. According to Winslow these shafts struck crevices that cut the "limestone" (really dolomite) in every way, and some ore was obtained of the following composition:

CuFeS	0.0071 %	
FeS_2	3.8308 %	
ZnS	22.1671 %	
PbS	63.9950 %	(By difference)
	100.0000 %	(Error is in original!)

The ore was of earthy luster and blue black in color. Ruhl quotes Samuel Wheeler as saying that the ore pockets were flat but tilted to the W. or SW. Ruhl also says that pegmatite was found at the bottom of the deepest of these shafts.

Winslow says that a further shaft was put down, the top of which is now to be seen 1710' S58W from the Center, where similar ore was found. Why this location was picked is not recorded and nothing in the vicinity seems to indicate the reason. Winslow locates this shaft on a map as the "Moore shaft", see fig. III.

1901

A Major Rush of St. Joseph, Mo., put down some diamond drill holes on the Dome, according to Shepard and Ruhl. Some of these skirted the pegmatite, but did not penetrate pegmatite at depth. It is possible, according to local information, that one of these holes was near the B shafts and went down 965' at an angle of 65°, with pyrite and some lead showing all the way. No logs of these holes are known.

1925

The Athletic Mining and Smelting Co. drilled the property this year, of which the following records remain:

Athletic M.S.C. No.	M.G.S. No.	Location	Elevation Feet	Depth Feet	From Center Distance Feet	From Center Bearing
1	2139	SW 1/4, SW 1/4, S32, T37N, R16W	1020*	490	495	S66W
D2	2140	NE 1/4, NE 1/4, S 6, T36N, R16W	1050	742	1710	S58W
D3	2141	NE 1/4, NE 1/4, S 6, T36N, R16W	1045	650	1710	S58W

*probable error for 1040'

These holes showed characteristics now known to be typical of the immediate area, see fig. V., such as:

a. Exposure of Lower Cambrian in this area surrounded by Ordovician, usually Gasconade surmounted by Roubidoux formation;
b. Considerable pyrite in certain sections;
c. Evidence of faulting assumed from repetition of formations.

Presumably the Athletic M.S.C. who were looking for lead and zinc found enough to encourage them since they cleaned out, repaired, and deepened one of the old shafts marked B1 on fig. IV, but there is no record of any ore being mined.

1925

Soon after this, the St. Louis Smelting and Refining Company worked near the Dome, as follows:

St. Louis S.R.C. No.	M.G.S. No.	Location	Elevation Feet	Depth Feet	From Center Distance Feet	From Center Bearing
Loc 3	2186	NE 1/4, NW 1/4, S 2, T36N, R17W	870	1060	15,200	S84W

This hole, see fig. II and V., was located on the banks of an intermittent stream running into Bank Branch. It is referred to subsequently as hole SL1. This area is not leased by O.E.C.I. but the hole is interesting in that it shows at depth some

of the characteristics around the Dome. The outcrop here is Ordovician of Van Buren formation which is considerably higher in the Geological sequence than any rock at the Dome. The similarity between this hole and those at the Dome shows in depth in the Davis and Bonneterre formations which contain considerable sandstone of peculiar appearance in both places. In other respects the hole showed a normal sequence for the general region, agreeing generally with deep holes in Morgan County to the N. and Laclede County to the S. The St. Louis S. R. C., who were presumably looking for lead and zinc, did not do any mining on record.

Subsequent to this no mining work was done on the Dome until 1955 but several Geologists noticed and discussed it and may even have visited it. Since their speculations need to be taken into account later it is convenient to chronicle them here.

1936

In Ref. D, Buchner suggested that the Dome was a "cryptovolcanic" structure, that is, a structure of uncertain origin which may have been produced by an underground explosion associated with the intrusion of magma or its emanations.

1939

In Ref. E, Tolman and Landes discussed the Igneous rocks of the Mississippi valley and inclined to the view that what they called the "Decaturville pegmatite" might be a pre-Cambrian structure which was exposed and eroded before the upper Cambrian sedimentary rocks were laid down, and was therefore not intrusive into the rocks with which it is now contiguous - that is, that it was a "buried hill", now exposed by erosion again.

Second Part

History Under Ozark Exploration Company, Inc., 1945 to date

1955

Late in 1954 Henry B. Hart of Versailles, Mo., became interested in the area, and early in 1955 he prospected it with a geiger counter. He recognised that pegmatite is a common primary source of the nuclear elements, uranium, lithium and the rare earths, as well as beryllium, zirconium, and titanium, all of interest now, which were not of interest to the old miners. He found that the area had several places where a geiger counter showed double background count, see fig. IV.

He founded a small company called the Ozark Exploration Company, Inc., and proceeded to examine the area. A field office was made out of an old house, and roads improved. The top of the pegmatite was scraped and its boundary was trenched round on the N., W., and part of the S., showing the pegmatite where exposed as more or less vertical sided, (see photos Fig. VII attached)

A shaft was sunk to the N. on the margin of the pegmatite, about 10 feet square foursquare to the compass, from the bottom of the trench 14' below the original surface to a depth of about 19' below, or a total of 34' below the original surface.

The S. wall of this shaft showed a more or less vertical face of pegmatite and exposed a band of dark grey "conglomerate" 2' wide dipping 80°S., towards the center of the pegmatite, which at times showed three times and better background geiger count in situ. This was sampled and assayed, and contained small amounts of thorium and rare earths yttrium, lanthanum, and cerium. The top of the pegmatite was carefully sampled and assayed, and metallurgical tests run on it that showed that fair grade feldspar could be readily separated from it by flotation.

It may be noted at this point that almost all assays obtained were spectrographic, because the O.E.C.I. considered that, although less accurate than chemical assay, they were far cheaper and also indicated most of the economic elements present, and were sufficient for initial exploration purposes.

Five churn drill holes were put down that skirted the pegmatite on the S. and W. and these suggested that the pegmatite did not enlarge laterally.

A radiometric survey was then completed, see fig. IV. This showed that a broken ring of ground with about twice background geiger count surrounded the pegmatite at roughly 500 feet radius besides a few high patches on the pegmatite itself.

1955, Aug. 10

After churn drilling and before core drilling, application was submitted to the Defense Minerals Exploration Administration for assistance in exploring the property for mica, uranium, and thorium in application No. D.M.E.A. - 3763.

1955, Aug. 30

Clinton Knox the Joplin office representative of the United States Bureau of Mines and Thomas E. Mullins, Geologist of the Plattville office of the United States Geological Survey examined the property on behalf of the D.M.E.A. in connection with the above application and submitted a joint report to the D.M.E.A. which was of course confidential.

1955, Oct. 14

The D.M.E.A. refused the loan. No basis is ever given for refusal in these cases but conversations with Knox, Mullins and others suggested that the deposit was considered unsuitable for the following reasons:

a. No stragetic mica was seen on the surface;

b. No significant quantity of uranium was found;

c. Thorium which admittedly occured was too small in probably tonnage to justify government development;

d. The Geology of the occurence was admittedly complicated and subject to widely different theories of origin, which made it difficult at this stage to lay out a development program.

1955, Nov.

Between April and this time, besides the churn drilling mentioned above, core drilling was carried out, and the details of both follow.

Ozark E.C.I. No.	M.G.S. No.	Location	Elevation Feet	Depth Feet	From Center Distance Feet	From Center Bearing
Churn Drill Holes						
1	13517	SE 1/4, SW 1/4, S32, T37N, R16W	1057	427	78	S34E
2	13552	SE 1/4, SW 1/4, S32, T37N, R16W	1053	400	122	N79E
3	13555	SW 1/4, SW 1/4, S32, T37N, R16W	1054	440	60	S40W
4	13926	SW 1/4, SW 1/4, S32, T37N, R16W	1038	180	58	N81W
5	13927	SW 1/4, SW 1/4, S32, T37N, R16W	1043	345	470	S50W
Core Drill Holes						
C1	13938	NW 1/4, NW 1/4, S 5, T36N, R16W	1045	700	807	S57W
C2	13945	SE 1/4, SW 1/4, S32, T37N, R16W	1056	530	3	E
C3	13951	SW 1/4, SW 1/4, S32, T37N, R16W	1043	670	473	S46W
C4	14023	SE 1/4, SW 1/4, S32, T37N, R16W	1055	782	47	N79E
C5	14067	SW 1/4, SW 1/4, S32, T37N, R16W	1037	152	204	N89W
C6	14077	SW 1/4, SW 1/4, S32, T37N, R16W	1036	290	206	N73W
C7	14068	SE 1/4, SW 1/4, S32, T37N, R16W	1044	270	272	N55E
C8	14079	SW 1/4, SW 1/4, S32, T37N, R16W	1038	560	60	N57W
C9		SE 1/4, SW 1/4, S32, T37N, R16W	1020	430	1371	N53E
		Total		6176		

See Fig. V. for the M.G.S. logs including C9 by the writer. See Fig. VII for the spectrographic assays of the drill holes. All holes showed considerable disturbance of the rocks, some mineralisation including brecciation, faulting, pyritisation and silification. They disclosed the pegmatite as it outcropped to be very limited in depth and area.

Third Part

Exploration Results of Ozark Exploration Company, Inc.

Geology

Geomorphic

The area surrounding the Dome is a plateau which rises to little over 1100' between the valley of the Niangua river about 7 1/2 m. to the W. and Auglaize Creek about 3 3/4 m. to the E. The highest parts of this plateau are capped by the Roubidoux formation consisting of dolomites with interbedded sandstones which are more resistant to erosion than the underlying dolomites, and where remaining the Roubidoux formation has been responsible for the relatively flat upland plateau. In the valleys such as the Niangua and Auglaize, the Roubidoux has been denuded and the underlying Gasconade dolomite eroded and formed into very steep valleys, as especially in the Niangua. According to Heller ref. H the plateau between the Niangua and the Auglaize is continuous Roubidoux formation but this is in error. In the vicinity of the Dome for an unknown area the Roubidoux, the Gasconade, and lower formations have all been removed, exposing the upper Cambrian dolomites. The Roubidoux was present at one time but due to the slight uplift here was humped up and more rapidly eroded than in the surrounding area which remained relatively flat.

Geology

Stratigraphy

The stratigraphy of the Dome is very complicated, difficult to identify, interpret, and explain. For reference a generalised columnar section is given in fig. VI.

Lamotte Sandstone. No exposure of this is mapped nor do the drill logs show any, yet the possibility remains that some is present. On the N. of the pegmatite and showing in the shaft a dark colored outcrop occurs, see fig. IV. D. This appears to be a conglomerate of well-rounded and semi-rounded white crystalline quartz pebbles with somewhat weathered, pitted surfaces set in a dark grey argillaceous and pulverent ground mass containing pyrite and muscovite mica. Quartz pebbles are to be seen in situ up to 2" in diameter, and on the surface much larger pebbles, about 5" diameter, have been found. In the shaft E fig. IV. it can be seen that this band lies in a green dolomite close to the pegmatite and dips 80° to the S., that is toward the Center of the Dome.

This rock showed three times and better background geiger count in situ. One sample assayed:

Thorium oxide ThO_2 0.14%

Another sample gave by spectrographic assay the following:

Vanadium	V	0.005	-0.05 %
Yttrium	Yt	0.005	-0.05 %
Titanium	Ti	0.3	-3.0 %
Zirconium	Zr	0.05	-0.5 %
Lanthanum	La	0.01	-0.1 %
Cerium	Ce	0.01	-0.1 %
Uranium	U	0.00	-0.02 %

This assemblage of elements occurs in the pegmatite but at lesser concentration. By chemical analysis this sample contained

Phosphorus P 0.02 %

If this phosphorus is furnished by monazite, a phosphate of yttrium, lanthanum, cerium and thorium, then about 0.2% of that mineral is present.

Hand concentration of this rock by panning produced a concentrate of 5% by weight of the original which contained by spectrographic analysis:

Vanadium	V	0.005	-0.05 %
Yttrium	Yt	0.05	-0.5 %
Titanium	Ti	0.5	-5.0 %
Zirconium	Zr	1.0	-10.0 %
Lanthanum	La	0.03	-0.3 %
Cerium	Ce	0.03	-0.3 %

This would suggest that if the yttrium, lanthanum, and cerium were present as monazite that this concentrate contained between 0.4 and 0.7% monazite. This band in its present position can hardly be a primary conglomerate. The presence of mica suggests that it may never have been a primary conglomerate. The pebbles are far too rounded to have been formed by fault movement. The cement seems to be a high ferromagnesian pegmatite (with abundant tourmaline), which otherwise resembles generally in content the main pegmatite nearby.

If the pebbles are not a primary conglomerate they are derived and the nearest source of such pebble below the rocks of the surrounding dolomite, which is Davis, is the lamotte basal conglomerate. It will be suggested that this material has been carried or exploded to its present position by the action that gave rise to pegmatite. In various places, what may be described as a silicified sand occurs; for instance, as float, at the collar of #2 hole down to 65', in hole #3 at 120 - 175', in hole #4 at 60 - 160', in hole #C2 at 300', in hole #C8 at 500 - 545', and hole #C9 at 418'.

This rock looks a good deal like white chert, but it consists of many perfectly rounded cloudy quartz grains from about 1 mm. diameter down, in a dense siliceous cement. Earl McCracken of the M.G.S. suggests that the cloudiness of the quartz grains is caused by their having been under great stress at some time. The cement contains very little silicates such as feldspar, as an assay of #4 hole at 150 - 165' gave only

Soda	Na_2O	0.04%
Potash	K_2O	0.05%

It is suggested that these deposits with the conglomerates are not the remnants of some sea that lapped up against the pegmatite at some time but are derived from the same formation as the pebbles in the conglomerate, the Lamotte sandstone, and in the same way. It is probably that at one time the Lamotte sandstone had a substantial thickness of 275' in this area.

Bonneterre Formation. This does not outcrop but has been logged in #2 hole at 190' to bottom at 400', and in hole #3 at 200' to bottom at 440'. This ascription is based solely on the insoluble residue content of this rock, such as green and brown shale, which is a marker zone in the upper Bonneterre. The central disturbed area gives no indication of the original thickness of the Bonneterre here, but in this part of Missouri about 115' might be expected.

Davis Formation. This outcrops apparently in a ring round the pegmatite, see fig. IV., surrounded by younger rocks. It can be seen in a greenish banded foliated dolomite in the trenches and the shaft, which is extensively slicken-sided. Ascription of this to Davis is based on the insoluble residue content of very fine silt, rounded and frosted sand, shale, pellet glauconite, and pepper and salt glauconite. These rocks are usually siliceous and argillaceous dolomites with some shale and very rapidly varying composition.

Near the pegmatite the Davis is logged in hole #2 at 130 - 190', #3 at 120 - 200', #4 at 60' to bottom at 155', #C2 at 68 - 80', #C4 at collar to 380' and again from 475 to bottom at 782', and #C8 from 410' to bottom at 560'. In the core drill holes the Davis is usually intensely brecciated. In many places the breccia shows fragments of several colors of dolomite contiguous and occasionally fragments themselves are breccia, showing the stress has been repeated, after a long interval.

No recognizable dip shows at the surface but in #C4 hole the two intervals of Davis show layers at angles of from 15° to 80° to the horizontal. The pegmatite usually occurs in the Davis, except in #C8 hole where it is logged as in Potosi and in my opinion this could be Davis.

The Davis does not outcrop in the vicinity of the B shafts but is logged as occuring in #C3 hole at 50 - 95', 205 - 225', 275 - 295', 415 - 500'. In my opinion the first of these may be Potosi as is the rock between it and the surface.

It does not outcrop around the Moore shaft but is logged as repeating in #D3 hole at 100 - 190' (logged as alternatively middle Derby Doerun) and at 410 - 535'. At the extremes of the area it does not occur in #C9 hole down to bottom at 430' and is probably below this, while it occurs in SL 1 hole at 845'.

The disturbed central area gives no indication of the true thickness of Davis but in this part of Missouri about 130' can be expected.

Derby - Doerun. This is logged as outcropping at the top of #4 hole to a depth of 45' and in #C8 hole as occuring in normal sequence between Davis and Potosi at 325 - 405'. It appears as a light grey dolomite and is recognised from its insoluble residues of small amounts of sand silt, glauconite, and chert. Although missing in the logs of many holes around the pegmatite, while formations above and below are logged as occuring, it is probably present but is undifferentiated from the formations above and below, since its residues in its lower part are silty and glauconitic and difficult to distinguish from Davis, and in its upper part its residues are brown and white drusy or dolomoidal quartz and difficult to distinguish from Potosi.

It is logged as outcropping near the B shafts in a sequence undifferentiated from Potosi, and in #C1 hole at 500' to the bottom at 700'. It is also logged as outcropping again at the Moore shaft in #D2 hole down to 590' and in the neighboring hole #D1 as occuring for 410' with the possible insertions of a block of Davis in the upper part. In SL1 it occurs at a depth of 760 - 845' in normal position. In the cores it is usually highly brecciated and where not styolitic and pyritic as in the bottom of #C1.

The disturbed central area gives no indication of its true thickness in this area but about 115' can be expected.

Potosi Formation. Due to its distinctive appearance and insoluble residue characteristics this formation can be more certainly recognised than those below it. It is logged as outcropping on the edge of the pegmatite at the collar of #C8 down to 325', although I think it is possible that the upper part of this may be Davis. It occurs in #1 at 140' to the bottom at 427', #3 undifferentiated from Eminence from the collar to 110', about the 275' layer of #C2 hole, and in #C4 in an intensely brecciated layer 330 - 425'.

It also outcrops near the B shafts in holes #C3 and 5 and repeats twice underground in #C3 at 95' - 200' and 225 - 275'. It occurs in hole #C1 to the W. of these shafts at 345' to about 500', but does not appear near the Moore shaft. It occurs in normal sequence in SL1 at 555' to 760'.

It occurs generally as a light brown finely crystalline dolomite with considerable quartose material interstitially, and when not intensely brecciated it is styolitic with pyrite and lead and zinc sulphides. It contains several highly siliceous layers; for instance, at 305' in #C2 and at 408' in #C9, which resemble those described as disturbed and recemented Lamotte, and may be of the same origin.

Its true thickness is not apparent in this disturbed area, but in this part of Missouri about 287' can be expected.

Eminence Formation. This is the general country rock of the area, except for the uplifted outcrops of older rocks detailed above. It also occurs sometimes at comparatively great depth, as for instance at the bottom of #C2 hole from about 400' to the bottom at 530', and again at the bottom of #C3 hole from 550' to the bottom at 670', as well as again in this hole at 290 - 415', although the outcrop rock is Potosi. These occurrences are not far off the theoretical undisturbed level that might be expected were there no uplift here of older rocks now in higher position than the Eminence.

The Eminence occurs as a light yellow to light grey rather coarsely crystalline dolomite, and is usually rather pure, containing only a few percent chert as impurity. It is commonly vuggy with large rhombs of dolomite lying in the small cavities surrounded by a thin greenish or grey shale of clay. Because of these openings it has proved difficult to drill through, as for instance in holes #C5, C6, C7. It is highly brecciated in C1 and carries pyrite, zinc sulphide, and lead sulphide. In #C2 hole at 148' I noticed a core with breccia that was faulted across and recemented, and in another place fragments of breccia in a breccia in a breccia. Traces of copper pyrites occur for instance in #C2 hole at 80 - 95'. Hole #C6 assayed 0.01 - 0.1% thorium at 285' within five feet of the bottom. It is to be remarked that elsewhere substantial traces of thorium has been found in the immediate vicinity of the pegmatite. There is no indication in the central disturbed area of the true thickness of Eminence, but in this part of Missouri about 290' can be expected.

Van Buren Formation. This does not occur in the central disturbed area although some float near B shafts looks like cemented Gunter basal conglomerate. This occurs on the hillside about 6000' away from the Center on bearing S66W.

Van Buren is logged in SL 1 hole at the collar down to 150'.

Intrusive Pegmatite. This outcrops as a roughly round area about 45' radius round the Center with vertical or even overhanging side walls, and is shown by the holes to have the shape of an inverted wedge with the deepest part of the wedge to the N.W. near #C8 hole at about 120' from where it slopes upward and SE. through hole #C2 at 68' and #C4 at 55' to #C3 where there is none. Besides this main mass, small amounts of pegmatite occur up and down the holes outside it, but no continuous lateral or downward extensions have yet been found. The main part is a high alkali graphic granite consisting of the following main mineral constituents:

Albite/microline	53.4%
Quartz	43.4%
Muscovite mica	2.2%
Black tourmaline, ilmenite, zircon, and non silicates	1.0%

The feldspar assays:

Potash K_2O	2.17%
Soda Na_2O	8.13%
Alumina Al_2O_3	14.89%
Silica SiO_2	73.90%

which would sugge

which would suggest an albite to microline ration of about 4 to 1. Most of the feldspar is perthitic. There is a little massive feldspar in #C2 hole at 35'.

The graphic granite is very pulverent and is partly decomposed even at its greatest depth. Quartz occurs in the graphic granite as small wedges, that give the rock its name as they are supposed to look like ancient writing, mostly about 2 x 5 mm. in size.

Quartz also occurs as a core of boulders near the Center and part of this core was encountered in an abortive hole put down about 12' E. of the Center at a depth of

RECEIVED AUG - 3 1956

7' below surface. This core was typical smoky quartz. The graphic and core quartz are apparently of the same age and some fine veins of quartz and mica which cross all are apparently of later age, according to Tolman and Landes in Ref. E.

The core was the original outcrop that called attention to the deposit. Similar quartz occurs as float in various parts of the area, for instance in a hollow to the N. by some cottonwood trees and in the hollow between the pegmatite and the B shafts, and occasionally elsewhere.

The muscovite mica is in small flakes usually curved and shattered, up to 3/4" across but usually smaller. Some of it occurs in the quartz stringers that cross the graphic granite and may be of later age than the mass. It also occurs associated with quartz as a schistose skin on the outside of the mass wherever exposed. It was so noticed by Ruhl in ref. C in the old shafts. Exactly such a schist occurs in #C2 hole at 97' for about 6".

Muscovite also occurs in the conglomerate with pyrite and probably tourmaline, and in fact at several places especially on the S. it seems that the "schist" cannot be distinguished from the conglomerate. Tourmaline is the common black variety usual in pegmatites and granites and is somewhat decomposed. It occurs rather abundantly in some parts of the graphic granite. Probably the dark color of the cement of the conglomerate is due to decomposed tourmaline, since spectrographic analysis of this shows 0.03-0.3% boron which would indicate about 6% tourmaline.

The spectrographic analysis of a bulk sample of the pegmatite, omitting the major constituents, silicon, oxygen, aluminum, sodium, potassium, and iron, contained the following:

Magnesium Mg	1.0	-	10	%
Caldium Ca	0.6	-	5.0	%
Lithium Li	0.03	-	0.3	%
Lead Pb	0.005	-	0.05	%
Manganese Mn	0.01	-	0.1	%
Gallium Ga	0.001	-	0.01	%
Vanadium V			0.03	%
Yttrium Yt	0.003	-	0.03	%
Copper Cu	0.005	-	0.05	%
Silver Ag	0.0003	-	0.003	%
Titanium Ti	0.1	-	1.0	%
Zirconium Zr	0.03	-	0.3	%
Uranium U	0.003	-	0.03	%

The very high magnesium and calcium content is probably due, not to pegmatite minerals, although some may be, but to dolomite included in the pegmatite. This also occurs in the drill holes. The nature of the mineral carrying the lithium has not been determined. It is to be noticed that there is a good showing of lithium (0.1 - 1.0%) in hole #C3 in rock logged as Davis but very close to the pegmatite, and again in hole #C9 in the sandy layer near the bottom which is 1371' away from the pegmatitic outcrop.

The yttrium content seems associated in samples from the conglomerate with cerium, lanthanum, and thorium, and may be present as monazite in both. The material logged in holes #C2 and #C8 at the bottom is not pegmatite although a little may be present. It mostly resembles the silicified sands such as at the collar of

#2 hole etc., and may be of the same origin. The titanium content occurs as ilmenite which is magnetic and gives noticable magnetism to the pegmatic mass. The cores of #C2 at 510' to the bottom at 530' look uncommonly like hydrothermal vein quartz to me.

Soil

Traces of thorium were found in soil samples from locations marked S1, S2, S3, and S4 on Fig. IV which are listed in the assays at the beginning of Fig. VII. These may have given rise to the geiger count shown in the map Fig. IV.

Geology

Structural

A cursory glance at the drill records, see fig. V., shows that the detailed structure is involved and difficult to interpret. Each drill hole on its own could be interpreted as a faulted structure which has positioned the rocks so; but the next hole only a few feet away when similarly interpreted yields an entirely different picture.

Taking the six holes that are on or near the pegmatite in a spiral order beginning with #1 the following formations are logged at roughly corresponding levels:

Hole 1	3	4	C8	C4	C2
Eminence	Eminence/ Potosi	Derby Doerun	Potosi	Igneous	Igneous
--		Potosi			Davis
		Davis	Igneous	Davis	Eminence
Potosi	Davis		Potosi		Potosi
	Bonneterre		Derby Doerun	Potosi	Eminence
--			Davis		Igneous
			Igneous	Davis	

These holes are all at most within 100' of one another and several pairs are within 30' such as #4 and #C8 and #C4 and #C2. There is no consistency and no correspondence. Similar phenomena are shown by the group of holes near the B shaft, and near the Moore shaft.

As no thickness nor reliable datum level can be obtained from the above data an attempt can be made to establish theoretical thicknesses and datum levels as if the disturbance had not occured from the logs of deep holes outside the disturbed area to the N. and S. Using data from Mather, ref. F for Morgan county holes, and from Searight, ref. K for Lebanon quadrangle holes, and comparing with SL1 we can establish the following theoretical thicknesses:

Thickness Feet

Formation	2 Holes Morgan county	SL 1	Dome Before disturbance	9 holes Lebanon quadrangle
Eminence	310	405	290	272
Potosi	302	205	287	293
Derby Doerun	155 (70	85	115	399 --- (128
Davis	(85	95	130	(143
Bonneterre	60	85	115	(128
Lamotte	275		275	over 245
Total	1102		1207	over 1209

The following shows the elevation above datum of the tops of the formation:

Elevation in feet above datum of the tops of the formations

Formation	2 holes Morgan county	SL 1	Dome before disturbance	9 holes Lebanon quadrangle
Eminence	504	720	723	772
Potosi	194	315	433	500
Derby Doerun	-108	110	146	207
Davis		25	31	
Bonneterre	- 263	+ 70	- 99	
Lamotte	- 323	- 155	- 214	- 192
Precambrian	- 598		- 489	

There follows a table that shows from the drill logs the highest elevations of the tops of the formations with the lowest elevations of the bases of the formations for the holes round the pegmatite, followed by two columns that show the difference between the elevation of the actual tops and the undisturbed tops of the Dome as given in the table above, supposing that no uplift had occured. The fourth column is the difference between the elevation of the actual lowest position of the base of the formation and the undisturbed Dome base elevation as given in the table above. The last two columns give actual uplift and depression if any.

Formation	Max. tops actual feet elevation	Min. bases actual feet elevation	Uplift feet	Depression feet
Eminence	1057	526	334	none
Potosi	1054	580	619	none
Derby Doerun	1038	630	892	none
Davis	1056	273	926	none
Bonneterre	854	614	953	none
Lamotte	1055	526	1269	none

A similar table prepared for the holes around B shaft is interesting as showing the same sort of uplift but a depression of the Eminence.

Formation	Max. tops actual feet elevation	Min. bases actual feet elevation	Uplift feet	Depression feet
Eminence	1045	373	322	60
Potosi	1043	545	590	none
Derby Doerun	1043	345	897	none
Davis	1018	493	987	none

The agreement of the uplifts is remarkable.

The area round the Moore shaft shows a similar phenomenon with less uplift. These figures show the oldest rocks uplifted most and the youngest least. Were it not for the presence of relatively undisturbed Eminence completely surrounding the small disturbed area these figures might show an overfold or overthrust. As it is they seem to show a number of small highly localised disturbances as if due to upward explosive force that has moved the lowest rocks most and the highest least.

The minimum uplift of the Eminence which is the country rock of the area should indicate the minimum uplift of the whole area if any, and is plus 334'. However, the lowest positions of the base of the Eminence is only 93' above theoretical round the dome and is actually depressed 60' at the B shafts. This might mean that some Eminence has caved. Although the disturbance occurs in a line roughly S58W, there is no evidence of a marked differential movement along that line indicating a major fault. However there are insufficient holes straddling this line to define this issue.

On the other hand Winslow's observations in ref. A, see fig. III., show there has been a definite doming of the area centering somewhere along the line S58W, since on the whole the surrounding rocks dip away from this line. His map, however, shows several dips discordant with this, suggesting folding. In the S 1/2, NW 1/4, S6, T36N, R17W a small fold can be clearly seen. It seems that the doming was accompanied by some, perhaps considerable, folding.

Summarising, the structure appears to be a slightly uplifted doming centered near the pegnatite of perhaps about 350 feet uplift, in the center area of which have occured at least three local intense uplifts, and there seems no reason why there should not be more, which have moved some of the lowest rocks for 1300 feet. These uplifts are in the nature of pipes of highly broken and dislocated blocks of rock without definite fault structure, possibly caused by cryptovolcanic explosive action which has elevated some intrusive pegmatite and hydrothermal material to the surface along with the oldest rocks, in one case, but not in the other two.

Geology

Origin

Among geologists there has been great difference in opinions not to say confusions over this structure. Exploration was laid out initially according to one of these opinions that it was a buried hill.

There seems little reason to believe that the Dome pegmatite is a buried hill of Precambrian or any other age. The deposit is not shaped in such a way as to suggest this, being an upturned wedge which is underlaid by the youngest rocks exposed in the immediate vicinity. The conglomerate that partly surrounds the pegmatite is not lithologically such as would be expected if a purely sedimentary deposit, and can be explained otherwise than as a primary beach deposit. Tolman and Landes in ref. E suggest that there was not enough rock cover for a pegmatitic intrusion to have formed in situ in the rocks with which it is at present contiguous. The latest formation, that the pegmatite is logged in, is the Potosi. Above this formation, assuming as is now believed by most Missouri Geologists that this part of the country was once covered by at least a part of the Pennsylvanian, a thickness of about 4500 feet may have covered this area at one time. This should be sufficient for pegmatite to form.

It seems best to fit the facts that this was an explosive cryptovolcanic structure due to the pressure of underlying magma which began to lift this region differentially very gently, until such time as the residual magma penetrated the Lamotte sandstone, which was charged with water and caused an explosion of sufficient violence to displace the dolomites of a limited area into a tumbled mass. Into this mass a small plug of pegmatite solidified rapidly. Some of the surrounding rocks were silicified either at the time or subsequently. Possibly a cavity was formed into which some of the younger rocks later slumped.

A similar occurence explains the area round the B shafts and the Moore shaft, except that no pegmatite is now visible there. The structure could be repeated in this area in other places still buried, since the igneous intrusion did not penetrate to the surface. The structure, subsequent to the first explosion, was subject to disturbance several times.

Geology

Age

There is no direct evidence of the age of the pegmatite but Tolman and Landes' argument mentioned in the previous paragraph does suggest that it was probably post Pennsylvanian, and by the same argument that it was not long post Pennsylvanian.

Although this deposit is unique in Missouri there are other structures of similar assumed origin. Among these are the Post Devonian igneous dikes of St. Genevieve County and St. Francois County which are believed by Kidwell, see ref. G.

to be of Cretaceous age. These dikes however were basic rocks and the igneous intrusions were volcanic and probably penetrated to the surface, so that the limitation as to age that applies to the Dome does not apply to them.

On one theory, the Crooked Creek structure in the Steelville quadrangle might be assigned a similar origin, see ref. L., and this is assigned to a Pre-Pennsylvanian age based on structural considerations.

There are of course no reasons why structures of similar assumed origin should be of the same age, but it is common for igneous activity to be limited to definite periods over a structural province that may be very extensive. Cretaceous period would be too late, for the Dome. Pre-Pennsylvanian seems just possible, but post-Pennsylvanian would be better.

Fourth Part
Evaluation of the Exploration by the Ozark Exploration Company, Inc.

Economic Geology

Pegmatite feldspar. Feldspar can be considered an ore of potash, and there are reports of its utilisation for that purpose in the manufacture of fertiliser. The feldspar is very friable, while the quartz is less so. It seems possible that if the graphic granite were crushed to about 1/4" and then screened at a slightly finer size than that, that the undersize would be mostly feldspar and the oversize mostly quartz. Most of the mica would come off with the quartz in the oversize. In this way it seems to me that a product running about 2% potash and 8% soda might be made cheaply, say at about $1.00 per ton of product.

Now in most of Missouri 12/12/12 fertiliser sells for about $80.00 per ton and the price per unit percent of potash content is therefore about $6.50 per unit percent per ton of fertiliser. On this basis the crude feldspar is worth about $13.00 per ton as a fertiliser. It is understood that since it is not a balanced fertiliser that it could not be sold for that, but I should think it might be priced at half that or about $6.00 per ton.

Plant and equipment to do this might run about $20,000.00. The output tonnage available at present would be about 15,000 tons. The product to be produced would have to be tested by experienced agricultural chemists for suitability, lack of toxicity, etc. It could be either marketed alone or mixed in with ag-stone.

That this could be done profitably would depend on a selling job being successful with the farmers, and the extent of the market that could be developed, which are both factors outside the scope of this report.

Could it be developed in this way in combination with dolomite as considered below this process alone might show a balance of profit as follows:

Value 15,000 tons at $6.00		$90,000.
Capital	$20,000	
Operation		
15,000 tons at $1.00	15,000	
Total Expenditure	$35,000	
Net operating profit		$55,000

Against this operating profit would have to be charged selling and development expenses.

Feldspar is a vital raw material for the glass and ceramic industry. Should considerably greater reserves of pegmatite be discovered in the future, which is possible, then they could be exploited for sale to these industries. The geographic location of this deposit is favorable for this possible development as all feldspar used in the state is freighted in from N. Carolina, Colorado or N. Dakota, all with high added freight charges.

Pegmatite lithium. Lithium occurs in the pegmatite and occasionally in lesser amounts in the surrounding rocks. Its mineralogical nature is not known. The possibility of a segregated occurence of lithium minerals in the existing pegmatite or another undiscovered exists. Any high lithium rocks could be stockpiled if the deposit is worked for other materials for possible future concentration or sale.

Pegmatite, rare earths and thorium. Traces of these occur in the pegmatite, in some of the soil, and somewhat more than traces in the conglomerate. Along with these occur zircon and ilmenite (containing titanium). The latter is of little commercial value at present owing to difficulties in extracting titanium from ilmenite. Monazite rare earth concentrates are worth about $350 - $400 per ton, and zircon concentrates about $40.00 per ton.

Dolomite, Lead and Zinc ore. The whole area contains traces of these sulphides but so far no holes have turned up economic concentrations. Nevertheless the much brecciated and possibly open nature of the ground makes the occurence of shallow lead somewhat likely. Such deposits if found could not be expected to be very extensive.

Dolomite, iron pyrites. This occurs in some holes, for instance #C1 and #C3, for short distances in amounts up to about 10%. It is economically worthless unless recovered in pure form as a by-product in another operation that is economically self supporting, in which case it could be sold for sulphuric acid manufacture.

Dolomite, Fertiliser. The country rock of this area is Eminence dolomite which is usually an extremely pure dolomite. Several sequences show rather pure dolomite in so far as the insoluble residue is low, for instance holes #C1, C5, C6 and C7. I would expect these to run about 95% pure calcium and magnesium carbonates. The average of 11 spectrographic samples from holes C1, C4 55 - 180' and 225 - 380', C5, C6 and C7 based on the assumption that chemical assay will run about 40% of the high figure in the spectrographic assay gave 47% $MgCO_3$ which would indicate theoretically pure dolomite. A chemical assay of hole C3 at 295' which is on the junction of Eminence with Davis ran 37.4% $MgCO_3$ which would indicate over 80% pure dolomite.

The possibility seems to exist that a large enough body of high grade dolomite may be present, but considerably more sampling, drilling, and chemical assaying would be needed to determine if it exists here.

Caution is needed since the area is very brecciated, and where brecciated is usually recemented in a calcareous cement higher in silica than the original dolomite. Further such brecciated occurences are often very pyritic, as in holes 5 and C3 and pyrite is not desirable in a fertiliser.

Although Missouri specifications call for only 80% equivalent calcium carbonate in ag-stone it is very desirable to process as pure a dolomite as possible, since it must be crushed to 10 mesh at least and farmers like it finer if they can get it. Lower grade usually means the presence of silica which greatly increases the cost of crushing. It is to be remarked also that pure dolomite has an equivalent calcium carbonate grade of 108%.

It must be remarked that at the time of writing the market for ag-stone is not encouraging in Missouri due to the decline in farm prices in the last three years combined with the local drought during the same period. This situation however could change rapidly for the better.

Agricultural dolomite can be sold locally for about $1.85 per ton ex plant and should cost about $1.25 per ton to produce. The crushing, screening, and storage plant necessary would cost about $250 per ton day. In general I would say that it would take at least three years' operation to amortize the cost of plant and equipment.

There would be some market for crushed stone as aggregate, ballast, or road dressing which would sell at from $0.75 to $1.45 according to specification, and could absorb some rock that was not suitable for ag-stone. It can be seen that a considerable steady market would be needed to justify such a plant, backed by a considerable tonnage of high grade dolomite. The matter may exist but the former is outside the province of this report.

Pegmatite-Dolomite-fertiliser. A possibility exists of mixing some of the screened pegmatite with the crushed dolomite to add a potash content to the ag-stone. It seems possible that about 10% crude feldspar, produced as discussed in a previous paragraph, might be mixed in without getting the silica content too high. This would add 1% total alkali and about .2% potash, and would be profitable if it could be sold at about a $0.65 premium or a total of $2.50 per ton. It would be necessary that this mixture be checked by competent agricultural chemists before attempts were made to produce and market it. It this were done, the same plant could be used to treat both materials with some additions, increasing capital expenditure to say $60,000.

Siliceous Rocks. In several drill holes considerable bodies of massive silica rocks showed up. Whatever their ascription, insoluble residue technique showed that much of these were 100% HCl insoluble, and I believe that some may run 99% SiO_2 or better. These could not be used for many of the uses to which sand is put but they might find market as a refractory material. If a market could be found for them they would probably be worth about $2.50 per ton. Production costs would run about $1.50 per ton. They could be processed in a screening and grinding plant used for processing feldspar or dolomite with the addition of some extra crushing equipment,

Some Suggestions for Future Development.

Pegmatite Exploration. The most potentially valuable deposit here is pegmatite. The existing one is too small to develop except as suggested, as a fillip to fertiliser. In that connection the existing cores should be examined and split for chemical assay, and possibly a few more shallow holes should be put down to establish the composition of the pegmatite exactly, with a view to exploitation as a fertiliser.

The drilling done already has not suggested where or why an extension or another pegmatite may be present, although it has suggested there is no reason why another may not be present. It is my opinion that further drilling for a pegmatite is not economic, since there is no indication of where to look. As the pegmatite is faintly magnetic, and if one occurs it will only be economic if near the surface, it is suggested that a magnetometer survey might be made of the likely area, which is that on the bearing of the disturbance S58W and either side for a distance of at least 1000 feet N. and S. If no magnetic anomalies turn up there seems little hope of a near surface pegmatite. If they do, drill there. Any subsequent steps would then depend on the size of the deposit discovered.

Fertiliser Development. The area to the N. seems at present the most likely for high grade dolomite occurence, but so far nothing is known as to the area to the S. which is probably also on Eminence dolomite. The existing holes should be searched for high grade dolomite sequences at or near the surface, and cores split and chemically assayed. A grid of shallow holes (100' deep) should be laid out on a likely area which if possible should be an area that could be mined by open pit alongside the pegmatite. The aim should be to develop a block of dolomite high grade enough, preferably 97.5% combined calcium and magnesium carbonate, and large enough, say 600,000 tons down to 80' from the surface or at most 100', to warrant mining and crushing.

Silica. Before spending much on this development it would be advisable to investigate the possible market for a high grade crushed silica. If it seems possible to develope one a sampling procedure should be carried out on the known high silica occurences, with a view of estimating their grade and tonnage.

General. It seems desirable that at this stage aims and means of development should be thoroughly examined, settled, costed, and then pursued, since on such a proposition as this it is so easy to spend so much on the development of relatively low priced products that it is not possible within reasonable time to return the investment. On the other hand it is necessary to be quite clear and as exact as possible on the amount and value of the raw material assets and the cost of processing them and this information, so often skimped, is a necessary and often substantial cost of the commercial development of any proposition that is eventually profitable.

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Ref. D 1936 Bucher, W. H. "Cryptovolcanic Structures in the United States" 16th International Geological Congress Report Vol. 2; beginning pp. 1071

Ref. E 1939 Tolman, Carl, and Landes, Kenneth K. "Igneous Rocks of the Mississippi Valley", chapter III. in "Contributions to a Knowledge of the Lead and Zinc Deposits of the Mississippi Valley Region" in Geological Society of America special paper N. 24; beginning pp. 72

Ref. F 1946 Mather, William B. "The Mineral Deposits of Morgan County, Missouri", Report of Investigations No. 2 Missouri Geological Survey and Water Resources, Rolla, Mo.; beginning pp. 19

Ref. G 1947 Kidwell, Albert L. "Post Devonian Igneous Activity in Southeastern Missouri", Report of Investigations No. 4 State of Missouri Geological Survey and Water Resources, Rolla, Missouri; beginning pp. 29

Ref. H 1954 Heller, Robert L. "Stratigraphy and Paleontology of the Roubidoux Formation of Missouri", Vol. XXXV, Second Series State of Missouri Department of Business and Administration, division of Geological Survey and Water Resources, Rolla, Missouri; maps

Ref. I 1954 Hendriks, Herbert E. "The Geology of the Steelville Quadrangle", Vol. XXXVI., Second Series, State of Missouri Department of Business and Administration, Division of Geological Survey and Water Resources, Rolla, Missouri; beginning pp. 62

Ref. K 1955 Searight, Thomas K. "The Geology of the Lebanon Quadrangle", Report of Investigations No. 18, State of Missouri, Department of Business and Administration, Division of Geological Survey and Water Resources, Rolla, Missouri; beginning pp. 19

Amendment to Report No. JOP-131-2

on

The Decaturville Dome Mine

The Ozark Exploration Company Inc.

Camdenton, Missouri

by

Phillip L. Jones

Consulting Engineer,

Professional Engineer Mo. No. 6447

July 6, 1956

Report No. JOP- 161

Summary

Further work on the dome has shown that about 6 - 7 million tons of fairly high grade dolomite (over 90% pure Mgco3 CaCO3) occur within the area drilled down to a depth of 200 feet from the surface without overburden. This dolomite should meet agricultural requirements as fertilizer if correctly processed.

Surrounding the pegmatite and between the pegmatite and the B shafts as aura of highly glauconitic and silicified dolomite occurs with a potash content determined by spectrographic assay approximately 2.2 % potash (K20). A probable tonnage of about 1 million tons of this rock occurs down to a depth of 200 feet from the surface without overburden. This dolomite might be sold for its potash content alone, or be mixed with purer dolomite to increase the latters potash content and make the final product lower in silica. This product should sell at a premium over straight agricultural dolomite, if acceptible to agriculturists, because of its potash content. A price of about 2.65 dollars per ton is suggested as possible.

In several drill holes in both these dolomites and in strata below them, lead as galena (PbS) and zinc as sphalerite (ZnS) occurs in small amounts associated usually with pyrite and marcasite (FeS_2). The mineralization seems related to the brecciation of the rocks caused by the pegmatite intrusion.

The discovered occurences have not so far proved of economic concentrations. However such may exist somewhere in the area, since traces of lead-zinc mineralization are not by any means confined to the area immediately round the pegmatite, but occur 400 feet away.

If the mine is developed primarily as a fertilizer source, lead-zinc bearing dolomites when run across could be either stock piled or treated currently for instance on tables, to rough out the bulk of the lead-zinc minerals, and the tailing dried and returned to the fertilizer section of the treatment.

Further immediate development of lead-zinc ore in economic concentration can only be made by systematic drilling.

The summary of report JOP-131-2 should be read in conjunction with this summary.

Main Report

Purpose

This report brings the original report JOP-131-2 up to the date of June 12,1956.

History

Drilling was continued (see P 10 JOP-131-2) as follows:

Ozark E.C.I. No.	Location	Elevation Feet	Depth Feet	From Center Distance Feet	From Center Bearing
C10	SE¼, SW¼, S32, T37N, R16W	1055	580	50	S54E
C11	Do.	1055	47	75	S54E
C12	Do.	1055	570	100	S54E
C13	SW¼, SW¼ S32,T37N,R16W	1030	430	363	N30W
C14	Do.	1030	340	280	N39W
C15	SE¼.SW¼, S32,T37N,R16W	1055	790	125	S54E
C16	SW¼,SW¼,S32,T37N,R16W	1035	380	290	S46W
C17	Do.	1035	520	375	S48W
C18	NW¼,NW¼,S5,T36N,R16W	1045	290	600	S51W
C19	Do.	1045	450*	675	S46W

* at 6-12-56, has gone a further 30' about, and bottomed since.

These holes were not logged by the Missouri Geological Survey. Holes C12,C13,C15,C17,C19 were examined by the writer in the field and some samples taken and examined in the laboratory with the results summarized below.
Spectrographic assays of drill holes C12, C13, and C15 are shown in figure VII of the Original report as amended by H. S. Hart and are on file in the Company office, and were examined.
Some chemical assays for the holes were also on file and examined.
All samples for assay and examination were taken from the drill cores by chips.

Exploration Results

All holes showed similar phenomena to the previous ones with the following exceptions:

All holes in the vicinity of the pegmatite (but not actually on it) and the B shafts and between, showed dolomite that was more or less glauconitic throughout and proved to carry high potash content (with somewhat high silica content). The potash was probably adsorbed by the glauconite which is an hydrated iron silicate of deep green color. Selected strata, such as C10 198' ran 3.13 % K_2O, and C10 280' ran 3.22% by chemical assay. The whole first 250' of holes C12,C15,C10,C4, ran by spectrographic assay about 2.2 % K_2O. Visual examination of holes C3 and C17 near the B shafts and comparison with the above holes suggested that these latter ran about the same in potash.

Holes in the vicinity of the B shafts showed small amounts of lead and zinc by chemical assay present as galena and sphalerite, from the surface down both in pyritised and brecciated zones, as for instance C17 151' with 0.45 % Pb and 0.80% Zn and C1 462' with 1.01 % Pb and 0.26 % Zn, and disseminated in dolomite as for instance C17 251' with 3.02 % Pb and 0.6 % Zn. The first 251 feet of C17 averages 0.53% Pb and 0.26 % Zn by chemical assay.

Hole C13 about 360 feet to the North of the Center showed considerable disturbance such as brecciation, pyritisation and silicification accompanied by some other mineralization principly sphalerite at depth. The whole sequence C13 222' - 418' ran by spectrographic assay trace Pb and 0.28 % Zn, and at 371' about Tr. Pb and 1.5 % Zn was reported.

Outside of an area of about 100' from the center and the area between the Center and the B shafts the first few hundred feet of the rocks are mostly logged as Eminence dolomite. This is usually a very pure dolomite, the low insoluble residues and assays support this here. The first 235 feet of C19 averaged by chemical assay 20.05 % MgO which indicated a dolomite about 95 % pure. Assays of this dolomite were low in potash running an average of 0.04 % K_2O.

Some indications of the proximity of a pegmatite (or igneous material) turned up in C17 which is between the Center and the B shafts, where at 358' fine micaceous pegmatitic layers were interleaved with glauconitic dolomite. Mica washed out of this hole in some quantity at times.

Evaluation of the New Exploration

Pegmatite feldspar. Nothing new was added to this (see P 21 JOP-131-2) except that evidence of the existance of more pegmatite at depth somewhere between the Center and the B shafts was given by hole C17.

Dolomite Lead-Zinc Ore. Chemical assays of holes in the vicinity of the B shafts showed constant occurence of small quantities of galena and sphalerite in the first few hundred feet, usually associated with

pyritised and brecciated zones. Some mineralization by sphalerite turned up in C13 North of the center at 225' - 418' associated with pyritised styolites. These two occurences were about 700 feet apart, but were similar. In various parts of the area slight lead-zinc mineralization has been found in most of the different dolomite logged, namely in Eminence, Potosi, and Davis. The mineralization is due therefore to the disturbance that brecciated, pyritised, and styolised the rocks, ie. the intrusions of the pegmatite, and can be expected elsewhere in the area, and not necessarily along the strike of the disturbance about S51W from the Center.

None of these occurences represent ore economic for its lead-zinc alone so far. Some of them might pay to be scalped of their lead-zinc in a simple mill when run across in mining dolomite for fertilizer.

Dolomite, Fertilizer.

Drilling between C9 and C19 a distance of 2040 feet on the strike of the disturbance, and between C15 and C13 at distance of 480 feet which is approximately at right angles to the strike and crosses the strike 338 feet S 51 W of C9 so that C15 is 75 feet South and C13 is 405 feet North encloses an area of 465,470 sq. ft. Out of this the area round the pegmatite, round the B shafts, and between the pegmatite and the B shafts which is silicified and glauconitic comprises 65,000 sq. ft. The rest of the area of 400,470 sq. ft. from grass roots down to 200 feet and in places more is largely fairly pure Eminence dolomite, and comprises a tonnage of $6\frac{1}{2}$ - 7 million tons. This figure represents a probable tonnage of dolomite for fertilizer with no overburden.

The central area of 65,000 sq. ft. compriseing down to 200 feet about 1 million tons represents a probable tonnage of silicified dolomite (with the exception of about 30,000 tons of pegmatite) which can be expected to run about 2.2% potash (K_2O), due to its glauconite content. This also represents a saleable fertilizer, either alone or mixed with pure dolomite. Such a mixture should command a premium over pure dolomite. Agricultural dolomite sells for about $2.00 ex plant. About $2.65 might be expected for a potash bearing dolomite, but price and output would be determined by approval of this mixture by agricultural chemists and the market available within perhaps 100 miles radius of the mine.

Suggestions for future Development.

All remarks made in the original report still hold (see P 24 JOP-131-2).

Geological considerations do not indicate where any economic concentrations of lead-zinc ore are likely to occur, but do not rule out the possibility that such concentrations are present.

They can only be discovered, if present, by systematic drilling.

GEOLOGICAL HISTORY - "THE DECATURVILLE DOME"
Camden-Laclede Counties, Missouri

EXHIBIT 4c

(1869)

RECEIVED
AUG - 3 1956

ORIGIN OF THE DECATURVILLE DOME

By W. A. Tarr, Professor of Geology
University of Missouri
D., U.C.L.A. D.,Ok.A.&M.

In 1869 some prospectors searching for lead uncovered a Granite Pegmatite.

The Pegmatite consists of feldspar, dominantly micro-coeline, but according to Winslow and Shepard.....contained albite, aligoclose, quartz and muscovite.....the writer found also tourmaline.

A feature so interesting and important, mention must be made... of a mass of mica schist....Winslow ventures the suggestion that some of these destrubed areas are underlain by other intrusive masses of igneous rocks....The structural geology of the area offers an interesting problem....Thorough study may disclose some unknown structural elements.

(The Ozarks Explorations Company, Inc., owns photostatic copies of the above report.)

The Ozarks Explorations Co., Inc.
Camdenton, Missouri

RECEIVED
AUG - 3 1956

GEOLOGICAL HISTORY - "THE DECATURVILLE DOME"
Camden-Laclede Counties, Missouri

1894
Missouri Geological Survey
By, Arthur Winslow
Original Founder of the Geological Society of America...Graduate Massachusetts Institute of Technology...State Geologist of Missouri.....
President of U.C. and British Columbia Mining Company, Goldfield Consolidated, etc.....
President of Liberty Bell and Gold Mining Co.

(Page 432) On the Camden-Laclede County line, Sec. 32, Township 37, Range 16, is an area of intese local distrubance. With this is associated an eruped dike or boss. Special interest attaches itself to this outcrop as it is the only one of the post archean age found in the Mississippi Valley, with the exception of the mesozoic eruptions of Arkansas.... Similar conditions have been nowhere observed within the Ozark area...The rocks of the dike consist of a graphic granite or pegmatite and of white mica...The Structure is that of a true graphic granite...long crystals of quarts, surrounded by feldspar...The disturbed conditions of rocks surrounding the pegmatite is in support of the view that the latter was originally molten and that it was intruded...An analysis showed the following remarkable composition from near surface samples...assay...

(The Ozarks Explorations Company, Inc., owns photostatic copies of the above report.)

GEOLOGICAL HISTORY - "THE DECATURVILLE DOME"
Camden-Laclede Counties, Missouri

LEAD AND ZINC DEPOSITS
1894
Missouri Geological Survey
By, Arthur Winslow

(Page 432) On the Camden and Laclede county line, at the Wheeler mine, in section 32, of township 37N., 16W., is an area of intense local distrubance, illustrated in figure 114. With this is associated an erupted dike or boss of pegmatite. Special interest attaches itself to this outcrop, as it is the only one of post Archean age found in the Mississippi valley, with the exception of the Mesozoic eruptives of Arkansas. Further, it is the only indication we have that igneous action or metamorphism accompanied the crustal movements of the Ozark uplift. The actual exposure of pegmatite does not exceed a few square yards, and, had it not been that the locality was prospected for lead, it presende might never have been detected.

The country rocks are principally magnesian limestones; with them are some sandstones; they are mormally horizontal and undisturbed. Immediately about the pegmatite however, they assume abnormal and rapidly varying dipe. Similar conditions have been nowhere observed within the qzark area, and, in themselves, they are sufficient to have distinguished this locality as one of somewhat intense, though local, disturbance. Tese conditions are represented on the small map, constructed from a survey of the area. The short, havy black lines represent outcrops, and the arrows the dips.

From this map it will be seen that to the north, east and south of the pegmatite, the disturbance does not extend very far, nor are the dips excessive. To the southwest, however, the disturbance can be traced some two miles, and at points it is quite intense. It is further noticeable that the dips are generally away from the dike, as if this were the center of the disturbance. Exceptions to this, and steep and confused dips at other localities, such as those marked A, B, and C, suggest that there were other centers also, and that eruptive rock may exist elsewhere, not far beneath the surface.

The rocks of the dike consist of a graphic granite, or pegmatite, and of white mica. These do not seem to be distributed or arranged in any special order, unless it be that the mica prevaile near the contact with the surrounding rocks. The dike seems to have the form of a boss or neck, which has pushed its way up through the rocks. The structure of the pegmatite proper is in part that of a true graphic granite consisting of long crystals of quartz, surrounded by feldspar; sometimes it is granular. It is always fine-grained, the quartz crystals not exceeding a fourth of an inch in diameter. Sometimes, masses of quartz are found with no admixture of feldspar. The mica forms a rock composed of very small crystals or scales. Prof. Erasmus Haworth, who examined specimens, reports that he found only one mica, muscovite. Microcline

GEOLOGICAL HISTORY - "THE DECATURVILLE DOME"
Camden-Laclede Counties, Missouri

LEAD AND ZINC DEPOSITS
By, Arthur Winslow --continued

is the principal feldspar, but the acid triclinics are present in small amounts. These are probably albite and oligoclase, both or either, and, possibly, orthoclase. The rock is much decomposed at the outcrop, and is mostly soft and incoherent. No contact metamorphism of the country rocks could be detacted.

The disturbed condition of the rocks surrounding the pegmatite is in support of the view that the latter was originally molten, and that it was intruded. That it was formed by aqueo-igenous fusion, as such rocks are commonly believed to be formed, there is no reason aganist. That it is purely a result of segregation or alteration of rocks in situ, as has been maintained by some concerning other pegmatites, is opposed to the facts. It is not probable that this intrusion or eruption ever reached the surface, No traces of volcanic rocks are now found in the surrounding country, and the small size of the outcrip indicates that the present exposure is near the apex of the boss or neck.

The exact age of the intrusion cannot be determined. That it was post-Lower Silurian is self-evident. We are inclined to assign it to the time of the last great uplift of the Ozarks, which was immediately after the Coal Measure epoch, and which was probably the greatest crustal movement that took place over this area.

(The Ozarks Explorations Company, Inc.,
owns photostatic copies of this report.)

GEOLOGICAL HISTORY - "THE DECATURVILLE DOME"
Camden-Laclede Counties, Missouri

1904

United States Geological Survey
Hydrology of Eastern United States
By, E. M. Shepard
B.A. 1878 Williams College
D.S. Waynesburg College
With Druary College 50 Years
Board Mgr. 1893 to 1933

(Page 113) The coarsely crystalline Granite, known as Pegmatite....in the neighborhood of Decaturville has been for many years an object of interest....In 1869 some miners prospecting for lead laid bare a small area of granite Pegmatite... called graphic granite....resembling the letters of ancient alphabet....which gradually merged into a true pegmatite.... mainly feldspar....known as microcline with some albite and aligoclase feldspar....numberless small masses of quartz.... sheet like mass of fine scaled feirunginous schist evidently metamorphoredgouge.....

(The Ozarks Explorations Company, Inc., owns photostatic copies of the above report.)

GEOLOGICAL HISTORY - "THE DECATURVILLE DOME"
Camden-Laclede Counties, Missouri

1912

Private Report by C. R. Van Hise to Congressman
D. W. Shackleford....on the Decaturville Pegmatite...

....It is a true Granite Pegmatite....which will contain several of the common minerals and should contain some of the rare minerals and gems....There extends to the southwest for considerable distance a mica schist....and from indications, there should be pitchblende, thorium and carnotite nearby.... I would advise you to keep watch on this property, it has wonderful possibilities....A thorough test should be made in the area....

Dr. Van Hise was of the opinion that the broken area extended much farther southwest than according to the other geologists.

Briefly, this is a general summary of the private report written by Dr. Van Hise to Congressman Shackleford which I was permitted to read shortly before the death of Shackleford. I was asked to keep it confidential until I had the means or associated with some one that could properly finance the testing of this property.

The Ozarks Explorations Company, Inc
By, H. B. Hart, President
Camdenton, Missouri

The Ozarks Explorations Co., Inc.
Camdenton, Missouri

GEOLOGICAL HISTORY - "THE DECATURVILLE DOME"
Camden-Laclede Counties, Missouri

DR. C. R. VAN HISE

Born at Fulton, Wisconsin, May 29, 1857; died at Milwaukee, Wisconsin, November 19, 1918.

B. M. E., University of Wisconsin, 1879, B. S. 1880, M. S. 1882; Ph. D. 1892; LL. D., University of Chicago, 1903; Yale, 1904; Harvard, 1908, Dartmouth, 1909.

Instructor in Metallurgy, University of Wisconsin, 1879-1883; Assistant Professor, 1883-1886; Professor 1886-1888; Professor of Mineralogy, 1888-1890; Professor of Archean and Applied geology, 1890-1892; Professor of Geology, 1892-1903; President, 1903-1918.

Non-resident professor of structural geology, University of Chicago, 1892-1903.

Assistant Geologist, United States Geological Survey, 1883-1888; Geologist in charge of Lake Superior Division, 1888-1900; Geologist in charge of Division of pre-Cambrian and Metamorphic Geology, 1900-1908; Consulting Geologist, 1909-1918.

Consulting Geologist, Wisconsin Geological and Natural History Survey, 1897-1903; President Board of Commissioners, 1903-1918.

Chairman of Wisconsin State Board of Forestry, 1905-1918.

Chairman Wisconsin Conservation Commission, 1908-1918.

Member of National Conservation Commission, 1908-1918.

Trustee of Carnegie Foundation for the Advancement of Teaching, 1909-1918.

Member of National Academy of Sciences, Washington Academy of Sciences, Scientific Society of Christiania, Royal Swedish Academy of Science, Geological Society of America (president in 1907), Wisconsin Academy of Sciences, Arts, and Letters (president, 1893-1896), American Association for the Advancement of Science (vice-president of Section E, 1901; President, 1916-1918), American Institute of Mining Engineers, National Geographic Society, Philosophical Society, New Yourk Academy of Sciences, Boston Society of Natural History, and others.

GEOLOGICAL HISTORY - "THE DECATURVILLE DOME"
Camden-Laclede Counties, Missouri

(1855 - 1871)

REPORTS ON THE GEOLOGICAL SURVEY
of the State of Missouri
1855-1871 by G. C. Broadhead,
F. B. Meek & B. F. Shumard

Published by Authority of the Legislature,
under the Direction of the Bureau of Geology
and Mines.

.....Although the Third Magnesian Limestone, which, in counties further east, has yielded such enormous quantities of Galena, is not extensively developed in Laclede, we have observed it to occur only in a single locality--towit: on Fielding Clark's land, in T. 36, R. 16, N.W. quarter of Sec. 5. At this place a few shallow excavations have been made in a soft variety of the Third Magnesian Limestone, and a few pounds of the Sulphurst of Lead got out. The ore occurs disseminated through an impure brown Iron ore, 200 yards distant from an igneous dyke of Granite. This locality is worthy of being further proved. It is not improbable that other deposits of the valuable metal will be found in Laclede county.

(The Ozarks Explorations Company, Inc., owns photostatic copies of the above report.)

CHEMICAL ASSAYS BY THE BRUCE WILLIAMS LABORATORIES
FOR THE OZARKS EXPLORATIONS COMPANY, INC.

CORE DRILL HOLE C-17

TEST HOLE	DEPTH	ZINC	LEAD
C-17	65'	0.06	0.04
C-17	83'	0.08	0.01
C-17	151'	0.80	0.45
C-17	185'	0.05	0.06
C-17	198'	0.06	0.03
C-17	236'	0.06	0.07
C-17	251'	0.06	3.02
C-17	295'	0.14	0.07
C-17	308'	0.32	0.20
C-17	332'	0.44	0.12
C-17	351'	0.12	0.03
C-17	358'	0.12	0.04
C-17	395'	0.14	0.02
C-17	408'	0.07	0.60
C-17	428'	0.06	0.10
C-17	446'	0.06	0.05
C-17	476'	0.04	0.02
C-17	503'	0.08	0.05

CHEMICAL ASSAYS BY THE BRUCE WILLIAMS LABORATORIES
FOR THE OZARKS EXPLORATIONS COMPANY, INC

TEST HOLE (CORE DRILL) C-1

TEST HOLE	DEPTH	ZINC	LEAD
C-1	355'	0.28	0.07
C-1	363'	0.36	0.16
C-1	420'	2.00	0.89
C-1	462'	2.30	1.01

The Ozarks Explorations Co., Inc.
Camdenton, Missouri

Please note that core drill holes sixteen (16) through twenty-three (23) have not been included in the assay reports. As yet the assays on these eight (8) core drill holes have not been completed and therefore cannot be included.

DOCKET COPY

February 11, 1957

Summary of Proposed Project

Object: Denial of application for an exploration project.

Docket No.: DMEA-4405

Commodity: Uranium, thorium, mica, rare earths, lead, zinc.

Applicant: The Ozarks Explorations Company, Incorporated
Camdenton, Missouri

Property: Decaturville Dome area, consisting of 34 leases of land containing approximately 6,174 acres in T. 36 N., R. 16 and 17 W., T. 39 N., R. 16 W., and T. 37 N., R. 16 and 17 W., 5th P.M. & B., Camden and Laclede Counties, Missouri.

Applicant holds 10-year leases with renewal provisions from 34 families or individuals.

Date of application: July 30, 1956.

Amount of application: $52,384.00

Work proposed:

6 - 1500-foot core drill holes to granite basement 9,000 feet @ $2.90/ft.	$26,100.00	
22 - 600-foot core drill holes 13,200 ft. @ $1.80/ft.	23,760.00	
Spectrographic and chemical assays	2,524.00	
Estimated total cost		$52,384.00

Government participation varies from 50% and 75%

Field Team report: Clinton C. Knox, January 29, 1957.

Reviewed the application and all subsequent data submitted and made various other investigations. Convinced that the application should be denied without another field examination since one was made August 30, 1955, under Docket No. DMEA-3763.

The available results of the large amount of core drilling since that examination was made, clearly indicates that a worthwhile exploration target still is not present.

The Missouri Geological Survey examined the core and logged 15 core drill holes, and logged 5 churn-drill holes, but could only report negative results.

Philip Jones, occasional consultant of the Applicant, emphasized that he did not intend to imply in his reports of February 14 and July 6, 1956, that minable thicknesses of lead-zinc ore had been indicated by analyses of core samples. He also had nothing to do with the ore reserve calculations shown in the application.

All qualified persons contacted agreed that no significant radioactivity has been evidenced by the large amount of prospecting work which has been done on the property to date. It seems unreasonable to believe that any strategic mica would be present. Missouri Geological Survey personnel concurs that this area is virtually devoid of lead-zinc mineralization when compared with such occurrences commonly found throughout the Central Missouri lead-zinc district.

From the standpoint of academic geology, this apparently intricately faulted Decaturville pegmatite offers a very interesting problem for solution, but from the standpoint of mining economics and DMEA exploration assistance, it should be ignored.

The data actually obtained by the Applicant seems to lack evidence of any systematic technological supervision during the large amount of prospecting that has taken place during the past two years. The Applicant reportedly was unwilling to employ competent consultation except for very infrequent cursory examination work, and then obviously failed to heed the recommendations. Concludes that the Applicant does not have adequate experience and ability to successfully conduct a mining exploration venture.

Commodity Group comments:

U. S. Geological Survey, N. E. Nelson, February 5, 1957.

No new data or evidence tending to justify the application having been presented, concurs with the Executive Officer, Region IV, that the application should be denied without a re-examination of the property.

U. S. Bureau of Mines - John E. Crawford, February 7, 1957.

Agrees with the Field Team and advises denial of the application without re-examination of the property.

Rare and Miscellaneous Metals Division - Michael Ching,
February 11, 1957.

An application under Docket No. DMEA-3763, covering the same property, wished to explore for strategic mica, uranium, thorium, monazite, and rare earths. This application was denied on October 14, 1955. The Applicant has done a great deal of stripping, trenching, shaft sinking, and drilling on the property and many exposures are accessible. The results of sampling, assaying, visual observations, and radiometric testing by DMEA field examiners, the Missouri Geological Survey and the Applicant Consultant have failed to demonstrate that economic or near-economic concentrations of uranium, thorium, mica, rare earths, lead and zinc are present on the property and there is no geologic indication that such concentrations would be found at depth.

Conclusions and Recommendations:

The additional work done by the Applicant since the field examination under Docket No. DMEA-3763 has failed to demonstrate that worthwhile ore deposits are likely to be found on this property. It is recommended that the application be denied.

Ernest Wm. Ellis

Ernest Wm. Ellis

FILE COPY
Surname: DMEA

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SECRETARY
WASHINGTON 25, D. C.

JUL 24 1958

Dear Mr. Hart:

We have your letter of July 3, 1958, with enclosed copy of your letter of the same date to Mr. Wendell B. Barnes of the Small Business Administration.

This Department, of course, cannot pass judgment on the decision made by the SBA in connection with your application for funds to construct a silica plant.

In regard to your two applications to the Defense Minerals Exploration Administration for aid in exploring for uranium, thorium, mica, rare earths, lead and zinc, we can assure you that they were evaluated strictly on the basis of the geological and other pertinent information available.

Throughout the history of DMEA efforts have been made to develop and maintain a high degree of efficiency in carrying out the purposes of the program. It has always been our policy to treat all applicants fairly and at the same time protect the Government's interest. The mining industry has frequently commended DMEA for the high professional and business standards employed in the conduct of its operations.

It is not unusual for a property owner to disagree with the conclusions of Government geologists and mining engineers. Hundreds of applications have been denied by DMEA, not because of politics or inefficiency, as you charge, but because the proposed projects did not appear to have sufficient merit to justify the expenditure of public funds.

Sincerely yours,

(sgd) Royce A. Hardy

Assistant Secretary of the Interior

Mr. H. B. Hart, President
The Ozarks Explorations Company, Inc.
Camdenton, Missouri

MChing/COMittendorf/gla/fw-7/15/58 00
cc: Secretary's file
Secretary's Reading File
MR (2)
ADI
AA

Mr. Ching, DMEA
DMEA Field Team, Reg. IV (2)
DMEA docket DMEA-4405 w/2cc incoming letter
Admr.Read.File, DMEA

FRS 1902

GAMMA

The OZARKS EXPLORATIONS COMPANY, INC.

(A MISSOURI CORPORATION)

The DECATURVILLE DOME
An Extinct Volcano
Containing Rare Minerals, Metals, Gems

CAMDENTON, MO.
July 3, 1958

Honorable, Fred A. Seaton
Secretary of the Interior

Dear Sir:

I am today enclosing to you a copy of a letter I mailed Wendell B. Barnes, Small Business Administrator. You probably have a copy of a letter he wrote us.

We are complaining to you for this reason, some time back we filed two applications with the D. M. E. A., they were turned down. We then filed an application with the Small Business Administration for funds with which to build a silica plant, this was also turned down. Very definitely these applications were turned down because of dirty politics or inefficiency in the departments, and for either reason certainly these departments need house cleaning.

It is most unfortunate that our President must be continously plagued by inefficient parasites in some of the departments.

Very respectfully yours,

THE OZARKS EXPLORATIONS CO., INC.

H. B. Hart, President

HBH/kw

1902

MDM

MDM
MR

ADI AA
MR

July 3, 1958

Wendell B. Barnes
Small Business Adminstration
Washington 25, D. C.

Dear Sir:

I purposely delayed answering your letter of May 12 until such time when other things affecting our company were completed.

We want to point out to you directly that our application to your department was definitely turned down, either through politics or gross inefficiency on the part of members in your department.

From your own letter I wish to call your attention to paragraph three, you stated your engineer Mr. Lewis did not find sufficient minerals in commercial quantity. How could he make such a statement. We refer you to our application which was for funds to build a silica plant. We gave you the description of nine pits which had been tested out and estimates made. Your engineer only looked at two of these pits, two out of nine.

We also refer you to paragraph four of your letter in which you stated that we had no designs covering the specialized mineral plant. We only ask for funds with which to build a silica plant, and the blue prints covering the floor plan were included in our application.

We have dozens of silica plants operating in Missouri, and they cost all the way from $10,000 to $150,000 each. Designed and equipped particularly for the products which they sell. We could only give you an estimate on the equipment to be used. Your engineer could have viewed any number of plants in our state and could have arrived at a fair estimate of cost.

We also refer you to paragraph five of your letter regarding the credit aspects of our company. I will answer this by asking you to read the latest Dunn & Bradstreet report as of June 1958 on The Ozarks Explorations Company. From this report you will see how ridiculous and untrue your appraisal was of our company.

If our application had been turned down on sound principles, certainly I would not be writing you. We have proceeded and are now building the plant from meager funds from members of our company. We hope to have it in operating within the next thirty days.

July 3, 1958

This little plant is only a stepping stone to a larger plant (a fertilizer plant) to supply millions of tons of good fertilizer to our farmers.

I will repeat by saying that definitely your letter is proof of inefficiency and petty politics.

I intend to send a copy of this letter to the Honorable Secretary Of The Interior, and when the right time presents itself, I hope our attorneys will strike your department and the D. M. E. A. for a clean out. We term you fellows, just plain down to the earth tax suckers. A damage to the Eisenhower adminstration.

Very respectfully yours,

THE OZARKS EXPLORATIONS CO., INC.

H. B. Hart, President

HBH/jlw

7/11/58

Mr. Dakan:

Per our conversation, please have this one revised. I doubt that Mr. Hardy would sign this letter with such language as "elimination of inefficiency" and "inefficiency has ... been kept at a minimum." Why not take the more positive approach and point out that efforts are made to develop and maintain high degrees of efficiency in your agency instead of looking at it gloomily and admit there is inefficiency? I doubt seriously that this letter would "help restore your confidence", as supposed in the last paragraph.

s/ Don Shearon

FILE COPY
Surname:
DMEA

Ching
Krause
Johnson
Secretary

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SECRETARY
WASHINGTON 25, D. C.

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We all agree that politics have no place in a program such as that of the DMEA, and the elimination of inefficiency should be the goal of every organization. Fortunately, the DMEA, by a system of checks and balances, has never allowed politics to enter into its decisions and inefficiency has likewise been kept at a minimum.

We trust that the foregoing assurances will help restore your confidence in the Defense Minerals Exploration Administration and convince you that hundreds of applications have been denied, not because of politics or inefficiency, but because the projects involved lacked sufficient merit to justify the expenditure of public funds.

Sincerely yours,

Secretary of the Interior

Mr. H. B. Hart, President
The Ozarks Explorations Company, Inc.
Camdenton, Missouri

MChing/gla 7-9-58
cc to: Secretary's Reading File
Secretary's file copy
MR (2)
ADI
AA
DCCO
~~DE~~
Admr.'s Reading File
DMEA docket DMEA-4405

Mr. Ching
DMEA Field Team, Region IV (2)
w/2cc incoming correspondence
PRS 1902

GAMMA

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(A MISSOURI CORPORATION)

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An Extinct Volcano
Containing Rare Minerals, Metals, Gems

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H. B. Hart

H. B. Hart, President

HBH/kw

OFFICIAL FILE COPY
DMEA
RECEIVED JUL 9 1958

DATE	INITIALS	CODE
7/9	C	220
		700

PRS
JUL - 8 1958 1902

TO: MDM	
REPLY TO BE PREPARED BY:	MDM
FOR SIGNATURE OF:	MR
COPY OF LETTER FURNISHED	
ADI AA	
MR	
SEND REPLY COPY TO ABOVE	

July 3, 1958

Wendell B. Barnes
Small Business Administration
Washington 25, D. C.

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THE OZARKS EXPLORATIONS CO., INC.

H. B. Hart, President

HBH/jlw

OFFICE OF
THE SECRETARY OF THE INTERIOR

7-11-58

Done

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DEPARTMENT OF THE INTERIOR
OFFICE OF THE SECRETARY
WASHINGTON 25, D. C.

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Sincerely yours,

Secretary of the Interior

Mr. H. B. Hart, President
The Ozarks Explorations Company, Inc.
Camdenton, Missouri

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code

FEB 28 1957

Mr. Ernest E. Thurlow, Manager
Denver Area Office AEC
P. O. Box 7647
Lakewood Branch
Denver 2, Colorado

Subject: DMA Field Team Uranium Reconnaissance Reports

Dear Mr. Thurlow:

Enclosed are single copies of the following reports which should complete your file on reports of uranium field examinations made in DMA Region IV to date:

1. Docket No. DMA-3763, Ozarks Explorations Company, Inc., Camden and Laclede Counties, Missouri, September 26, 1955, by T. F. Millens and C. C. Knox.

2. Docket No. DMA-3965, Antous Oil Company, Hudspeth County, Texas, August 25, 1955, by C. C. Knox and D. C. Shelaren.

3. Docket No. DMA-4211, Lone Star Uranium Corporation, Burnet County, Texas, January 15, 1957, by R. D. King and C. C. Knox.

4. Docket No. DMA-4301, Louis A. Sanford, Kiowa County, Oklahoma, August 14 and 22, 1956, by C. C. Knox and R. D. King, respectively.

5. Docket No. DMA-4405, Ozarks Explorations Company, Inc., Camden and Laclede Counties, Missouri, January 29, 1957, by C. C. Knox.

In addition, the final Field Team report, with attachments, on Docket No. DMA-8921, Dho and Knox, Kiowa County, Oklahoma, September 21, 1954, and January 12, 1955, by C. C. Knox and K. P. Barend, respectively, is enclosed.

Sincerely yours,

W. O. Mittendorf
(for)
Administrator

Enclosures

OCSelfridge/ecf 2/27/57
cc to: FT, REC. IV (2)
Dockets (6)
Admr. R. File
Oper. Comm.
FDLamb, USGS
THKillingsard, USGS
OCSelfridge (2)

8623

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON 25, D. C.

February 20, 1957

Memorandum

To: Nonmetallic Minerals Division
Defense Minerals Exploration Administration

From: W. F. Dietrich, Chief, Branch of Ceramic and Fertilizer Materials

Subject: DMEA-4405 (mica)

Applicant: The Ozarks Explorations Company, Inc.

Name and Location of Property: Decaurville Dome
Camden and Laclede Counties, Missouri

Date Application Rec'd. by Br. of Ceramic & Fertilizer Materials: 2/15/57

Comments:

1. Applicant initally requested assistance (DMEA-3763) in the amount of $195,258.75, which was later lowered to $52,277 under an alternate proposal.

2. Field examiners visited the property on August 30, 1955, and examined samples from bulldozer cuts and drill cores, reporting that the mica observed was of small size and of nonstrategic grade.

3. Careful re-examination by the field team of available data, including additional drill core samples still does not indicate a worthwhile exploration target.

Recommendation:

I concur with the recommendation of the field team that this application be denied.

W. F. Dietrich

W. F. Dietrich

OFFICIAL FILE COPY
DMEA
RECEIVED FEB 21 1957

DATE	INITIALS	CODE
2/21	C	220
2/21	Chung	700
		225

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON 25, D. C.

February 20, 1957

Memorandum

To: Nonmetallic Minerals Division
Defense Minerals Exploration Administration

From: W. F. Dietrich, Chief, Branch of Ceramic and Fertilizer Materials

Subject: DMEA-4405 (mica)

Applicant: The Ozarks Explorations Company, Inc.

Name and Location of Property: Decaurville Dome
Camden and Laclede Counties, Missouri

Date Application Rec'd. by Br. of Ceramic & Fertilizer Materials: 2/15/57

Comments:

1. Applicant initally requested assistance (DMEA-3763) in the amount of $195,258.75, which was later lowered to $52,277 under an alternate proposal.

2. Field examiners visited the property on August 30, 1955, and examined samples from bulldozer cuts and drill cores, reporting that the mica observed was of small size and of nonstrategic grade.

3. Careful re-examination by the field team of available data, including additional drill core samples still does not indicate a worthwhile exploration target.

Recommendation:

I concur with the recommendation of the field team that this application be denied.

Signed
W. F. Dietrich

EXTRA COPY
DMEA
RECEIVED FEB 21 1957

DATE	INITIALS	CODE

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON 25, D. C.

February 20, 1957

Memorandum

To: Nonmetallic Minerals Division
Defense Minerals Exploration Administration

From: W. F. Dietrich, Chief, Branch of Ceramic and Fertilizer Materials

Subject: DMEA-4405 (mica)

Applicant: The Ozarks Explorations Company, Inc.

Name and Location of Property: Decaurville Dome
Camden and Laclede Counties, Missouri

Date Application Rec'd. by Br. of Ceramic & Fertilizer Materials: 2/15/57

Comments:

1. Applicant initally requested assistance (DMEA-3763) in the amount of $195,258.75, which was later lowered to $52,277 under an alternate proposal.

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3. Careful re-examination by the field team of available data, including additional drill core samples still does not indicate a worthwhile exploration target.

Recommendation:

I concur with the recommendation of the field team that this application be denied.

Signed
W. F. Dietrich

EXTRA COPY
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RECEIVED FEB 21 1957
DATE | INITIALS | CODE

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON 25, D. C.

February 20, 1957

Memorandum

To: Nonmetallic Minerals Division
Defense Minerals Exploration Administration

From: W. F. Dietrich, Chief, Branch of Ceramic and Fertilizer Materials

Subject: DMEA-4405 (mica)

Applicant: The Ozarks Explorations Company, Inc.

Name and Location of Property: Decaurville Dome
Camden and Laclede Counties, Missouri

Date Application Rec'd. by Br. of Ceramic & Fertilizer Materials: 2/15/57

Comments:

1. Applicant initally requested assistance (DMEA-3763) in the amount of $195,258.75, which was later lowered to $52,277 under an alternate proposal.

2. Field examiners visited the property on August 30, 1955, and examined samples from bulldozer cuts and drill cores, reporting that the mica observed was of small size and of nonstrategic grade.

3. Careful re-examination by the field team of available data, including additional drill core samples still does not indicate a worthwhile exploration target.

Recommendation:

I concur with the recommendation of the field team that this application be denied.

Signed

W. F. Dietrich

EXTRA COPY
DMEA
RECEIVED FEB 21 1957

DATE	INITIALS	CODE

DMEA Form 7
(12-56)

700

OFFICIAL FILE COPY

Date	Surname	Code
2/11	Chiang	700
"	Elbin	700
2/13	Selfridge	130
"	Johnson	110
		100
		220

Lamb
Kelson

FEB 13 1957

Mr. H. B. Hart, President
The Ozarks Explorations Company, Incorporated
Camdenton, Missouri

Re: Docket No. DMEA-4405 (Uranium, thorium, mica, rare earths, lead and zinc)
Decaturville Dome Area
Camden and Laclede Counties, Missouri

Dear Mr. Hart:

Your second application for aid in an exploration project on the above-named property has been reviewed.

Careful study of all our new information indicates to us that the probability of disclosing significant ore reserves has not been notably improved by the additional work done by you since your first application. We regret to advise you that, under these circumstances, your application for exploration assistance is denied.

We wish to thank you again for your interest in the Defense Minerals Exploration Program and for bringing the new developments on your property to our attention.

Enclosed are the following documents which you requested Mr. Clinton C. Knox and this office to return:

1. Five logs of churn drill holes, dated April, May, and June, 1955, nine logs of core drill holes, dated 1955, and six logs of core drill holes, dated September and October, 1956, all by the Missouri Geological Survey.

2. Five logs of core drill holes, dated July, 1956, and eight logs, dated October, 1956, all by Mr. Philip Jones.

3. Three tentative geologic sections by Mr. Philip Jones and a letter report, dated October 24, 1956, to you regarding these sections.

4. Copies of 12 spectrographic analyses, dated September 11-13, 1956, by the Keldon Research Corporation.

8623

5. Seven photostats of spectrographic analyses tabulations.

Sincerely yours,

C. O. Mittendorf (for)

Administrator

Enclosures

MChing/gla
2-11-57
cc to: Admr.'s Reading File
Operating Committee
DMEA Field Team, Region IV (2)
T.H.Kiilsgaard, 5224
Jack Kratchman - AEC
Code 700
Mr. Ching

OFFICIAL FILE COPY
DMEA
RECEIVED FEB 8 1957

DATE	INITIALS	CODE
2-8	C	220
"	Chieg	700

February 7, 1957

4405

Uranium, thorium, etc.

The Ozarke Explorations Co., Inc.

Decaturville Dome area

Camden & Laclede Co., Missouri

Ernest William Ellis, DMEA Member
Uranium Commodity Committee
John E. Crawford, Bureau of Mines Member
Uranium Commodity Committee

Field Team Report

1/29/57 2/5/57

X

X

DMEA Form 7
(12-56)

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Date	Surname	Code
2/4/57	Ching	700
2-5	Ellis	700
2/5	Selfridge	120
"	Johnson	110
	Mittendorf	100
2/6	C	220

700

FEB 6 1957

Mr. Ernest E. Thurlow, Manager
Denver Area Office AEC
P. O. Box 7647
Lakewood Branch
Denver 2, Colorado

Re: Docket No. DMEA-4405 (Uranium, thorium, mica, rare earths, lead and zinc)
The Ozarks Explorations Company, Inc.
Decaturville Dome Area
Camden and Laclede Counties, Missouri

Dear Mr. Thurlow:

Enclosed is a copy of another report from Clinton C. Knox which was sent here instead of directly to you. It is in the nature of an investigation and review of a new application which covers a property previously examined and found unsuitable for a DMEA project.

Sincerely yours,

C. O. Mittendorf

Administrator

Enclosure

MChing/gla
2-4-57
cc to: Admr.'s Reading File
DMEA Field Team, Region IV (2)
Code 700, Mr. Ching
THKiilsgaard, 5224
AEC - Jack Kratchman

R.C.S.

8623

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

OFFICIAL FILE COPY
DMEA
RECEIVED FEB 7 1957

DATE	INITIALS	CODE
2-8	C	220
2-8	Ching	700

February 5, 1957

Re: DMEA 4405
The Ozarks Explorations Company, Inc.
Decaturville Dome
Camden and Laclede Co. Missouri
Uranium, thorium, mica, rare earths, lead and mine)

Memorandum

To: E. W. Ellis, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of memorandum of Executive Officer concerning re-examination of referenced property.

No new data or evidence tending to justify the application having been presented, I concur with the opinion of the Executive Office of Region IV that a re-examination of the property is not warranted and again recommend that the application be denied.

N. E. Nelson

N. E. Nelson

OFFICIAL FILE COPY
DMEA
RECEIVED JAN 31 1957

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1-31	cw	220
		130
2/5	C.	220
2-5	Cheny	700
~~January 29, 1957~~		

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
~~WASHINGTON 25, D.C.~~
Box 431
Joplin, Missouri

Memorandum

To: DMEA Operating Committee, Department of the Interior, Washington 25, D. C.

From: Executive Officer, DMEA Field Team, Region IV

Subject: Investigation and review of application, Docket DMEA-4405, (uranium, thorium, mica, rare earths, lead and zinc)
The Ozarks Explorations Company, Inc.
Camdenton, Missouri
Decaturville Dome area
Camden and Laclede Counties, Missouri

Based on an investigation made of this application as requested in your letter of August 21, 1956, this is to express Field concurrence with the recommendations in the copies of the reviews of the Commodity Group also furnished with your letter. Since reviewing the application and all pertinent data subsequently obtained, and making the investigation you requested, I am fully convinced that this application should be denied without Field re-examination of the Applicant's property. It was examined by Mullins(USGS, Platteville, Wis.) and Knox(USBM, Joplin, Mo.) August 30, 1955, upon Field referral of this Applicant's previous application Docket DMEA-3763. Available results of the great amount of prospect core drilling since indicates clearly that a worthwhile exploration target still is not evidenced.

The requested investigation under this new application was concluded after conferring with the following as the opportunites arose at places, and on the dates listed:

Name	Title	Place	Date
Mr. H. B. Hart	President of the Applicant Co.	Joplin	9-21-56
Mr. Philip Jones	Consulting Engineer	Joplin	10-24-56
Mr. Robert King	USGS-DMEA, Denver	Texas	9-12-56
and			
Dr. Thomas R. Beveridge	Missouri State Geologist	Rolla	10-15-56
Dr. Garrett A. Muilenburg	Assistant State Geologist	Rolla	10-15-56
Also by correspondence with:			
Mr. Robert A. Laurence	Reg. V, Executive Officer	Knoxville, Tenn.	10-2-56
Mr. Tom E. Mullins	USGS	Platteville, Wis.	10-8-56

Reviewed by
DMEA OPERATING COMMITTEE
2-4-57
(date)

FIELD EXAM. REPORT

Personnel of the Missouri Geological Survey indicated that it had made all justifiable drill hole core examinations but could only report negative results. The Applicant alleged for a time that the office of the Missouri Geological Survey had been a source of some newspaper publicized adverse inferences regarding this Decaturville Dome prospecting venture. Prior to that, personnel of the Missouri Geological Survey had logged five churn-drill holes and nine core-drill holes, copies of the logs of which were furnished me with your letter of August 21 and are returned herewith as you requested (Incl.A). Later, however, the Applicant permitted and requested personnel of the Missouri Geological Survey to resume logging which has been done on at least six of the holes core-drilled during and since preparation of the subject application. Therefore, also enclosed herewith for your possible review and return as requested to the Applicant are the following copies of data obtained through it since the application was filed:

(1) Six more recent Missouri Geological Survey logs,
(2) The 5 core-drill hole logs by Mr. Philip Jones, furnished with your letter, and which you also requested returned,
(3) Eight furnished by Mr. Jones since,
(4) Three sections of diagramatic geologic concepts Mr. Jones had constructed from cursory examinations he had been engaged to make of selected core chip samples.
(5) Copy of a letter report Mr. Jones wrote to the Applicant regarding the three above-mentioned geologic structural diagrams,
(6) Copies of 12 spectrographic analyses of selected core chips, and
(7) The Applicant's 6 photostats of spectroscopic analyses tabulations.

During several more recent discussions here with Mr. Philip Jones, a Consulting Metallurgist in Joplin who was employed very infrequently by the Applicant, he explained, among other things, that the inferences drawn from page 4, paragraph 2, regarding lead-zinc mineralization in his report which was included with the Application, admittedly was a result of his unfortunate phrasing. Mr. Jones emphasized that he actually had no intent to imply that any mineable thicknesses of ore had been indicated by the analyses from the selected core chip samples. Mr. Jones also hastened to explain that he had not participated in, or been consulted on the "ore reserve" calculations or any of the other details written under the items of the Application Form MF-103.

All qualified persons contacted during this investigation indicated agreement that no significant radioactivity has been evidenced by any of the large amount of prospecting work which has been done on the Applicant's properties to-date, and no worthwhile-appearing exploration target is envisioned. It seems unreasonable to believe that any strategic mica would be present. The personnel I conferred with in the Rolla offices of the Missouri Geological Survey indicated their concurrence with my observation that this particular area related to the indicated Decaturville pegmatite, likewise appears virtually devoid of lead-zinc mineralization as compared with such occurrences commonly found throughout all the Central Missouri lead-zinc district.

From the standpoint of academic geology, this apparently intricately faulted Decaturville pegmatite offers a very interesting problem which should be solved; from the standpoint of mining economics and DMEA exploration assistance policies, however, it should be ignored. A graduate student at Missouri University reportedly is preparing a thesis on this Decaturville geologic curiosity,

Tentative arrangements by Mr. Philip Jones, on behalf of the Applicant, for Mr. Dan R. Stewart, Geologist-Geophyscists, American Zinc, Lead & Smelting Co., to make a magnetic survey of Decaturville dome on a consulting basis, reportedly had to be cancelled recently because of exhaustion of the Applicant's prospecting funds and because of the winter weather. The Applicant indicated that while all work has been recessed, its stockholders plan to make funds available for resumption of some aspects of this prospecting venture next Spring.

In view of the fact that the data actually obtained by the Applicant seems to evidence lack of any systematic technological supervision during the large amount of prospecting of the past two years, and that the Applicant reportedly was unwilling to employ competent consultation except for very infrequent cursory examination work, and then obviously failed to heed their recommendations, I have concluded that the Applicant does not have adequate experience and ability to successfully conduct a mining exploration venture.

Clinton C. Knox

Clinton C. Knox

Encl 8

cc: DMEA Op. Com(3) w/2 cc for AEC
Mr. Laurence,USGS,Knoxville(2)
Mr. King,USGS,Denver
4405 file(2)

OCT 12 1956

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
~~WASHINGTON 25, D.C.~~
Box 431
Joplin, Missouri

RECEIVED
OCT 17 1956

October 9, 1956

Dr. Thomas R. Beveridge, State Geologist
State Division of Geological Survey & Water Resources
Buehler Building
Rolla, Missouri

Re: Application Docket DMEA-4405
? (mica, uranium, lead, zinc, etc.)
Ozarks Exploration Co., Inc.
Decaturville Dome
Camdenton, Missouri

Dear Dr. Beveridge:

As indicated in the attached copy of a letter from Mr. Hart, perhaps someone in your organization could discuss the subject application recently received by this office.

I plan to be in Rolla next Tuesday afternoon, October 16, and contact you or Dr. Milenburg.

With best personal regards, I am,

Sincerely yours,

CCK/enn

Clinton C. Knox
Executive Officer
DMEA Field Team, Region IV

encl.(1)
cc: DMEA Op.Com.(2)
Laurence,USGS,Knoxville
4405 file

4405

RECEIVED
OCT 1 0 1956

COPY

COPY

The Ozarks Explorations Company, Inc.
(A Missouri Corporation)
Camdenton, Mo.

October 5, 1956

Mr. Clinton C. Knox, Exec. Officer
DMEA Field Team, Region IV
U. S. Dept. of the Interior
Box 431
Joplin, Missouri

Dear Mr. Knox:

I will be glad to have you discuss our project and our application with your Department, with Mr. Philip L. Jones at any time convenient to do so.

From the last drilling holes, it begins to look like we may be able to work out this structure. I have had some more holes logged by the department in Rolla, and I will send you a copy of these logs just as soon as I can. I wish to thank you again for your valuable assistance.

Very respectfully,

THE OZARKS EXPLORATIONS CO., INC.

/s/ H. B. Hart
President

HBH/vpl

10/1/56 gla

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
~~WASHINGTON 25, D.C.~~
Box 431
Joplin, Missouri

RECEIVED
OCT - 1 1956

September 27, 1956

Mr. Robert A. Laurence, Executive Officer
Geological Survey - DMEA
Room 13 Post Office Building
Knoxville 2, Tennessee

Re: DMEA-4405 Ozarks Explorations
Decaturville, Missouri

Dear Bob:

This belatedly is to thank you for your letter of September 19 with the Interim report on Dewey Amos' September 14 inspection of the National Lead project. Please also pass my thanks on to Dewey for that good job, and to Tom Mullens for the copy of his letter to you on the cited Application.

Enclosed are copies of pertinent correspondence all of which I believe you will find self-explanatory. Also enclosed are black and white prints I was able to make here of the Missouri Surveys' strip logs you wanted on 14 holes, which you may find will suffice for your review of this Decaturville Dome. I am certain, however, that the Missouri Survey would furnish you the hand-colored copies of the logs if you so request, but I believe they must charge for that work. Mr. Philip Jones, a local consultant, kindly furnished for your use extra prints of the logs he had made on 5 additional holes. I also am sending you the sole copy of the project map he gave me last week showing the hole locations.

The Applicant, Mr. H. B. Hart, an associate, Mr. Lee Farmer, and their consultant, Mr. Philip Jones, spent last Friday morning discussing the Application here with me. I mentioned the absence of any significant mineralogical information on the logs forwarded to me with the Operating Committee's August 21 letter. That omission seemed so unusual to me because of the way the Missouri Survey always made note on their strip logs of all trace metallic minerals found in all hole samples furnished them from Bureau drilling in Missouri. Mr. Hart since sent me through Mr. Jones' Office the "originals" of those strip logs by the Missouri Survey on which notations of the lead, zinc, and copper traces were penned. I have copied those notations in pencil on the enclosed prints of those strip logs.

Mr. Hart also brought me single copies of new spectographic analyses on samples from holes C-28, C-29, and C-30 which are obviously as insignificant as all those previously furnished.

Mr. Jones called me again today to describe cores from the recent 8 or 10 holes which he saw for the first time at the project last Saturday. I agree with him that the drilling is indicating a very unusual structure for Missouri, but from my examinations of the past 12 years in that central Missouri plateau region, I doubt that many places can be found that are more devoid of zinc-lead minerals. Referring to the third paragraph of the August 10 Review by Nelson, USGS, upon my questioning, Mr. Jones expressed his regret that he inadvertently had made that mis-statement regarding averaging of the "7 spot samples".

Mr. Hart emphasized last Friday that 31 diamond drill holes now have been completed but because, as he alleged, the Missouri Survey had issued very unfavorable press releases on his project, its geologists have not been invited to come on the property or log any drill hole cores since the C-9 hole was completed. Evidently Mr. Hart made his own "ore reserve" calculations, has failed to heed the recommendations of his consultant, Mr. Jones, and employs him only infrequently. Thus there is no evidence that Mr. Hart's organization ever systemically recorded the drilling results.

I explained to Mr. Hart that it would have to be a very unusual case where I would recommend a DMEA project contract that did not have some endorsement of the A.E.C. in the case of radioactive minerals, or the Missouri Geological Survey in the case of lead and zinc minerals in Missouri.

As the Operating Committee suggested in its August 21 Field references, I discussed this Application with Robert King of your Denver Office during the recent ten day trip with him in Texas. Now with Tom Mullen's comments and yours I feel about prepared to write a Field Team memo and recommendations in concurrence with the denial suggested by the Bureau and Survey reviewers in Washington. However, since I expect to go through Rolla within two weeks I plan first to further discuss the Application with the Missouri Survey. I am certain they would not wish to furnish me the comments of their geologists in writing.

In the meantime, I hope I can be allowed to concentrate on some of the many other DMEA matters on hand which appear of much greater importance and urgency.

Sincerely,

CCK/enn

Clinton C. Knox

cc: DMEA Op.Com.(2)
Laurence, USGS
4405 file

COPY

RECEIVED
OCT - 1 1956

COPY

PHILIP L. JONES
Consulting Engineer
Mineral Economics & Mineral Dressing

Phone MAyfair 3-7161

405 Miners Bank Bldg.
Joplin, Missouri
Sept 17 1956

Mr. C. Knox,
U.S. Bureau of Mines,
Joplin, Mo.

Dear Clint:

Re Ozark Exploration Co. Inc D.M.E.A. Application

Mr. H. B. Hart, President of the above Company brought some of his most recent drill cores in to see on Sept. 6th. I looked at them and took some samples. He asked me to bring these samples to your notice which I did the same day.

The samples were from two holes C 28 and C 29. The C 28 hole is 1580 feet from the Center on bearing 490 W of S. The C 29 hole was 40 feet to the E.S.E. of C 28. The C 28 hole is roughly 300 feet E.S.E. from the Moore shaft.

Mr. Hart has located one of the old Athletic Smelting and Refining Co's holes 50 feet S of the Moore shaft which is either D 2 or D 3, logs of which should accompany the application. This old hole is therefore about 280 feet W.N.W. of the new hole C 28. I enclose map fig. IV report JOP-131 which I understand you to say was not included in the application but which should accompany report JOP-131, which is drawn in a somewhat more orthodox manner than the one you have, and I have marked the new holes on this print in the lower left-hand corner.

Examination of the hole C 28 shows the following sequences to which I have tentatively added formation description based on comparison of the new samples with samples from the cores of old holes which have been logged by the M.G.S.

Surface to 195'	Grey dolomite speckled green with numerous glauconite particles (70' - 160' boxes not seen)	Davis
195' - 240'	Grey slightly banded and convoluted dolomite with dark styolitic partings	Bonneterre
240' - 280'	Boxes not seen	
280' - 348'	Grey dolomite interbedded with a few thin beds of green shale, all bedding at about 50° to the horizontal	Davis
348' - 440'	White sandstone speckled dark brown	Lamotte

The sandstone has not turned up anywhere else in this area before, and it seems impossible for it to be anything else than Lamotte. A quartzose rock turns up several times near the pegmatite, which consists of rounded sand grains in a hard siliceous cement, which I have always thought was altered Lamotte. I have also felt that the conglomerate that occurs to the N. of the pegmatite is an altered Lamotte basal conglomerate.

Comparing the C 28 hole with the D 2 and D 3, D 2 bottoms in Bonneterre at 650' and D 3 in Davis at 740', while C 28 shows Lamotte beginning at 348'. Obviously a major movement has occurred here in 280' horizontal distance representing an upthrow in C 28 of over 392; since neither the Bonneterre or Davis bottom in the old holes.

This represents a considerable fault with the upthrow to the S. and is as far as I know the first time it has been possible to recognize the movement in two nearby holes.

The dark styolitic partings in the sequence called Bonneterre in C 28 shows slight mineralization of galena and sphalerite, and a little ilmenite seems present.

Mr. Hart wanted you to know about this in taking consideration of the whole application.

Sincerely yours

Philip L. Jones

8/31/56

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

RECEIVED
AUG 31 1956

~~WASHINGTON 25, D.C.~~
Box 431
Joplin, Missouri

August 29, 1956

Mr. H. B. Hart, President
The Ozarks Explorations Co., Inc.
Camdenton, Missouri

Re: Docket DMEA-4405 (uranium, thorium, mica, rare earths, lead and zinc)
Decaturville Dome area
Camden and Laclede Counties, Mo.

Dear Mr. Hart:

Copies of the preliminary application reviews by members of the Rare and Miscellaneous Metals Division of DMEA, and 19 drill hole logs you had furnished it on August 13, have been received from Washington with a letter to me authorizing further investigation of this application.

Therefore, in the light of all this recently received additional information, I again have studied carefully the copy of the application received directly from you on August 2. While no essential data seems to be lacking from your obviously complete application presentation, I still plan before preparing my comments and recommendations requested thereon, to arrange a discussion with Mr. Philip L. Jones, if agreeable to you and him, on some points in the application and his report furnished as a part thereof. Although, his metallurgical consulting office is within a block from me, he could not be contacted there recently but I expect he will be available shortly.

Also, I have been instructed to take the opportunity to discuss the geologic and radiologic aspects of your application data with a geologist of the U. S. Geological Survey who I am scheduled to join soon on DMEA project work in Texas.

Please be assured, however, that all involved are making a most earnest effort to expedite a fair decision on your application.

With best personal regards, I am,

Sincerely yours,

Clinton C. Knox
Executive Officer
DMEA Field Team, Region IV

CCK/enn

cc: Mr. Philip L. Jones,
Miners Bank Bldg., Joplin, Mo.
DMEA Op. Com. (2)
Laurence, USGS-Knoxville - w/2nd F.T. copies of all recent pertinent correspondence CCK.
Harshman, USGS-Denver - 4405 file

Surname copy

Ellis
Lamb
Nelson
Selfridge
J. Johnson

700

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

Mr. H. B. Hart, President
The Ozarks Explorations Company, Incorporated
Camdenton, Missouri

Re: Docket No. DMEA-4405 (Uranium, thorium, mica, rare earths, lead and zinc)
Decaturville Dome Area
Camden and Laclede Counties, Missouri

Dear Mr. Hart:

This will acknowledge your letter of August 13, 1956, enclosing 14 drill-hole logs, prepared by the Division of Geological Survey and Water Resources, State of Missouri, and five drill-hole logs, prepared by Philip L. Jones, pertaining to your captioned application. As you requested, these logs will be returned to you as soon as they have served our purpose.

Your application has been reviewed by the Rare and Miscellaneous Metals Division of this Agency, and it has been referred, for further investigation, to:

Mr. Clinton C. Knox
Executive Officer
DMEA Field Team, Region IV
P. O. Box 431
Joplin, Missouri

The Regional Office will contact you in regard to your project if additional information is required.

Sincerely yours,

C. O. Mittendorf

Administrator

cc to: Senator Stuart Symington
Senator Thomas C. Hennings, Jr.

EWEllis/gla 8-17-56
cc to: Admr.'s Reading File
Docket
Code 700
DMEA Field Team, Region IV (2)

Surname copy

700

Ellis
Selfridge
F. Simons
Mitchell

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

Mr. Clinton C. Knox
Executive Officer
DMEA Field Team, Region IV
P. O. Box 431
Joplin, Missouri

AUG 21 1956

Re: Docket No. DMEA-4405 (Uranium, thorium, mica, rare earths, lead and zinc)
The Ozarks Explorations Company, Incorporated
Decaturville Dome Area
Camden and Laclede Counties, Missouri

Dear Mr. Knox:

The captioned application is referred to Region IV for comments and recommendations. You may deem it necessary, since the Applicant has performed additional drilling within the past year, to again visit the property. However, that decision is left up to your own good judgment. Of course, if the cores or cuttings are available, then we believe it would be advisable to scan them radiometrically.

Enclosed are copies of memoranda, dated August 10 and 15, 1956, by N. E. Nelson, USGS, and James Paone, USBM, respectively, relating to the subject application.

You will note that this is the same proposed project that was denied on October 14, 1955, under Docket No. DMEA-3763. Since the latter application was denied, Applicant has completed considerable additional work, mostly drilling. The reported results of said drilling do not reveal that the possibility of discovering a commercial ore body is any better than that presented in the previous application. The Commodity Members, as you will see by the enclosures, recommend denial without a field examination. However, in view of the fact that the Applicant has done this work in good faith, and at considerable expense; also, from your office file, you will note that there have been numerous Congressional inquiries, it seems advisable to refer this application to your office for comments.

Perhaps you may have an opportunity to discuss the proposed project with the geologist from Region III when he arrives to assist you in the investigation of the application under Docket No. DMEA-4269, Big Bend Exploration Company, Inc.

Under date of August 13, the Applicant forwarded to us the following:

1. The logs of 5 churn-drill holes and 9 core-drill holes, prepared by the Division of Geological Survey and Water Resources, State of Missouri; and

2. The logs of 5 core-drill holes, prepared by Philip L. Jones, two dated July 17, 1956, two dated July 18, 1956, and one dated July 20, 1956.

These are forwarded for your information. The Applicant requests that these logs be returned when they are of no further use. Kindly return them to Washington with your comments.

According to Applicant's letter of August 1, a copy of the subject application was forwarded to your office.

In our opinion, a long, detailed report should not be necessary in this particular case. However, we would like to have the benefit of your opinion.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GCS)

EWEllis/ai 8-17-56

cc to: Docket
Admr.REading File
Operating Committee
Code 700
Mr. Ellis
Messrs. JECrawford, Rm. 3643
THKiilsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA

Enclosure

APPROVED:

FRANK D. LAMB (FDL)

Member, Bureau of Mines

N. E. Nelson (NEN)

Member, Geological Survey

Surname copy 700

Ellis
Johnson

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

Hon. Dewey Short
House of Representatives
Washington 25, D. C.

Re: Docket No. DMEA-4405 (Uranium, thorium mica, rare earths, lead and zinc)
The Ozarks Explorations Company, Incorporated
Decaturville Dome Area
Camden and Laclede Counties, Missouri

My dear Mr. Short:

This will acknowledge receipt of your communication of August 16, 1956, enclosing a letter, dated August 15, from Mr. James P. Roach of Camdenton, Missouri, an attorney representing The Ozarks Explorations Company, Incorporated. The contents of Mr. Roach's letter have been carefully noted.

On this date, we are referring the application to our field examiners at Joplin, Missouri, for their investigation. Mr. R. B. Hart, president of the subject company, is likewise being advised of this action. Our field examiners are men well acquainted with the mineral resources of the State of Missouri and will undoubtedly render an unbiased opinion as to the merits of the proposed project. Our final action will be determined on information obtained in the field as well as information available to us here in Washington.

In accordance with your request, Mr. Roach's letter is returned herewith.

Please be assured that action in this case will be expedited to the best of our ability.

Sincerely yours,

C. O. Mittendorf

Administrator

Enclosure

EWEllis/gla
8-21-56
cc to: Admr.'s Reading File
Docket
Code 700
DMEA Field Team, Region IV (2) w/2 cc each incoming communication

C

Congress of the United States

House of Representatives

Washington, D. C.

August 16, 1956 195

Mr. C. O. Mittendorf, Adm.
Defanse Minerals Exploration Adm
Department of the Interior
Washington 25, D. C.

Sir:

The attached communication is sent for your consideration. Please investigate the statements contained therein and forward me the necessary information for reply, returning the enclosed correspondence with your answer.

Yours truly,

DEWEY SHORT M. C.

JAMES P. ROACH
Attorney at Law
Post Office Bldg.,
Camdenton, Missouri

August 15, 1956

Honorable Dewey Short, M. C.
House Office Building
Washington, D. C.

Re: Docket Number DMEA-4405
Ozarks Explorations Company, Incorporated
Camdenton, Missouri

Dear Congressman:

You will recall that Mr. Henry B. Hart and I had the pleasure of calling at your office early this summer in regard to the mining venture which we and other local residents are engaged in here in the Ozarks. To review the matter briefly, we have been engaged in exploratory drilling in connection with our mining project, and early this year we filed an application with the Defense Minerals Exploration Administration for a drilling assistance grant, which application was at that time denied. We have, since that time, more than doubled the amount of exploratory drilling and we have recently filed a new application for a drilling assistance grant which has been docketed under the above given number.

In view of the fact that most of the people in Washington connected with the mining and minerals branches of the Department of the Interior are from the Western States, and are imbued with the idea that there are no important minerals to be found in the Ozarks, we are faced with the problem of overcoming their bias for lack of knowledge of our Ozarks area so that we may have a fair and impartial consideration of our project and our application for a drilling assistance grant.

We appreciate your kind assistance given us in the past, and we are again imposing upon your kindness by asking that you request the Defense Minerals Exploration Administration give our application a reconsideration. Through the offices of mutual friends, we have enlisted the support of the two Senators from Missouri, and, of course, our own Congressman, Morgan M. Moulder.

Thanking you in advance for your unfailing courtesy, and with kindest personal regards, I am,

Sincerely yours,

/s/ James P. Roach

James P. Roach

C O P Y

JPR:dk

Surname copy

700
Ellis
Land
Kelson
Selfridge
Peterson

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D.C.

Mr. Richard H. Brown
Executive Assistant to
Hon. Thomas C. Hennings, Jr.
United States Senate
Washington 25, D. C.

AUG 21 1956

Re: Docket No. DMEA-4405 (Uranium, thorium, mica, rare earths, lead and zinc)
The Ozarks Explorations Company, Incorporated
Decaturville Dome Area
Camden and Laclede Counties, Missouri

Dear Mr. Brown:

In accordance with our telephone conversation on August 15, 1956, and your letter of the same date, I am enclosing a copy of my letter to Mr. H. T. Hart, president of the applicant company, advising him of the action taken on the subject application by this office as of this date.

Sincerely yours,

C. O. Mittendorf

Administrator

Enclosure

EWEllis/gla
8-17-56
cc to: Admr.'s Reading File
Docket
Code 700
DMEA Field Team, Region IV (2)

Surname copy

700

Ellis
Land
Nelson
Selvidge
Johnson

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

AUG 21 1956

Hon. Stuart Symington
United States Senate
Washington 25, D. C.

Re: Docket No. DMEA-4405 (Uranium, thorium, mica, rare earths, lead and zinc)
The Quartz Explorations Company, Incorporated
Decaturville Dome Area
Camden and Laclede Counties, Missouri

Dear Senator Symington:

In accordance with your letter, dated August 14, 1956, and my reply of August 16, I am enclosing a copy of my letter to Mr. H. I. Hart, president of the applicant company, advising him of the action taken on the subject application as of this date.

Sincerely yours,

C. O. Mittendorf

Administrator

Enclosure

EWEllis/gla
8-17-56
cc to: Admr.'s Reading File
Docket
Code 700
DMEA Field Team, Region IV (2)

700

FILE COPY
Surname: Ellis

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

AUG 16 1956

Hon. Stuart Symington
United States Senate
Washington 25, D. C.

Re: Docket No. DMEA-4405 (Uranium)
Ozarks Explorations Company, Inc.
Decaturville Dome
Camden & Laclede Counties, Missouri

My dear Senator Symington:

Acknowledgement is made of your letter, dated August 14, 1956, with attached letter of August 8 from Mr. George W. Carter, Kansas City Life Insurance Company, P. O. Box 139, Kansas City 41, Missouri, expressing interest in the subject application. Mr. Carter's letter is returned herewith.

This application was received in Washington on August 3, 1956, and is presently being reviewed by the commodity analysts. When the initial review of the application is completed, I will be glad to inform you of further action to be taken.

Please be assured that action on this application will be expedited to the best of our ability.

Sincerely yours,

G. O. Mittendorf

Administrator

Enclosure
EWEllis/gla/izm 8-15-56
cc to: Docket
Code 700
Mr. Ellis
Admr.'s Reading File
DMEA Field Team Reg. IV(2), w/2cc of 2 incoming letters
Messrs. JECrawford, Rm. 3643
THKiilsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA

RICHARD B. RUSSELL, GA., CHAIRMAN
HARRY FLOOD BYRD, VA.
LYNDON B. JOHNSON, TEX.
ESTES KEFAUVER, TENN.
JOHN STENNIS, MISS.
STUART SYMINGTON, MO.
HENRY M. JACKSON, WASH.
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LEVERETT SALTONSTALL, MASS.
STYLES BRIDGES, N. H.
RALPH E. FLANDERS, VT.
MARGARET CHASE SMITH, MAINE
FRANCIS CASE, S. DAK.
JAMES H. DUFF, PA.
HERMAN WELKER, IDAHO

8/15/56

DMEA 4405

United States Senate

COMMITTEE ON ARMED SERVICES

August 14, 1956

Mr. C. O. Mittendorf, Administrator
Defense Minerals Explorations Administration
U. S. Department of the Interior
Washington 25, D. C.

Dear Mr. Mittendorf:

Enclosed is a letter which I have just received from Mr. George W. Carter with regard to an application which has been submitted to you by the Ozarks Explorations Company, Inc., of Camdenton, Missouri, and which I understand has been filed under docket number DMEA 4405.

I will deeply appreciate any consideration which you may give this application and will be glad to have you keep me advised as to the status of the matter.

Thanking you, I am

Sincerely yours,

Stuart Symington

Stuart Symington

SS:b

RECEIVED
AUG 15 1956

KA[illegible]S CITY LIFE INSURANCE COMPANY
P. O. Box 139
3520 Broadway
Kansas City 41, Missouri

August 8, 1956

Senator Stuart Symington
United States Senate
Washington 25, D. C.

Honorable Sir:

Re: Application of the Ozarks Explorations Company, Inc., Camdenton, Camden County, Missouri, for Grant from D. M. E. A.

I advised you in March this year that the above named Company had made certain explorations and desired a grant from the Government for the purpose of making further explorations. I also advised you that any assistance, that you may render the Company, in order that its application may receive a fair and unbiased consideration, would be greatly appreciated.

C O P Y

I wish to take this opportunity to extend to you my appreciation of your interest shown, in relation to said application, and I am sure I express the sentiment of all the stockholders of our Company. I am glad to state that I had an opportunity, and I assure you it was a pleasure, at the last meeting of stockholders in May, to advise them of your interest shown in said application.

Permit me to advise you the Company has made further exploration work and in fact is now Core Drilling the thirty-first hole and that all costs incident to all drilling to date have been financed by our Company. Sufficient amounts of minerals and rare earths have been found that will justify further explorations, in fact, it is not unreasonable to assume that as a result of these explorations a very extensive mining operation may be developed not only in relation to the holdings of about seven thousand acres of leased land owned by said Company but as to the greater part of the Ozarks. This conclusion and assumption are based upon reports of nationally known geologists now in the files of our Company.

Also, permit me to further advise you that the Company did on August 1, file an application with "Mr. C. O. Mittendorf, Administrator, Defense Minerals Explorations Administration, United States Department of the Interior, Washington 25, D. C.", asking for a Government grant, in order that further explorations may be made.

I am glad to advise you that the Company is not only financially able but is anxious to pay its share in cash, according to government regulations, of the costs of further explorations desired.

It will be greatly appreciated if you will assist our Company in every way possible so that this newapplication will receive a fair and unbiased consideration.

I beg to remain

Yours respectfully
/s/ Geo. W. Carter

8/16/56

LYNDON B. JOHNSON, TEX., CHAIRMAN

THEODORE F. GREEN, R. I.
LISTER HILL, ALA.
RICHARD B. RUSSELL, GA.
ROBERT S. KERR, OKLA.
EARLE C. CLEMENTS, KY.
JAMES E. MURRAY, MONT.
EDWIN C. JOHNSON, COLO.
THOMAS C. HENNINGS, JR., MO.

United States Senate
Democratic Policy Committee

August 15, 1956

Mr. C. O. Mittendorf, Administrator
Defense Minerals Explorations Administration
Department of the Interior
Washington, 25, D. C.

Dear Mr. Mittendorf:

This will confirm my conversation with you today concerning the application of Ozarks Explorations Company, Inc. (D.M.E.A. #4405).

I would appreciate your advising our office when further action is taken with respect to this application.

With best wishes, I am

Sincerely yours,

Richard H. Brown

Richard H. Brown
Executive Assistant
to Senator Hennings

RHB:mtc

RECEIVED
AUG 16 1956

GAMM

8/15/56

The OZARKS EXPLORATIONS COMPANY, INC.

(A MISSOURI CORPORATION)

CAMDENTON, MO.

RECEIVED
AUG 15 1956

The DECATURVILLE DOME
An Extinct Volcano
Containing Rare Minerals, Metals, Gems

August 13, 1956

Rare and Miscellaneous Metals Division
Defense Minerals Explorations Administration
United States Department of the Interior

Subject: DMEA 4405
RE: Exploration Assistance Wheeler Mine

Gentlemen:

We are sending to you, to be attached to the first copy of our application, for consideration by your department the following loged drill holes:

Logs by Missouri Department of Mines---------- 5 plunger drill holes

" " " " " " ---------- 9 core drill holes

Logs by Philip Jones ---------- 5 core drill holes

At such time, when either you approve or reject our application, it would be appreciated if you would return the above listed logs to us.

Very respectfully,

H. B. Hart, President

HBH/abh

8/15/56

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON 25, D. C.

RECEIVED
AUG 15 1956

August 15, 1956

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee

From: James Paone, Bureau of Mines Alternate Member
Uranium Commodity Committee

Subject: Application for Assistance, DMEA Docket 4405, The Ozarks Exploration Co., Inc., Decaturville Dome (Wheeler Mine), Camden County, Missouri

I have reviewed the attached application, DMEA Docket 4405, The Ozarks Exploration Co., Inc., Decaturville Dome (Wheeler Mine), Camden County, Missouri, dated July 30 and received in this office August 6, 1956. I have also discussed it with Joseph O. Hosted, Washington representative of the Atomic Energy Commission.

The applicant proposes to explore a pegmatite by 6 core drill holes 1,500 feet deep and 22 core drill holes 600 feet deep. The total estimated cost for the 22,200 feet of drilling is $52,384.

It is doubtful that any economic concentrations of uranium will be discovered as a result of the proposed work. It appears that the applicant is cognizant of this fact and that he realizes that the work will be essentially prospecting.

We recommend that the application be denied without a field examination.

James Paone
James Paone

Attachment

8/14/56

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

RECEIVED
AUG 13 1956

August 10, 1956

Re: DMEA 4405
Ozarks Explorations Co.
Decaturville Dome
Camden Co., Missouri
$52,384 - Uranium

Memorandum

To: E. W. Ellis, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of application.

The referenced property was the subject of DMEA application 3763, at which time, August 1955, a pegmatite mass which has long aroused interest was believed by the applicant to be mica bearing. The application was denied as the examiners could find no evidence pointing to a worthwhile concentration of any mineral.

Apparently the applicant has since drilled 23 holes ranging in depth from 47 feet to 790 feet and totalling about 10,681 feet. Five churn drill holes were put down in 1955 prior to the DMEA examination. Diamond drill hole #24 is probably being drilled. An array of new data are now submitted pertaining to the drilling, and a long report by the consulting engineer in which the data are organized and new inferences drawn. The core drilling indicates the pegmatitic mass which was taken to be a more or less vertical plug, probably dips northerly or northwesterly. The greatest thickness, 120 feet, is shown in hole C-8. As it seems not to have been cut in holes C-5, C-6 and C-14, to the west and northwest, the 120 feet may be near the true thickness. The extensive drilling has served to show the near surface attitude of the pegmatitic mass and gives information concerning the quantity and quality of the dolomite and feldspar. Scattered showings of lead, zinc and thorium, as yet not correlated, and probably of little significance, fail to give the project an economic aspect.

The conclusions of the consulting engineer are used to support this application for assistance. I accept the conclusions for the most part but question the odd statement, as p. 4, paragraph 2, "The first 251 feet of C-17 averages 0.53% Pb and o.26% Zn by chemical assays." The lead average is obtained by averaging 7 spot samples, the lowest 0.01%, the highest 3.02%. The 3.02% sample is ascribed to the 251-foot depth and the highest above that 0.45% is at 151 feet. The material above 151 averages 0.025% and that below to 251, 0.05% Pb.

Using such averages, but not the same ones, someone estimates there are 15,100 tons of lead (metallic) and 8,600 tons of zinc in a triangular area between holes C-1, C-20 and C-13. Supporting data are not given. Likewise, reserves of uranium are estimated at 66 tons of material carrying 0.11% U_3O_8 and of rare earth 79,950 tons, no grade ascribed.

The proposed work consists of:

6 core drill holes	1,500 feet deep	9,000 feet
22 core drill holes	600 feet deep	13,200 feet
		21,200 feet

The 1,500-foot holes are to test the hypothetical contact of the dolomite and the basement granite. The 600-foot holes to locate further lead and zinc reserves.

The consultant concludes:

> "None of these occurrences represents ore economic for its lead-zinc alone so far. Some of them might pay to be scalped of their lead-zinc in a simple mill when run across in mining dolomite for fertilizer.....Geological considerations do not indicate where any economic concentrations of lead-zinc ore are likely to occur, but do not rule out the possibility that such concentrations are present."

Obviously, such being the case, the proposed drilling is prospecting.

Denial of the application without referral to the Field Team is recommended.

N. E. Nelson

N. E. Nelson

August 3, 1956

Ozarks Explorations Co, Inc.
Camedenton,
Missouri

Subject: DMEA 4405
Re: Exploration Assistance
Wheeler Mine

Gentlemen

The receipt of your application dated July 30, 1956 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-4405 and referred to the Rare & Misc. Metals Division.

Kindly identify all future correspondence relating to your application by this docket number.

Sincerely yours,

Robert E. Adams, Chief
Operations Control and
Statistics Division

August 3, 1956

Memorandum

To: Executive Officer, DMEA Field Team, Region IV

From: Chief, Operation's Control and Statistics Division

Subject: Assignment of Docket Number

There is listed below the assigned docket number to an application recently received from Region ——— Applicant.*

* Application forwarded you by applicant.
- 4405 Ozarks Explorations Co, Inc.
Wheeler Mine

Robert E. Adams
Chief, Operation's Control
and Statistics Division

THE OZARKS EXPLORATIONS CO., INC.
CAMDENTON, MISSOURI

HOLE 15

	Depth	Silicon	Aluminum	Magnesium	Iron	Calcium	Sodium	Potassium	Tellurium	Boron	Phosphorus	Antimony	Gold	Lead	Tin	Chromium	Arsenic	Manganese	Gallium	Germanium	Platinum	Bismuth	Columbium	Nickel	Beryllium	Molybdenum	Vanadium	Lithium	Yttrium	Cadmium	Copper	Silver	Tantalum	Zinc	Titanium	Zirconium	Palladium	Rhodium	Ruthenium	Cobalt	Lanthanum	Cerium	Strontium	Tungsten	Mercury	Indium	Barium	Uranium	Thorium	Gems
	297	3-30	1-10	5-50	1-10	3-30	05-5	5-5		01-1	05-5		01				03-3									05-05	01-1	01-1		03-03				05-5												03-3	05-5			
	298	3-30	5-5	3-30	3-30	5-50	05-5	1-1					03				03-3					01-1				03-03				03-03	03-03			05-5								05-05						05-5			
	303	2-20	5-5	3-30	5-5	5-50	03-3	1-1			01-1		01				01-1											05-05		001-01				05-5	03-3							05-05						05-5			
	316	3-30	2-20	3-30	5-5	3-30	05-5	5-5		01-1	05-5		03				01-1													03-03				05-5								05-05						05-5			
	319	3-30	3-3	3-30	1-10	5-50	03-3	3-3		01-1	01-1		03				03-3													03-03				03-3								05-05						05-5			
	329	5-50	2-20	3-30	5-5	5-50	05-5	5-5		01-1	01-1		03				03-3											005-05		03-03				1-1	05-5											03-3	005-05			
	341	3-30	3-3	3-30	2-20	3-30	05-5	5-5		01-1	01-1		03				05-5													03-03				05-5														005-05			
	344	1-10	1-1	5-50	5-5	5-50	05-5	1-1		01-1	03-3		01				01-1													001-01				01-1	01-1													005-05			
HOLE	356	2-20	5-5	5-50	5-5	5-50	03-3	3-3					01				01-1									003-03		002-03		03-03				05-5								01-1				01-1		005-05			
	358	2-20	5-3	5-50	5-5	5-50	05-5	5-5		01-1			03				01-1													003-03				03-3														005-05			
	365	2-20	3-3	5-50	1-10	5-50	05-5	3-3					01	01			05-5													003-03				05-5														005-05			
	368	1-10	3-3	5-50	5-5	5-50	05-5	3-3			05-5		01				01-1											003-03		001-01				05-5														005-05			
	374	2-20	3-3	5-50	1-10	5-50	03-3	5-5			03-3		03	01			03-3													002-03				05-5														005-05			
	379	2-20	3-3	5-50	5-5	5-50	05-5	3-3	005-05		05-5		03				03-3									003-03				003-03				03-3														005-05			
	407	1-10	3-3	5-50	2-20	3-30	05-5	1-1					03				03-3					005-05						005-05		003-03				1-1	03-3							01-1				03-3		005-05			
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	468	2-20	05-5	3-30	3-3	3-30	03-3	1-1	005-05				01				03-3					003-03		01-1						001-01				05-5														005-05			
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	491	1-10	1-1	5-50	3-3	5-50	05-5	5-5			03-3		03				01-1													001-01				03-3														005-05			
	500	2-20	1-1	5-50	3-3	5-50	03-3	3-3			03-3		01				01-1													001-01				03-3								01-1						005-05			
	506	2-20	3-3	5-50	3-3	5-50	03-3	3-3	01-1				01				01-1									003-03				001-01				05-5								005-05						005-05			
	524	1-10	1-1	5-50	5-3	5-50	03-3	3-3			03		01				03-3					005-05		003-03		005-05	003-03			001-01				03-3														005-05			
	540	3-30	5-5	5-50	3-3	5-50	03-3	1-1		01-1	05-5		01				01-1					005-05		003-03		005-05				003-03				05-5														005-05			
	617	3-30	5-5	3-30	5-5	5-50	03-3	5-5		01-1	05-5		03				03-3									005-05		005-05		003-03				05-5												03-3		005-05			
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	656	3-30	5-5	3-30	1-10	5-50	03-3	3-3			05-5		05				01-1					005-05				003-03		005-05		005-05	005-05		1-1	05-5														005-05			
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	663	2-20	3-3	2-20	5-5	5-50	03-3	1-1					01				03-3									003-03		01-1		005-05				05-5								003-03				03-3		005-05			
	676	3-30	1-10	3-30	3-3	5-50	05-5	3-3			03-3		03				01-1									005-03		005-05		003-03				05-5	03-3							003-03						005-05			
	689	3-30	5-5	3-30	5-5	3-30	05-5	3-3			01-1		01				03-3					005-05				003-03		005-05		003-03				05-5								003-03				01-1		005-05			
	691	2-20	3-3	2-20	2-20	5-50	05-5	1-1					03				01-1					005-05				003-03		003-03		003-03	003-03		01-1	05-5														005-05			
	697	3-30	5-5	3-30	5-5	3-30	05-5	5-5			03-3		03				01-1									003-03		003-03		001-01				05-5					003-03									005-05			
	709	3-30	3-3	5-50	1-10	5-50	05-5	3-3	03-3				005-05				03-3					01-1		003-03		005-05		005-05		001-01				05-5														005-05			
	712	3-30	5-5	3-30	1-10	3-30	05-5	3-3			05-5		005-05				03-3					005-05				005-05		005-05		001-01	003-003			1-1														005-05			
	727	5-50	2-20	3-30	5-5	5-50	1-1	5-5		01-1	005-05		01-1									005-05				005-05		005-05		005-05	003-003			1-1														005-05			
	719	2-20	1-1	5-50	1-10	3-30	05-5	5-5		01-1			003-03				01-1					005-05		003-03		003-03				003-03				1-1	03-3													005-05			
	439	3-30	3-3	3-30	5-5	5-50	05-5	3-3		01-1	05-5		03				03-3					005-05				003-03				003-03				03-3												03-3		005-05			
	735	3-30	3-3	5-50	5-5	5-50	03-3	1-1		01-1	03-3		01				01-1									005-05		005-05		003-03			03-3	05-5							005-05				01-1		005-05			
	744	5-50	5-5	3-30	5-5	5-50	03-3	3-3		01-1	05-5		01				01-1									005-05		001-01						03-3												03-3		005-05			
	751	3-30	1-1	5-50	5-5	3-30	05-5	5-5					03				01-1									003-03				001-01				05-5														005-05			
	759	5-50	1-1	3-30	2-20	3-30	05-5	3-3			03-3		01				1-1	001-01						3-3		003-03		005-01		001-01	003-003		01-1	05-5														005-05			
	762	3-30	1-1	5-50	1-10	3-30	05-5	5-5			03-3		03				01-1							01-1		005-05				001-01				03-3														005-05			
	769	3-30	1-1	5-50	1-10	5-50	03-3	5-5		01-1			01				03-3					005-05		005-05						001-01				03-3														005-05			
	Composite Hole 666	2-20	05-5	5-50	1-10	2-20	03-3			01-1	01-1		03	01			01-1	001-01	001-01			005-05							003-03	03-3	003-03		3-30	03-3															005-05			
	12720-7	5-50	2-20	3-30	5-5	3-30	05-5	1-10		03-3	05-5		01				005-05	001-01						005-05		005-05		01-1		001-01				3-30	005-05					01-1					005-5		005			

THE OZARKS EXPLORATIONS CO., INC.
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DEPTH	SILICON	ALUMINUM	MAGNESIUM	IRON	CALCIUM	SODIUM	POTASSIUM	TELLURIUM	BORON	PHOSPHORUS	ATIMONY	GOLD	LEAD	TIN
55	3-30	5-5	3-30	1-10	5-50	1-1	3-3		01-1				01	
70	1-10	3-3	5-50	5-5	5-50	05-5	3-3		01-1	05-5			03	
80														
90	2-20	5-5	3-30	1-10	5-50	1-1	3-3		03-3	05-5			03	01
100														
120	1-10	1-1	5-50	3-3	5-50	03-3				05-5			03	
140	1-10	1-1	5-50	5-5	5-50	03-3	05-5			05-5			01	
160	1-10	1-1	5-50	5-5	5-50	03-3	05-5			05-5			01	
200														
10	1-10	3-3	3-30	1-10	5-50	05-5	3-3		01-1	05-5			01	
30	1-10	1-1	3-30	5-5	M	05-5	1-1		01-1	05-5			01	
40	2-20													
235	2-20	3-3	5-50	2-20	5-50	05-5	3-3			03-3	1-1		1-1	01
238	1-10	1-1	5-50	1-10	5-50	05-5	1-1			03-3	05-5		05-05	
250	3-30	5-5	3-30	1-10	5-50	03-3	1-1		01-1		05-5		03	
260	3-30	5-5	3-30	5-5	3-30	03-3	05-5		01-1		05-5		03	
276	1-10	1-1	3-30	3-3	3-30	03-3							03	
290	1-10	1-1	5-50	1-10	3-30	05-5	1-1			03-3			03	01
294	1-10	1-1	3-30	5-5	5-50	03-3			01-1	05-5			01	
300	2-20	1-1	5-50	5-5	3-30	05-5	1-1			05-5			01	01
306	1-10	1-1	5-50	1-10	3-30	05-5	3-3		01-1	03-3			03	
313	1-10	1-1	3-30		Mi0	03-03				03-3			03	
315	2-20	5-5	5-50	1-10	3-30	05-5	3-3		01-1		05-5		03	
320	2-20	5-5	5-50	1-10	5-50	05-5	3-3		01-1				01	
Mad.	3-30	3-3	5-50	2-20	3-30	1-1	3-3						01	

DEPTH	CHROMIUM	ARSENIC	MANGANESE	GALLIUM	GERMANIUM	PLATINUM	BISMUTH	COLUMBIUM	NICKEL	BERYLLIUM	MOLYBDENIUM	VANDIUM	LITHIUM	YTTRIUM	CADMIUM	COPPER	SILVER
55			01-1									003-03		005-05		003-03	
70			01-1													003-03	0015-015
80																	
90			01-1													003-03	0001-001
100																	
120			005-05													001-01	
140			01-1									003-03				003-03	
160			01-1									003-03				003-03	
200																	
10			03-3								01-1			005-05		005-05	0015-015
30			01-1									003-03				01-1	
40																	
235			03-3													03-3	0015-015
238			01-1													005-05	0015-015
250			005-05													003-03	003-003
260			005-05													003-03	
276																003-03	
290			01-1													01-1	003-003
294			01-1													003-03	003-03
300			01-1									003-03				003-03	
306			01-1						01-1			003-03				005-05	003-03
313			01-1													003-03	
315			01-1						005-05			005-05				003-03	003-03
320			01-1									003-03				003-03	
Mad.			03-3	001-01					01-1							003-03	003-03

DEPTH	TANTALUM	ZINC	TITANIUM	ZIRCONIUM	PALLADIUM	RHODIUM	RUTHENIUM	COBALT	LANTHANUM	CERIUM	STRONTIUM	TUNGSTEN	MERCURY	INDIUM	BARIUM	URANIUM	THORIUM	GEMS
55			1-1								005-05				03-3	005		
70			03-3								005-05					005		
80																		
90			1-1	-1							005-05				01-1	005		
100																		
120			05-5													005		
140			03-3								005-05					005		
160			03-3								005-05					005		
200																		
10			1-1	-1							005-05				01-1	005		
30			05-5	-1							005-05					005		
40																		
235		03-3	03-3								01-1					005		
238			05-5								01-1					005		
250			1-1								005-05					005		
260			05-5								005-05					005		
276			03-3													005		
290			05-5	-1							005-05					005		
294			03-3	-1							005-05					005		
300			03-3	-1							005-05					005		
306			05-5	-1							005-05					005		
313			03-3													005		
315			1-1								01-1					005		
320			05-5													005		
Mad.		01-1	03-3													005		

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DEPTH	SILICON	ALUMINUM	MAGNESIUM	IRON	CALCIUM	SODIUM	POTASSIUM	TELLURIUM	BORON	PHOSPHORUS	ATIMONY	GOLD	LEAD	TIN
5	Mi-04	1-1	3-3	3-30	3-3	01-1							01	01
9	2-20	1-1	5-50	1-10	5-50	1-1	1-1			05-5			01	
18	1-10	05-5	5-50	5-5	5-50	05-5	05-5			03-3			01	
28	5-50	05-5	3-30	1-10	3-30	05-5	1-1						01	
37	2-20	1-1	5-50	5-5	5-50	05-5	1-1			03-3			03	
45	1-10	05-5	5-50	5-5	5-50	05-5	1-1			03-3			03	
53	1-10	05-5	5-50	5-5	5-50	03-3	1-1			01-1			03	
55	3-30	1-1	5-50	5-5	5-50	05-5	1-1			01-1			01	
59	3-30	1-1	5-50	5-5	3-30	05-5	1-1						03	
65	1-10	05-5	5-50	5-5	5-50	05-5	1-1			03-3			03	
76	3-30	3-3	3-30	1-10	3-30	05-5	3-3		01-1	01-1			03	
117	2-20	3-3	5-50	1-10	5-50	03-3	3-3						03	
124	3-30	1-1	3-30	1-10	3-30	05-5	5-5		01-1				03	01
130	1-10	1-1	5-50	3-3	5-50	03-3	1-1						01	
138	5-50	1-1	5-50	5-5	3-30	05-5	5-5		01-1				01	
146	1-10	1-1	5-50	5-5	5-50	01-1	05-5						01	
150	2-20	1-1	5-50	1-10	3-30	05-5	3-3		01-1				01	
158	3-30	2-20	3-30	1-10	5-50	05-5	5-5		01-1				01	
168	1-10	3-3	5-50	5-5	5-50	05-5	3-3						03	
171	2-20	1-10	5-50	1-10	3-30	05-5	5-5						03	
173	3-30	1-1	5-50	1-10	2-20	05-5	5-5						03	
174	3-30	1-10	3-30	3-3	5-50	03-3	1-10						01	
192	3-30	2-20	2-20	1-10	5-50	3-3	3-3		03-3				01	
196	3-30	1-1	3-30	3-30	2-20	05-5	5-5		03-3				03	
198	3-30	2-20	2-20	2-20	3-30	05-5	5-5		01-1	05-5			01	
205	3-30	2-20	3-30	1-10	3-30	05-5	5-5		03-3	1-1			01	
212	5-50	2-20	2-20	1-10	2-20	05-5	5-5			05-5			01	
224	5-50	1-10	3-30	1-10	3-30	05-5	5-5		03-3	1-1			03	
227	2-20	5-5	5-50	1-10	5-50	05-5	3-3		01-1				03	
229	1-10	3-3	5-50	1-10	5-50	05-5	3-3						01	
238	3-30	5-5	3-30	1-10	5-50	3-3	5-5						01	
245	2-20	3-3	3-30	1-10	3-30	1-1	5-5						01	
251	2-20	1-1	3-30	5-5	5-50	1-1	5-5						01	
253	5-50	1-10	2-20	5-5	3-30	03-3	1-1			05-5			01	
262	3-30	2-20	3-30	3-3	3-30	05-5	5-5		01-1				01	
268	3-30	2-20	2-20	5-5	2-20	05-5	5-5		01-1				01	
281	3-30	1-1	3-30	1-10	2-20	3-3	3-3		01-1				03	
286	5-50	2-20	3-30	5-5	3-30	1-1	5-5		01-1				01	
292	5-50	1-10	3-30	5-5	3-30	1-1	5-5		01-1				01	

DEPTH	CHROMIUM	ARSENIC	MANGANESE	GALLIUM	GERMANIUM	PLATINUM	BISMUTH	COLUMBIUM	NICKEL	BERYLLIUM	MOLYBDENIUM	VANDIUM	LITHIUM	YTTRIUM	CADMIUM	COPPER	SILVER
5		01-1							005-05	001-01						1-1	
9			01-1								005-05					01-1	003-005
18			01-1													003-03	
28			01-1													003-03	
37			01-1								001-01					003-03	
45			01-1													003-03	003-003
53			01-1											005-05		003-03	
55			01-1													003-03	003-03
59			01-1													003-03	003-03
65			01-1											003-03		003-03	
76			01-1									001-01		005-05		003-03	
117			03-3													001-01	
124			03-3						005-05							003-03	0001-001
130			01-1													001-01	
138			01-1													001-01	
146			01-1													001-01	
150			01-1													003-03	
158			03-3	001-01										01-1		003-03	
168			01-1				001-01									01-1	003-003
171			01-1				001-01									03-3	003-03
173			01-1				001-01									01-1	
174			01-1													001-01	
192			03-3	001-01			001-01				005-05	005-05		01-1		005-05	
196			05-5				001-01		01-1			003-03				005-05	
198			01-1	001-01			001-01					005-05		03-3		01-1	
205			03-3				001-01					005-05		01-1		003-03	
212			01-1				001-01							03-3		005-05	
224			03-3	001-01			001-01							01-1		01-1	
227			03-3	001-01										005-05		01-1	003-03
229			03-3				001-01									003-03	
238			03-3								005-05					003-03	
245			05-5				001-01									001-01	
251			01-1													001-01	
253			01-1				001-01							005-05		003-03	
262			01-1											005-05		001-01	
268			01-1											005-05		001-01	
281			03-3											01-1		003-03	003-03
286			01-1									003-03		01-1		003-03	
292			01-1									003-03		005-05		003-03	

DEPTH	TANTALUM	ZINC	TITANIUM	ZIRCONIUM	PALLADIUM	RHODIUM	RUTHENIUM	COBALT	LANTHANUM	CERIUM	STRONTIUM	TUNGSTEN	MERCURY	INDIUM	BARIUM	URANIUM	THORIUM	GEMS
5			1-1													005		
9			05-5								01-1					005		
18			03-3								005-05				01-1	005		
28			03-3													005		
37		01-1	05-5													005		
45		005-05	03-3													005		
53		01-1	03-3								005-05					005		
55			03-3													005		
59		03-3	05-5													005		
65		05-5	03-3								005-05					005		
76		03-3	05-5								005-05					005		
117		01-1	05-5								005-05					005		
124		01-1	05-5													005		
130			05-5								005-05					005		
138			03-3													005		
146			05-5								005-05					005		
150			05-5													005		
158			1-1	03-3							005-05				01-1	005		
168			03-3									11-1				005		
171		01-1	03-3													005		
173			03-3					03-3								005		
174			1-1	03-3												005		
192			05-5								01-1				03-3	03-3		
196			05-5													01		
198			3-3	05-5					005-05		01-1				05-5	005		
205			1-1	03-3							01-1				03-3	005		
212			3-3	05-5							01-1				05-5	01		
224			3-3	03-3							01-1				03-3	005		
227			05-5								005-05				01-1	005-03		
229			03-3								005-05					005		
238			05-5								005-05				03-3	005		
245			03-3													005		
251			03-3													005		
253			1-1	05-5												005		
262			05-5								005-05				03-3	005		
268			1-1	03-3							005-05				05-5	005		
281			03-3												01-1	005		
286			01-1	05-5							01-1				05-5	005		
292			01-1	05-5							01-1				05-5	005		

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Hole-No.	Depth	Silicon	Aluminum	Magnesium	Iron	Calcium	Sodium	Potassium	Titanium	Boron	Phosphorus	Antimony	Gold	Lead	Tin	Chromium	Arsenic	Manganese	Gallium	Germanium	Platinum	Bismuth	Columbium	Nickel	Beryllium	Molybdenum	Vanadium	Lithium	Yttrium	Cadmium	Copper	Silver	Lanthanum	Zinc	Titanium	Zirconium	Palladium	Rhodium	Ruthenium	Cobalt	Hafnium	Cerium	Strontium	Tungsten	Mercury	Indium	Barium	Uranium	Thorium	Germ
	86	3-30	1-1	3-30	1-10	3-30	1-1	5-5			1-1			03	01	03-3	05-5							005-05		005-05		01-1			003-03	003-03			03-3												005			
	95	3-30	1-1	3-30	1-10	3-30	1-1	5-5						03	01	03-3	03-3														003-03	003-03			03-3												005			
	132	3-30	1-10	3-30	5-5	2-20	1-1	3-3		01-1				03		01-1	01-1									005-05					005-05				05-5	03-3												005			
	161	1-10	1-1	5-50	3-3	5-50	1-1	1-1			05-5			01			01-1														003-03				03-30												005			
	238	2-20	3-3	2-20	1-10	5-50	1-1	5-5		01-1				01			03-3											01-1				03-03				03-3												005			
	248	3-30	1-10	2-20	3-3	3-30	1-1	5-5						01			01-1														003-03				05-5	03-3										05-5	005			
	263	5-50	2-20	3-30	2-20	3-30	1-1	5-5		03-3	05-5			003-03	001-01		03-3	001-01						005-05		005-05	003-03	03-3	01-1		003-03				1-1	05-5					01-1					05-5	005			
	270	3-30	1-1	5-50	1-10	3-30	1-1	5-5		01-1	05-5			03			05-5										003-03	005-05			003-03				05-5												005			
	275	5-50	2-20	3-30	2-20	2-20	1-1	5-5		03-3	03-3			05	01	03-3	01-1	001-01									005-05	01-1	005-05		003-03				3-3	03-3										03-3	005			
	285	3-30	2-20	3-30	1-10	3-30	1-1	5-5		01-1	1-1			03	01	03-3	01-1										005-05	005-05	01-1		003-03				3-3	05-5				005-05						05-5	005			
	328	3-30	1-10	3-30	2-20	2-20	1-1	5-5		03-3	05-5			03	01	03-3	01-1		001-01					005-05				01-1	005-05			005-05				3-3	05-5										03-3	005			
	335	5-50	2-20	3-30	2-20	3-30	1-1	5-5		03-3	03-3			03	01		03-3	001-01						005-05				01-1	01-1		003-03				3-3	03-3					01-1					03-3	005			
12	338	3-30	3-3	5-50	1-10	3-30	05-5	5-5			03-3			03			05-5														003-03				03-3								01-1				005			
	350	4-00	2-20	1-10	1-10	1-10	1-1	5-5						03		01-1	05-05	001-01						005-05			003-03	01-1	005-05		005-05	003-03			3-3	05-5					01-1					05-5	005			
	380	3-30	5-5	5-50	1-10	5-50	1-1	3-3						01			03-3										003-03	03-3			003-03				03-3												005			
	394	3-30	3-3	3-30	2-20	3-30	1-1	3-3		01-1				005-05			01-1							01-1					003-03		005-05	003-03		01-1	03-3												005			
	405	5-50	2-20	3-30	5-5	3-30	1-1	5-5		03-3	3-3			01-1		01-1	01-1	001-01						01-1		005-05			005-05	005-05	01-1	003-03			1-1	03-3					03-3					03-3	005			
	412	2-20	3-3	5-50	3-3	5-50	05-5	03-3			1-1			01			01-1														003-03				01-1												005			
	419	2-20	3-3	5-50	5-5	5-50	05-5	01-1			05-5			01			03-3														001-03				03-3								01-1				005			
	428	2-20	3-3	5-50	1-10	5-50	1-1	5-5						03			03-3														003-03				03-3												005			
	447	5-50	2-20	3-30	5-5	5-50	1-1	5-5		05-5	3-3			03			03-3	001-01										01-1	01-1		003-03				05-5	03-3				005-05		01-1				03-3	005			
	449	5-50	1-10	2-20	3-30	3-30	03-3	1-1						01		03-3	01-1							01-1							005-05				3-3	05-5											005			
	458	5-50	2-20	3-30	1-10	3-30	03-3	3-3						01			01-1												01-1		005-05				3-3	05-5					01-1					03-3	005			
	542	3-30	1-1	2-20	2-20	2-20	05-5	5-5						01			03-3														003-03				03-3												005			
	548	1-10	1-1	3-30	5-5	5-50	03-3	1-1			05-5			01			01-1														001-01				01-1												005			
	565	2-20	1-1	3-30	1-10	3-30	03-3	1-1			03-3			01			01-1														003-03				005-05								01-1				005			
	578	3-30	1-1	5-50	1-10	5-50	05-5	1-1		01-1	03-3			01			01-1									005-05					001-01				05-5												005			
	30	5-50	2-20	3-30	1-10	2-20	1-1	5-5		03-3				01			01-1									003-03			005-05		001-01				3-3	05-5				005-05					05-5	005			
	67	1-10	3-3	5-50	5-5	5-50	05-5	05-5		01-1				01			01-1														001-01				05-5												005			
	88	2-20	1-1	5-50	3-3	3-30	05-5	03-3						01			005-05														001-01				03-3												005			
	95	1-10	3-3	3-30	3-3	5-50	05-5	05-5						01			005-05														001-01				05-5												005			
	128	1-10	1-1	5-50	2-20	3-30	05-5	03-3						03			03-3														003-03			03-3	03-3												005			
	142	1-10	1-1	5-50	1-10	5-50	05-5	03-3		01-1	03-3			03			01-1										003-03				003-03	001-01			05-5					005-05						005			
	150	3-30	3-3	3-30	1-10	5-50	05-5	03-3		03-3	03-3			01			01-1									005-05		003-03		003-03				1-1					005-05						005			
	164	2-20	1-1	3-30	2-20	3-30	05-5	05-5		01-1	.0			03			03-3														001-01				03-3												005			
	165	2-20	1-1	5-50	1-10	5-50	05-5	05-5		01-1	1-1			01			01-1										005-05				001-01				05-5												005			
	182	3-30	1-1	3-30	1-10	3-30	05-5	1-1		01-1	1-1			01			01-1										003-03				001-01				05-5												005			
	211	5-50	1-1	3-30	5-5	5-50	05-5	05-5			05-5			01			01-1										005-05		003-03		001-01				05-5	03-3											005			
	213	2-20	05-5	3-30	3-3	5-50	03-3	05-5			03-3			03			01-1										005-05				001-01				03-3												005			
	222	2-20	5-5	2-20	3-30	2-20	05-5	1-1						01			01-1												005-05		003-03	003-03		05-5	05-5												005			
	240	3-30	1-1	5-50	5-5	3-30	05-5	05-5			03-3			01			01-1										003-03				001-01				03-3												005			
	248	3-30	1-1	5-50	5-5	5-50	05-5	1-1			03-3			01			01-1										005-05				001-01				03-3												005			
	274	1-10	05-5	5-50	1-10	3-30	05-5	05-5		01-1				03	01		03-3							005-05		005-05	005-05	005-05			003-03			01-1	03-3												005			
13	280	2-20	1-1	5-50	1-10	3-30	05-5	3-3						005-05	01		01-1									005-05	005-05				003-03			03-3	05-5										03-3	005			
	282	3-30	3-3	5-50	2-20	5-50	05-5	1-1						03		01	03-3							005-05		01-1	005-05		003-03		005-05			05-5	03-3							01-1				03-3	005			
	290	3-30	3-3	5-50	1-10	5-50	05-5	1-1		01-1	05-5			03	01		01-1										005-05		005-05		005-05			05-5	05-5							01-1					005			
	308	3-30	5-5	3-30	1-10	5-50	03-3	1-1		01-1	05-5			01-1			01-1									003-03	003-03		005-05		001-01			01-1	05-5											005-05	005			
	321	1-10	1-1	5-50	1-10	5-50	05-5	1-1			05-5			005-05			01-1										01-1	005-05			003-03				03-3	03-3							01-1				005			
	368	2-20	5-5	3-30	3-30	3-30	05-5	1-1						005-05			01-1									005-05	005-05		005-05	005-05				05-5	05-5												005			
	369	1-10	1-1	5-50	2-20	5-50	05-5	1-1						03		01	03-3									005-05	003-03				003-03			05-5	03-3							01-1					005			
	378	3-30	1-1	5-50	3-30	3-30	01-1	1-1						005-05	01		03-3							01-1			005-05			001-01	005-05	003-03		3-3	05-5										01-1	005			
	378	1-10	1-1	5-50	1-10	5-30	03-3	05-5		01-1	05-5			01			01-1										003-03				001-01			01-1	03-3												005			
	375	2-20	3-3	5-50	2-20	5-50	03-3	1-1			03-3			03			01-1										005-05				001-01			05-5	05-5							005-05					005			
	385	1-10	05-5	5-50	1-10	5-50	03-3	05-5		01-1				03	01		01-1										005-05				003-03			05-5	03-3							01-1					005			
	388	1-10	05-5	5-50	1-10	3-30	03-3	05-5			03-5			03	01		01-1										005-05				003-03	003-03		05-5	03-3							01-1					005			
	394	2-20	1-1	5-50	2-20	5-50	05-5	05-5			03-3			03			01-1							005-05			005-05		01-1	005-05	005-05			1-1	05-5							01-1					005			
	400	1-10	3-3	5-50	5-5	5-50	03-3	03-3		01-1	03-3			01			01-1										005-05				001-01			03-3	05-5							005-05					005			
	405	1-10	1-1	5-50	5-3	5-50	01-1	03-3		01-1	03-3			01			005-05										003-03				001-01				03-3												005			
	418	1-10	5-5	5-50	2-20	3-30	05-5	3-3			03-3			03			03-3							005-05			005-05				003-03			03-3	05-5							01-1				01-1	005			
	420																																																	

THE OZARKS EXPLORATIONS CO., INC.
CAMDENTON, MISSOURI

	Silicon	Aluminum	Magnesium	Iron	Calcium	Sodium	Potassium	Lithium	Gold	Boron	Mercury	Phosphorus	Thallium	Lead	Tin	Chromium	Arsenic	Antimony	Manganese	Gallium	Germanium	Partinum	Bismuth	Barium	Columbium	Nickel	Beryllium	Molybdenum	Vanadium	Zirconium	Cadmium	Copper	Silver	Tantalum	Zinc	Titanium	Zirconium	Palladium	Rhodium	Rubidium	Cobalt	Lanthanum	Strontium	Ruthenium	Tungsten	Indium	Mg-Tho-Sil	Gems
10-40'	.5-.50	1-10	1-10	1-10	2-20	1-1.	.05-.5							.03				.01-1					.01-1					.003-.03						.1-.1	.1-.1						.005-.05					.005
55-85	.5-.50	2-20	3-30	.5-.5	3-30	3-3.	.5-.5.			.01-1				.03				.005-.05	.001-.01				.03-.3					.005-.05						.1-.1	.005-.5							.01-.1				.005
83-115	3-30	1-10	2-20	1-10	3-30	.3-.3	3-3.			.01-1				.03				.03-.3	.001-.01				.01-1					.005-.05						.05-.5	.03-.3							.01-.1				.005
126	1-10	.5-.5	3-30	.5-.5	.5-.50	.05-.5	1-1							.01				.03-.3										.003-.03						.05-.5												.005
145	2-20	.5-.5	3-30	.5-.5	.5-.50	1-1	3-3							.005-.05				.03-.3					.03-.3					.003-.03						.03-.3												.005
155	3-30	1-10	3-30	1-10	.5-.50	.1-.1.	3-3							.03				.03-.3					.01-.1				.005-.05	.003-.03	.005-.03					.1-.1.	.03-.3						.005-.05					.005
185	3-30	.5-.5	3-30	1-10	3-30	.1-.1.	.5-.5							.03				.03-.3										.003-.03						.05-.5												.005
196	.5-.50	1-10	2-20	.5-.50	3-30	.05-.5	3-3							.03				.01-.1					.05-.5					.003-.03						.3-.3.	.05-.5				.01-.1		.01-.1					.005
198	.5-.50	2-20	3-30	.5-.5	3-30	.3-.3	1-10							.03				.01-.1	.001-.01							.01-.1		.005-.05						.1-.1.	.03-.3							.01-.1				.005
210	2-20	1-1.	3-30	3-3	.5-.50	1-1	3-3							.01				.01-.1										.003-.03						.05-.5								.005-.01				.005
220	.5-.50	1-10	2-20	1-10	3-30	1-1.	.3-.3.					.01-.1		.03	.03			.01-.1										.003-.03						.1-.1.	.05-.5				.005-.05		.005-.05					.005
228	1-10	.5-.5	.5-.50	3-3	.01-.5	.05-.5	1-1.				.05-.5			.01				.01-.1										.001-.01						.03-.3								.005-.05		.01-.1		.005
243	.5-.50	1-10	1-10	1-10	2-20	.1-.1.	.5-.5.			.05-.5				.03				.01-.1	.001-.01									.003-.03	.005-.03					.3-.3.	.03-.3							.01-.1				.005
250	.5-.50	1-10	2-20	1-10	3-30	1-1	.5-.5							.01				.03-.3										.003-.03						1-1	.03-.3							.005-.05				.005
252	3-30	3-3	3-30	1-10.	3-30	.1-.1.	.3-.3.				.03-.3			.03				.03-.3										.003-.03	.005-.03					.05-.5								.005-.03				.005
290	.5-.50	.3-.3.	2-20	1-10	2-20	.1-.1.	.5-.5.				.05-.5			.005-.05				.03-.3	.001-.01									.003-.03	.005-.03					.05-.5												.005
305	3-30	1-1.	3-30	1-10	2-20	1-1.	.5-.5.				.03-.3			.005-.05				.03-.3										.003-.03						.05-.5												.005
315	.5-.50	1-10	3-30	.5-.5	.5-.50	.1-.1.	.5-.5					.01-.1		.005-.05				.01-.1	.001-.01									.005-.05	.005-.03					1-1.	.03-.3				.005-.05		.01-.1					.005
428	.5-.50	1-10	2-20	1-10	3-30	1-1	.5-.5							.01-.1				.5-.5										.01-.1	.001-.01			.03-.3	.03-.3													.005
433	3-30	.5-.5	3-30	1-10	3-30	.05-.5	1-1							.005-.05				.05-.5										.005-.05	.001-.005			.01-.1	.05-.5													.005
435	2-20	3-3	3-30	1-10	.5-.50	.05-.5	1-1							.005-.05				.03-.3										.005-.05	.005-.005			.01-.1	.01-.1													.005
328	3-30	1-10	3-30	1-10	3-30	3-3	.5-.5			.01-1				.03				.03-.3				.001-.01						.003-.03						1-1.								.005-.05				.005
332	.5-.50	2-20	3-30	.5-.5	2-20	3-3	.5-.5			.01-1		.05-.5		.03				.01-1				.001-.01	.03-.3					.003-.03						1-1	.03-.3							.005-.05				.005
342	3-30	3-3	.5-.50	1-10	.5-.50	3-3	3-3					.05-.5		.01				.01-1				.001-.01						.003-.03						.05-.5								.005-.05				.005
353	.5-.50	2-20	2-20	2-20	2-20	3-3	.5-.5			.03-.3				.01-1				1-1	.001-.01			.003-.03	.05-.5		.005-.05		.01-1	.003-.03				.01-1	3-3													.005
362	2-20	3-3	3-30	1-10	3-30	1-1	3-3			.01-1		.005-.05		1-1														.01-1	.003-.003					.05-.5								.005-.05				.005
368	2-20	3-3	.5-.50	1-10	3-30	1-1	3-3			.11-1				.005-.05				3-3										.005-.05	.005-.03					.05-.5								.005-.05				.005
378	1-10	3-3	.5-.50	1-10	.5-.50	1-1	3-3							.005-.05				1-1										.003-.03						.03-.3								.01-.1				.005
390	1-10	3-3	3-30	.5-.5	.5-.50	1-1	1-1					.03-.3		.003-.03				1-1										.005-.05						.05-.5												.005
400	3-30	1-10	2-20	1-10	3-30	1-1	3-3							.005-.05				1-1	.001-.01				.03-.3			.005-.05		.005-.05	.005-.003					1-1.	.05-.5							.01-.1				.005
409	1-10	3-3	3-30	.5-.5	.5-.50	1-1	1-1			.03-.3				.005-.05				.03-.3										.005-.05						.03-.3								.01-.1				.005
1220	3-30	2-20	2-20	2-20	3-30	1-1.	.5-.5.			.03-.3				.005-.05		.03-.3		.05-.5					.03-.3		.005-.05	.001-.01		.003-.03	.001-.015					1-1.								.01-.1				
433	3.																																														
435																																															
456	2-20	.5-.5.	3-30.	2-20	3-30	1-1.	1-1.							.005-.05				.03-.3									.003-.03		.005-.05			1-1.	.03-.3								.01-.1				.005
476	3-30	.5-.5	3-30	1-10	.5-.50	1-1.	1-1							.01				.03-.3										.003-.03						.05-.5												.005
485	.5-.50	3-3	3-30	1-10	2-20	1-1.	.5-.5							.03				.03-.3							.003-.03			.003-.03						.01-.1.												.005
498	.5-.50	1-10	2-20	1-10	3-30	1-1.	3-3			.01-1				03				.01-1										.005-.05						.01-1	.03-.3							.01-.1				.005
511	3-30	2-20	2-20	2-20	3-30	.1-.1.	.5-.5.			.03-.3				.005-.03		.03-.3		.03-.5					.03-.3		.005-.05	.001-.01		.003-.03	.001-.015					1-1.								.01-.1				.005
516	3-30	.5-.5.	3-30	1-10	2-20	1-1.	.5-.5.							.003-.03				.03-.5										.003-.03	.005-.005					.03-.5												.005
525	3-30	1-10	2-20	2-20	.5-.50	1-1.	.5-.5.			.01-1				.01-1				.03-.3					.03-.3					.003-.03						.05-.5								.01-1				.005
544	3-30	1-10	3-30	1-10	3-30	1-1	.5-.5			.03-.3		.03-.3		.005-.05				.05-.5					.03-.3		.01-.1			.003-.03						1-1.	.03-.3							.01-.1				.005
548	3-30	3-3	3-30	2-20	3-30	1-1	.5-.5			.03-.3				.03				1-1							.01-.1			.005-.05	.003-.03					.03-.3												.005
561	1-10	1-1	3-30	1-10	.5-.50	.05-.5	1-1				.03-.3			.01				.03-.3										.003-.03						.03-.3												.005
572	3-30	2-20	3-30	1-10	3-30	1-1	.5-.5.			.03-.3	.05-.5			.005-.05				.03-.3	.001-.01				.03-.3		.01-.1		.005-.05	.005-.05					1-1.	.05-.5							.01-.1				.005
38	.5-.50	2-20	2-20	1-10	3-30	1-1	3-3				.05-.5			.03				.01-.1							.03-.3	.01-.1	.01-.1	.01-.1	.005-.05	.005-.03				1-1.	.05-.5				.01-.1							.005
47	.5-.50	.3-.3	.5-.5.	2-20	.5-.5	.03-.3	.03-.3							.01		.03-.3		.03-.3							.01-.1.		.005-.05	.005-.05	.01-.1	.003-.03				.05-.5												.005

No-10

No-11

THE OZARKS EXPLORATIONS CO., INC.
CAMDENTON, MISSOURI

Sample	Depth	SILICON	ALUMINUM	MAGNESIUM	IRON	CALCIUM	SODIUM	POTASSIUM	TELLURIUM	GOLD	BORON	MERCURY	PHOSPHORUS	LITHIUM	THALLIUM	LEAD	TIN	CHROMIUM	ARSENIC	ANTIMONY	MANGANESE	GALLIUM	GERMANIUM	PLATINUM	BISMUTH	BARIUM	COLUMBIUM	NICKEL	BERYLLIUM	MOLYBDENUM	VANADIUM	YTTRIUM	CADMIUM	COPPER	SILVER	TANTALUM	ZINC	TITANIUM	ZIRCONIUM	PALLADIUM	RHODIUM	RUBIDIUM	COBALT	LANTHANUM	STRONTIUM	RUTHENIUM	TUNGSTEN	INDIUM	UR – THE [illegible]	GEMS
PANNED SOIL	TRACT N.	Mi-0	1-10.	1-10	3-30	.5-5.	03-3	05-5								005-05					03-3											003-03		01-1			01-1	.1-1.	03-3						005-05		03-3		.02	
PANNED SOIL	TRACT D	5-50	5-5.	1-10	5-50	1-10	01-1	03-3								.03		03-3			03-3							005-05		005-05	005-05	003-03		005-05			01-1	1-1.											.005	
PANNED SOIL	TRACT N.	5-50	1-10	2-20	5-50	1-10	01-1									.03					05-5							005-15		005-15	005-05	005-15		005-15				1-1.											.005	
PANNED SOIL	TRACT N.	5-50	5-5.	1-10	5-50	5-5.	01-1	05-5								01-1					03-3											003-05		003-03			03-3	05-5											.005	
PANNED SOIL	SUN-TRACT N.	M/Cn	2-20	5-5.	1-10	3-3.	03-3	.1-1			03-3					.03	.01				01-1										005-15	05-5		001-01				5-5.	1-10					03-3				@	03-3	
SHAFT ROCK – 30' DOWN.																																																[illegible]		
CORE DRILL SAMPLE	205'	CHEMICAL ANY. R.L. SIMPSON.														.1																			1.9 oz		1.1%													
C.I.	382'	3-30	5-5.	3-30	5-50	5-50	03-3	.1-1.								01-1					01-1				003-03									005-05	003-03		03-3	05-5							01-1				.01	
	456'	3-30	1-1.	5-50	1-10	3-30	01-1	03-3								.1-1.					01-1				001-01									005-05	003-03		.1-1.	03-3											.01	
	678'	3-30	3-3.	3-30	1-10	3-30	05-5	05-5								.1-1					01-1													005-05			05-5	01-1											.01	
	681'	5-50	5-5	3-30	3-30	3-30	03-3	05-5								03-3					01-1													003-03			.1-1.	05-5											.005	
C 2	68'	Mi-0	2-20	5-5.	1-10.	.3-3.	05-5	.3-3.						01-1.		.01					005-05				001-01	03-3		005-05			005-05			005-05				.3-3.	.1-1.						01-1				.01	
	146'	5-50	1-10.	2-20	5-5.	3-30	05-5	.3-3.					03-.3			01					005-05					03-.3					003-03			005-05				05-.5	03-.3						01-1		005-05		.01	
	232'	5-50	1-10	3-30	5-5.	3-30	03-3	.1-1.								01					01-1													003-03				03-.3	03-.3										.01	
	258'	Mi-0	1-10	05-.5	.5-5.	05-.5	05-.5	03-3						005-15		.03					01-1					03-3						003-03		001-01				.1-1.							01-1				.01	
	275'	Mi-0	1-10	2-20	1-10.	2-20	05-5	03-3								01					01-1	001-01				01-1						003-03		003-03	003-003			.1-1.	03-3						005-05		05-5		.01	
	325'	Mi-0	1-10	1-10	2-20	2-20	03-3	03-3								01					005-05	001-01				01-1						003-03		003-03				.1-1.	05-5						005-05		01-1		.01	
	345'	Mi-0	2-20	1-10	1-10	3-30	05-5	03-3								005-05					01-1	001-01				03-3						003-03		003-03				.1-1.	05-5						01-1		01-1		.01	
	420'	3-30	.3-3.	3-30	1-10	3-30	01-1	05-5						03-.3		.03					01-1													003-03			03-3	03-3							005-05				.01	
	430'	3-30	1-1.	3-30	.3-3	5-50	01-1	.1-1						03-3		01					01-1													003-03			03-3	03-3							005-05				.01	
	528'	Mi-0	3-30	1-10.	1-10.	5-5.	.3-3.	.3-3						01-1		005-05						001-01				05-5		005-05		005-05	005-05	003-03		005-05				.1-1	03-3						01-1				.01	
	528'	5-50	3-30	1-10	1-10	1-10	3-3	.3-3								.03	01				01-1	001-01				05-5		005-05			005-05	005-05		005-05				.1-1.	03-9				.003	005-05					003-03	
C 3	286'	5-50	1-10	2-20	1-10	2-20	05-5	3-3.		03-3			1-1.			03-3	01				01-1	001-01				05-5		005-05		01-1	005-05	003-03		01-1				03-3	01-1										.01	
	590'	5-50	1-1	2-20	2-20	2-20	03-3	1-1.								03-3	005-05				03-3							01-1						005-05	005-03		01-1	03-3											.01	
C 4	12'	Mi-0	2-20	5-5	.5-5.	.3-3	.1-1	5-5					01-1	01-1		01					005-05	001-01			001-01	05-.5						005-15		005-15				.1-1	05-5					005-05	01-1				.02	
	34'	. .	2-20	5-5	5-5	.3-3.	05-5	5-5					01-1	01-1		01						001-01				03-3						005-05		003-03				.1-1	05-5					005-05	01-1				.02	
	44.	. .	3-30	.3-3	.3-3.	.3-3.	.1-1.	1-10.					01-1	01-1		01					005-05													005-05				03-3											.02	
	98'	5-50	1-1.	3-30	1-10	2-20	05-5	.3-3.								003-03	.01				03-.3.													005-05					03-3										.02	
	132'	5-50	1-10.	3-30.	.5-5.	3-30	05-5	.3-3.								.03	.01				03-3					03-3						003-03		003-03				05-5	03-3										.01	
	205'	Mi-0.	.5-5.	1-10.	.5-5	2-20	01-1.	.1-1.						005-05		03					01-1					03-3								003-03	003-003			05-5	05-5										.01	
	225	3-30	2-20	3-30	1-10	3-30	05-5	.5-5.								03					.03-3					03-3						003-03		003-03				05-5	03-3						01-1				.01	
	255'	5-50	1-10	3-30	.5-5	3-30	05-5	.3-3.								005-05	01				005-05				001-01					01-1	01-1	003-03		.3-3.	005-005			03-3	03-3										03-3	
	404'	2-20	1-1.	3-30	3-3	5-50	03-3	05-5					05-5			.03					01-1										003-03			001-01			01-1	03-3	03-3										.01	
	522'	Mi-0	1-10	1-10	1-10	1-10	01-1	05-5								.03					005-05					03-3						005-05		005-05				.05-.5	05-6						005-05				.01	
	646'	5-50	1-10	2-20	3-3	3-30	05-5	.3-3.						01-1		.03					01-1										005-05	003-03		005-05				05-5	03-3										.01	
	664'	Mi-0	3-3	5-5	5-5	3-3	01-1	~						005-05		01																		005-05				.1-1.	03-3										.01	
C 5	150	5-50	1-10	2-20	1-10	2-20	1-1.	.3-3.								005-05	01				01-1	001-01						003-03		005-05				01-1				05-5	03-3										.01	
C. 6	285	2-20	5-3	5-50	1-10	5-50	05-5	.1-1					05-5			003-03					03-3											003-03		005-05	003-003			05-5										F	01-1	
C 6	212	2-20	3-3	2-20	3-30	03-3	03-3	03-3								1-1.					01-1											003-03		003-03			05-5	01-1											.005	
	80'	2-20	.3-3.	3-30	5-5.	5-50	03-3									01					01-1													003-03				1-1											.005	
C 7	240'	3-30	5-5	2-30	5-5.	3-30	03-3	1-1.					03-3	005-05		03-3					01-1													001-01				03-3											.005	
C 8	23'	Mi-0	.3-3.	.5-5.	2-20	1-10	01-1	03-3								01					01-1											005-05		005-05				1-1.	05-5					01-1					01-1	
	30'	. .	.1-1.	.3-3	2-20	1-1.	01-1	03-3								01					01-1											003-03		005-05				.1-1.	.1-1.					005-15					.005	
	48'	. .	.3-3	.3-3.	1-10	1-1.	01-1	03-3								01					005-05													003-03				1-1.	03-3										.005	
	87'	. .	.3-3	3-3.	5-5.	3-3.	01-1	03-3								01					005-05													003-03				1-1.	05-5										.005	
	208'	5-50	2-20	3-30	1-10	3-30	05-5	.3-3.								005-05					005-05					03-3	005-05				003-03	005-05		01-1				05-5	05-5										.005	
	412'	3-30	1-1	5-50	1-10	2-20	05-5	.3-3					05-5	005-05		01					05-5											001-01		003-03				03-3											.005	
	405'	5-50	1-10	3-30	.5-5	3-30	05-5	3-3								01					03-3											003-03		001-01				03-3	03-3						005-05				.005	
	446	5-50	2-20	5-50	1-10	2-20	1-1.	.5-5					03-3			03					03-3	001-01				03-3								005-05	003-003			.1-1	03-3						003-03				.005	
	442	5-50	1-10	5-50	2-20	3-30	05-5	3-3.					03-3	03-3		03	01				03-3	001-01										003-03		003-03	003-003			05-5											.005	
	516'	Mi-0	1-10	5-5.	5-5	5-5	01-1	1-1.								03												003-03						003-03	003-003			.3-3.	05-5										.005	
C 9	18'	3-30	.5-5.	3-30	.5-5.	5-50	05-5	.1-1.					05-5			005-05					01-1					03-3								.1-1.	003-003			03-3											.005	
	40'	3-30	.5-5.	3-30	1-10	3-30	.1-1	5-5.					03-3	01-1		01-1					01-1							005-05						05-5				03-3											.005	
	178'	3-30	1-10	2-20	.5-5	3-30	.1-1	3-3.			03-3		03-3			03					005-05											003-03		01-1				.3-3.	03-3										.005	

THE OZARKS EXPLORATIONS CO., INC.
CAMDENTON, MISSOURI

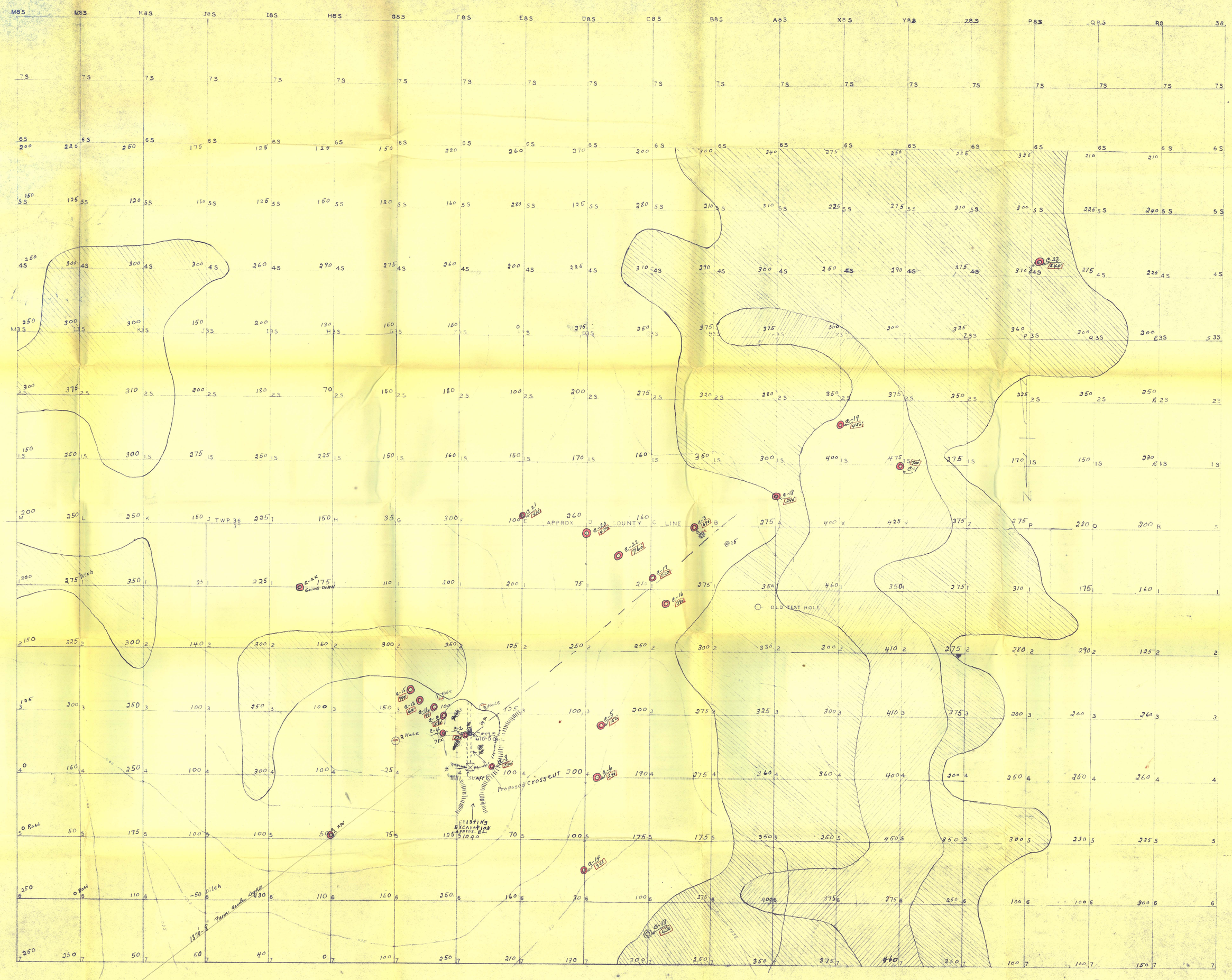
	Hole Depth	Silicon	Aluminum	Magnesium	Iron	Calcium	Sodium	Potassium	Tellurium	Gold	Boron	Mercury	Phosphorus	Lithium	Thallium	Lead	Tin	Chromium	Arsenic	Antimony	Manganese	Gallium	Germanium	Platinum	Bismuth	Barium	Columbium	Nickel	Beryllium	Molybdenum	Vanadium	Yttrium	Cadmium	Copper	Silver	Tantalum	Zinc	Titanium	Zirconium	Palladium	Rhodium	Rubidium	Cobalt	Lanthanum	Strontium	Ruthenium	Tungsten	Indium	Ur.-Tho.-Etc.	Gems
Hole C-4	669	14.04	1-10	2-20	.5-.5	2-20	1-1	.3-.3							.03	.01				.01-.1	.001-.01				.05-.5								.003-.03				.03-.3	.03-.3										.01	
	690	.5-.50	.5-.5	3-30	1-10	3-30	.03-.3	.3-.3							.01					.05-.5					.03-.3					.005-.05		.001-.01				.05-.5	.03-.3										.01	
	705	.5-.50	.5-.5	3-30	2-20	2-20	1-1	.5-.5							.005-.05	.01				.05-.5	.001-.01								.005-.05				.003-.03				.03-.3											.01	
	718	.5-.50	.1-.10	2-20	1-10	2-20	1-1	.3-.3							.003-.03	.01				.03-.3													.005-.05	.003-.03			.05-.5											.01	
	732	.5-.50	2-20	3-30	1-10	3-30	.05-.5	.3-.3							.03	.01				.03-.3	.001-.01				.03-.3				.003-.03	.003-.03			.005-.05				.05-.5	.03-.3										.01	
	740	.5-.50	2-20	3-30	.5-.5	3-30	.1-1	.3-.3							.01	.01				.03-.3					.03-.3					.003-.03			.001-.01				.05-.5	.03-.3						.01-.1				.01	
	752	.5-.50	2-20	2-20	1-10	3-30	.1-1	.5-.5							.03					.03-.3	.001-.01				.03-.3					.03-.03			.003-.03				.1-1	.03-.3						.1-.1				.01	
	761	.5-.50	2-20	1-10	.5-.5	2-20	.1-1	.5-.5							.03	.01				.005-.05	.001-.01				.05-.5								.005-.05	.003-.03			.1-1	.03-.3										.01	
	778	3-30	3-.3	3-30	2-20	3-30	.05-.5	.05-.5				.05-.5			.03					.05-.5									.005-.05				.001-.01				.03-.3											.01	
	781	3-30	.5-.5	3-30	2-20	2-20	.05-.5	.1-1				.03-.3			.005-.05					.05-.5													.001-.01				.03-.3											.01	
Hole-5	85	.5-.50	.5-.5	3-30	.5-.5	2-20	.05-.5	.1-1				.03-.3			.01					.01-.1													.01-.1				.05-.5						.005-.05					.01	
	90	3-30	.3-.3	3-30	.3-.3	.5-.50	.03-.3	.05-.5								.01				.01-.1													.005-.05				.01-.1											.01	
	107	.5-.50	.3-.3	3-30	.3-.3	3-30	.03-.3	.05-.5							.01					.01-.1													.003-.03	.003-.03			.01-.1											.01	
	126	.5-.50	.1-.1	3-30	.5-.5	3-30	.03-.3	.05-.5							.01					.01-.1													.002-.03				.01-.1											.01	
	136	3-30	.3-.3	3-30	.5-.5	3-30	.03-.3	.1-1				.05-.5			.01					.01-.1													.005-.05				.01-.1											.01	
	143	3-30	.1-.1	3-30	.5-.5	3-30	.03-.3	.1-1				.03-.3			.01					.01-.1													.005-.05				.01-.1											.01	
	150	.5-.50	.1-.10	2-20	1-10	2-20	.1-1	3-.3							.005-.05	.01				.01-.1	.001-.01					.003-.03		.005-.05					.01-.1				.05-.5	.03-.3										.01	
Hole-6	80	3-30	.5-.5	.5-.50	.5-.3	3-30	.1-1	.1-1				.03-.3			.03					.01-.1													.003-.03				.03-.3						.003-.03					.01	
	152	.5-.50	.3-.3	2-20	.5-.5	3-30	.05-.5	.3-.3				.03-.3			.03					.02-.3													.003-.03			.01-.1	.01-.1										.01	
	178	2-20	.3-.3	3-30	.3-.3	.5-.50	.03-.3	.05-.5				.05-.5			.01					.01-.1													.003-.03				.01-.1						.003-.03					.01	
	202	2-20	.1-.1	.5-.50	.3-.3	.5-.50	.05-.5	.1-1				.03-.3			.03					.01-.1										.003-.03			.003-.03			.01-.1	.01-.1										.01	
	225	3-30	.1-.1	3-30	.3-.3	3-30	.03-.3	.03-.3				.05-.5			.03					.01-.1													.003-.03				.01-.1						.003-.03					.01	
	240	3-30	.5-.5	3-30	.3-.3	.5-.50	.03-.3	.1-1							.01					.01-.1													.003-.03				.01-.1											.01	
	250	2-20	3-.3	.5-.50	3-.3	.5-.50	.03-.3	.1-1							.01					.01-.1									.003-.03				.005-.05				.03-.3						.005-.05					.01	
	285	2-20	.5-.5	.5-.50	1-10	.5-.50	.05-.5	.1-1				.05-.5			.003-.03					.03-.3										.003-.03			.005-.05	.003-.03			.05-.5											.01-.1	
	260	3-30	.1-.1	.5-.50	.5-.5	.5-.50	.05-.5	.05-.5							.01					.01-.1													.005-.05				.01-.1											.01	
Hole-7	18	3-30	.5-.5	3-30	.5-.5	.5-.50	.05-.5	.1-1							.03					.03-.3													.005-.05				.05-.5											.005	
	50	3-30	.3-.3	3-30	.5-.5	3-30	.03-.3								.01					.01-.1													.003-.03				.05-.5											.005	
	80	2-20	.3-.3	3-30	.5-.5	.5-.50	.03-.3								.01					.01-.1													.003-.03				.1-.1											.005	
	118	3-30	.5-.5	3-30	.5-.5	3-30	.03-.3	.1-1				.03-.3			.01					.01-.1													.003-.03				.1-.1											.005	
	202	2-20	.1-.1	.5-.50	1-10	.5-.50	.03-.3	.05-.5				.1-.1			.01					.05-.5													.001-.01				.01-.1											.005	
	227	2-20	.3-.3	.5-.50	3-.3	.5-.50	.03-.3	.1-1				.05-.5			.01					.03-.3													.001-.01				.03-.3											.005	
	240	3-30	.5-.5	3-30	.5-.5	3-30	.03-.3	.1-1				.03-.3	.005-.05		.03					.01-.1													.001-.01				.03-.3											.005	
	252	2-20	.3-.3	.5-.50	.3-.3	.5-.50	.03-.3	.1-1				.05-.5			.01					.03-.3													.001-.01				.01-.1											.005	
	260	2-20	.1-.1	.5-.50	.5-.5	3-30	.01-.1	.05-.5				.03-.3			.01					.01-.1													.001-.01				.01-.1											.005	
Hole-8	23	4.04	.3-.3	.5-.5	2-20	1-10	.01-.1	.03-.3							.01					.01-.1										.005-.05			.005-.05				.1-.1	.05-.5				.01-.1						.01-.1	
	30	" "	.1-.1	3-.3	2-20	.1-.1	.01-.1	.03-.3							.01					.01-.1										.003-.03			.005-.05				.1-.1	.1-.1				.005-.05						.005	
	48	" "	.5-.3	.3-.3	1-10	.1-.1	.01-.1	.03-.3							.01					.005-.05													.003-.03				.1-.1	.03-.3										.005	
	71	" "	.3-.3	1-10	3-30	.5-.5	.01-.1								.01					.01-.1							.005-.05						.003-.03				.5-.5											.005	
	87	" "	.3-.3	3-.3	.5-.5	3-.3	.01-.1	.03-.3							.01					.005-.05													.003-.03				.1-.1	.05-.5										.005	
	121	1-10	.1-.1	.5-.50	1-10	.5-.50	.03-.3	.05-.5				.05-.5			.01					.03-.3													.003-.03				.03-.3											.005	
	142	.5-.50	.3-.3	.5-.50	1-10	3-30	.03-.3	.1-1				.05-.5			.01					.03-.3									.005-.05				.005-.05				.03-.3											.005	
	167	3-30	.3-.3	.5-.50	.5-.5	.5-.50	.03-.3	.05-.5				.05-.5			.01					.01-.1													.001-.01				.03-.3											.005	
	208	.5-.50	2-20	3-30	1-10	3-30	.05-.5	.3-.3							.005-.05					.005-.05	.005-.05				.03-.3		.005-.05			.003-.03	.005-.05		.01-.1				.05-.5	.05-.5										.005	
	237	3-30	.3-.3	3-30	.5-.5	.5-.50	.03-.3	.05-.5				.1-.1			.01					.01-.1													.003-.03				.01-.1											.005	
	269	3-30	.3-.3	3-30	.5-.5	3-30	.03-.3	.05-.5							.01					.01-.1													.003-.03				.03-.3												
	305	.5-.50	1-10	3-30	.5-.5	.5-.50	.05-.5	3-.3				.03-.3			.03					.01-.1													.005-.05	.003-.03			.03-.3											.005	
	327	2-20	.1-.1	.5-.50	.5-.5	.5-.50	.03-.3	.1-1				.03-.3			.03					.01-.1													.001-.01				.01-.1											.005	
	336	.5-.50	.1-.1	3-30	1-10	2-20	.05-.5	.3-.3				.01-.1			.03					.03-.3													.001-.01		.01-.1		.01-.1											.005	
	348	3-30	.3-.3	.5-.50	1-10	.5-.50	.01-.1	.1-1				.1-.1			.005-.05					.01-.1													.003-.03	.003-.03		.03-.3	.03-.3						.005-.05					.005	
	360	3-30	.3-.3	.5-.50	.5-.5	.5-.50	.1-1	.3-.3				.05-.5			.005-.05	.005-.05				.03-.3													.003-.03				.03-.3											.005	
	365	3-30	.3-.3	3-30	.3-.3	.5-.50	.03-.3	.05-.5				.05-.5				.01				.01-.1													.001-.01				.03-.3											.005	
	370	2-20	.1-.1	.5-.50	3-.3	.5-.50	.03-.3	.1-1				.05-.5			.03					.03-.3													.003-.03				.03-.3											.005	
	375	1-10	.1-.1	.5-.50	3-.3	.5-.50	.01-.1					.03-.3			.01					.01-.1													.001-.01				.01-.1											.005	
	388	.5-.50	2-20	3-30	.5-.5	3-30	.05-.5	.3-.3				.1-.1			.01-.1					.01-.1	.001-.01									.003-.03			.003-.03				.03-.3	.03-.3					.005-.05					.005	
	409	2-20	.1-.1	.5-.50	.5-.5	.5-.50	.03-.3	.1-1				.05-.5			.03					.03-.3													.003-.03	.003-.03			.01-.1											.005	
	412	3-30	.1-.1	.5-.50	1-10	2-20	.05-.5	.3-.3				.05-.5	.005-.05		.01					.05-.5										.001-.01			.003-.03				.03-.3											.005	
	425	.5-.50	1-10	3-30	.5-.5	3-30	.05-.5	.3-.3							.01					.03-.3										.003-.03			.001-.01				.03-.3	.03-.3					.005-.05					.005	
	428	4.04	1-10	2-20	.5-.5	2-20	.05-.5	.5-.5							.03	.01				.03-.3					.03-.3					.003-.03			.003-.03				.1-.1	.03-.3					.005-.05					.005	
	432	.5-.50	.3-.3	3-30	1-10	.5-.50	.05-.5	.3-.3				.03-.3			.03					.03-.3			.01-.1										.003-.03				.03-.3											.005	
	442	.5-.50	1-10	.5-.50	2-20	3-30	.05-.5	.3-.3				.03-.3	.03-.3		.03	.01				.03-.3	.001-.01									.003-.03			.003-.03	.003-.03			.05-.5											.005	
	446	.5-.50	2-20	.5-.50	1-10	2-20	.1-1	.5-.5				.03-.3			.03					.03-.3	.001-.01				.03-.3					.005-.05			.005-.05	.003-.03			.1-.1	.03-.3					.003-.03					.005	
	460	.5-.50	.5-.5	3-30	1-10	2-20	.05-.5	.3-.3				.05-.5			.01					.03-.3								.005-.05					.003-.03				.05-.5											.005	
	462	.5-.50	.5-.5	.5-.50	1-10	2-20	.03-.3	.1-1				.05-.5			.03					.03-.3								.005-.05					.003-.03				.05-.5						.003-.03					.005	
	465	3-30	.5-.5	.5-.50	.5-.5	.5-.50	.03-.3	.3-.3				.05-.5			.01					.03-.3													.003-.03				.03-.3											.005	
	468	1-10	.5-.5	.5-.50	.5-.5	.5-.50	.03-.3	.3-.3				.03-.3			.01					.03-.3													.003-.03				.05-.5						.003-.03					.005	

THE OZARKS EXPLORATIONS CO., INC.
CAMDENTON, MISSOURI

Hole	Depth	Silicon	Aluminum	Magnesium	Iron	Calcium	Sodium	Potassium	Tellurium	Gold	Boron	Mercury	Phosphorus	Lithium	Thallium	Lead	Tin
Hole C-1	233	3.-30	05-.5	5.-60	1.-10	3.-30	01-.1	03-.3								005-.05	
	295	5.-50	05-.5	5.-50	1.-10	3.-30	03-.3	01-.1								.02-	
	314	5.-50	.3-3.	3.-30	.5-5.	3.-30	05-.5	.1-1.					03-.3			.01	
	382	3.-30	.5-5.	3.-30	2.-20	5.-50	03-.3	.1-1.								01-.1	
	456	3.-30	.1-1.	5.-50	1.-10	3.-30	01-.1	03-.3								.1-1.	
	500	2.-20	.1-1.	5.-50	.5-5.	3.-30	03-.3	05-.5								.03	
	535	2.-20	.1-1.	5.-50	.5-5.	3.-30	05-.5	05-.5								.01	
	595	2.-20	.3-3.	5.-50	.5-5.	3.-30	05-.5	05-.5								005-.05	
	678	3.-30	.3-3.	3.-30	1.-10	3.-30	05-.5	05-.5								.1-1.	
Hole C-2	68	Maj	2.-20	.5-5.	1.-10	.3-3.	05-.5	.3-3.						01-.1		.01	
	80	5.-50	.1-1.	3.-30	.5-5.	1.-10	05-.5	.3-3.								.01	
	120	2.-20	.1-1.	3.-30	.3-3.	5.-50	03-.3	05-.5					05-.5			.01	
	125	2.-20	.1-1.	3.-30	.5-5.	5.-50	03-.3	01-.1					03-.3			.01	
	146	5.-50	1.-10	2.-20	.5-5.	3.-30	05-.5	.3-3.					03-.3			.01	
	196	5.-50	.1-1.	3.-30	.5-5.	3.-30	03-.3	.3-3.								.01	
	232	5.-50	1.-10	3.-30	.5-5.	3.-30	03-.3	.1-1.								.01	
	255	2.-20	05-.5	5.-50	.5-5.	5.-50	05-.5	—								.01	
	258		1.-10	05-.5	.5-5.	05-.5	05-.5	03-.3						005-.05		.03	
	283	5.-50	.3-3.	3.-30	1.-10	2.-20	05-.5	03-.3								.01	
	295	Maj	1.-10	2.-20	1.-10	2.-20	05-.5	03-.3								.01	
	325	"	1.-10	1.-10	2.-20	2.-20	03-.3	03-.3								.01	
	345	"	2.-20	1.-10	1.-10	2.-30	05-.5	03-.3								005-.05	.01
	355	"	1.-10	2.-20	.5-5.	2.-30	05-.5	03-.3								.03	
	390	5.-50	.3-3.	2.-20	.5-5.	2.-20	03-.3	.1-1.								.01	
	420	3.-30	.3-3.	3.-30	1.-10	3.-30	01-.1	05-.5					03-.3			.03	
	430	3.-30	.1-1.	3.-30	.3-3.	5.-50	01-.1	.1-1.					03-.3			.01	
	528	Maj	3.-30	1.-10	1.-10	.5-5.	.3-3.	.3-3.						01-.1		005-.05	.01
	529	5.-50	3.-30	1.-10	1.-10	1.-10	.3-3.	.3-3.								.03	.01
Hole C-3	286	5.-50	1.-10	2.-20	1.-10	2.-20	05-.5	.3-3.			03-.3		.1-1.			03-.3	.01
	295	5.-50	.1-1.	2.-20	2.-20	2.-20	03-.3	.1-1.								03-.3	005-.05
	590			17.4 Quantitative Chemical Analysis													
Hole C-4	12	Maj	2.-20	.5-5.	.5-5.	.3-3.	.1-1.	.5-5.						01-.1		.01	
	32	"	2.-20	.5-5.	.5-5.	.3-3.	05-.5	.5-5.						01-.1		.01	
	44	"	3.-30	.3-3.	.3-3.	.3-3.	.1-1.	1.-10						01-.1		.01	
	58	5.-50	.1-1.	3.-30	1.-10	2.-20	05-.5	.3-3.								003-.03	.01
	102	5.-50	.3-3.	3.-30	.3-3.	2.-20	03-.3	.3-3.					03-.3			.03	
	120	5.-50	1.-10	3.-30	.5-5.	3.-30	05-.5	.3-3.								005-.05	.01
	132	5.-50	1.-10	3.-30	.5-5.	3.-30	05-.5	.3-3.								.03	.01
	142	5.-50	1.-10	3.-30	.5-5.	2.-20	05-.5	.5-5.								.03	.01
	174	5.-50	1.-10	2.-20	1.-10	3.-30	05-.5	.1-1.								.01	
	185	3.-30	.3-3.	2.-20	.3-3.	5.-50	01-.1	05-.5					05-.5			.01	
	205	Maj	.5-5.	1.-10	.5-5.	2.-20	01-.1	.1-1.						005-.05		.03	
	225	3.-30	2.-20	3.-30	1.-10	3.-30	05-.5	.5-5.								.03	
	255	5.-50	1.-10	3.-30	.5-5.	3.-30	05-.5	.3-3.								005-.05	.01
	282	3.-30	1.-10	3.-30	1.-10	5.-50	05-.5	.3-3.								005-.05	.01
	298	5.-50	1.-10	3.-30	1.-10	2.-20	.1-1.	.5-5.								003-.03	.01
	334	5.-50	.1-1.	3.-30	.5-5.	2.-20	.1-1.	.3-3.								.03	
	355	5.-50	1.-10	2.-20	.5-5.	3.-30	05-.5	.3-3.								.03	.01
	376	3.-30	.1-1.	3.-30	.5-5.	3.-30	05-.5	.1-1.					03-.3			.03	.01
	384	3.-30	.1-1.	3.-30	.5-5.	3.-30	03-.3	05-.5					05-.5			.03	
	404	2.-20	.1-1.	3.-30	.3-3.	5.-50	03-.3	05-.5					05-.5			.03	
	416	2.-20	.1-1.	3.-30	1.-10	3.-30	01-.1	03-.3					05-.5			.03	
	426	3.-30	.1-1.	2.-20	.5-5.	5.-50	01-.1	05-.5					05-.5			.03	
	463	5.-50	2.-20	3.-30	.5-5.	3.-30	05-.5	.3-3.								.03	.01
	495	5.-50	2.-20	3.-30	.5-5.	2.-20	05-.5	05-.5 / 3-3.					05-.5			005-.05	.01
	508	5.-50	1.-10	3.-30	.5-5.	2.-20	05-.5	05-.5					05-.5			003-.03	.01
	522	Maj	1.-10	1.-10	1.-10	1.-10	01-.1	05-.5								.03	
	542	3.-30	.3-3.	3.-30	.5-5.	3.-30	05-.5	.3-3.					03-.3			.03	
	560	5.-50	.1-1.	3.-30	.5-5.	3.-30	05-.5	.3-3.					03-.3			.03	
	564	5.-50	.5-5.	3.-30	.5-5.	3.-30	.1-1.	.5-5.								.03	
	580	5.-50	.1-1.	2.-20	1.-10	2.-20	05-.5	.3-3.								.03	
	591	5.-50	1.-10	3.-30	.5-5.	3.-30	05-.5	.5-5.								.03	
	601	5.-50	1.-10	2.-20	.5-5.	2.-20	05-.5	.5-5.								.03	
	637	3.-30	.1-1.	3.-30	.5-5.	3.-30	05-.5	.1-1.								.03	
	646	5.-50	1.-10	2.-20	.3-3.	3.-30	05-.5	.3-3.						01-.1		.03	
	664	Maj	.3-3.	.5-5.	.5-5.	.3-3.	01-.1	—						005-.05		.01	

Hole	Depth	Chromium	Arsenic	Antimony	Manganese	Gallium	Germanium	Platinum	Bismuth	Barium	Columbium	Nickel	Beryllium	Molybdenum	Vanadium	Yttrium
Hole C-1	233				01-.1											
	295				01-.1											
	314				01-.1											
	382				01-.1				003-.03							
	456				01-.1				001-.01							
	500				01-.1											
	535				01-.1											
	595				01-.1											
	678				01-.1											
Hole C-2	68				005-.05				001-.01	03-.3		005-.05			005-.05	
	80				01-.1											
	120				005-.05											
	125				005-.05											
	146				005-.05					03-.3					003-.03	
	196															
	232				01-.1											
	255				01-.1											
	258				01-.1					03-.3						003-.03
	283				01-.1											
	295				01-.1	001-.01				01-.1						003-.03
	325				[illegible]	[illegible]				01-.1						003-.03
	345				01-.1	001-.01				03-.3						003-.03
	355				03-.3	001-.01				03-.3						
	390				01-.1											
	420				01-.1											
	430				01-.1											
	528					001-.01				05-.5		005-.05		005-.05	005-.05	003-.03
	529				01-.1	001-.01				05-.5		005-.05			005-.05	005-.05
Hole C-3	286				01-.1	001-.01				05-.5		005-.05		01-.1	005-.05	003-.03
	295				03-.3							01-.1				
	590															
Hole C-4	12				005-.05	001-.01			001-.01	05-.5						005-.05
	32					001-.01				03-.3						005-.05
	44				005-.05											
	58				03-.3											
	102				01-.1											
	120				01-.1					01-.1						003-.03
	132				03-.3					03-.3						003-.03
	142				01-.1					03-.3						
	174				01-.1					03-.3						
	185				03-.3											003-.03
	205				01-.1					03-.3						
	225				03-.3					03-.3						003-.03
	255				005-.05				001-.01					01-.1	01-.1	003-.03
	282				03-.3				001-.01						005-.05	003-.03
	298				01-.1				001-.01						003-.03	
	334				03-.3											
	355				01-.1											
	376				01-.1											
	384				01-.1											
	404				01-.1										003-.03	
	416				01-.1											
	426				01-.1										003-.03	
	463				01-.1		001-.01			03-.3						003-.03
	495				01-.1	001-.01			03-.3						003-.03	005-.05
	508				03-.3	001-.01				03-.3					003-.03	003-.03
	522				005-.05					03-.3						005-.05
	542				05-.5											
	560				03-.3											
	564				03-.3											003-.03
	580				03-.3											
	591				03-.3											01-.1
	601				01-.1					03-.3						
	637				03-.3											
	646				01-.1										005-.05	003-.03
	664															

Hole	Depth	Cadmium	Copper	Silver	Tantalium	Zinc	Titanium	Zirconium	Palladium	Rhodium	Rubidium	Cobalt	Lanthanum	Strontium	Ruthenium	Tungsten	Indium	Ur.-Tho.-E.C.	Gems
Hole C-1	233		003-.03			01-.1	01-.1											.01	
	295		003-.03	003-.03		03-.3	03-.3											.03	
	314		003-.03	003-.03			03-.3											.01	
	382		005-.05	003-.03		03-.3	05-.5							01-.1				.01	
	456		005-.05	003-.03		.1-1.	03-.3											.01	
	500		003-.03			01-.1	01-.1											.01	
	535		003-.03				01-.1											.01	
	595		003-.03			05-.5	01-.1											.01	
	678		005-.05			05-.5	01-.1											.01	
Hole C-2	68		005-.05				.3-3.	.1-1.						01-.1				.01	
	80		001-.01				01-.1									005-.05			
	120		001-.01				01-.1											.01	
	125		001-.01				.1-1.											.01	
	146		005-.05				05-.5	03-.3						01-.1		005-.05		.01	
	196		003-.03				03-.3												
	232		003-.03				03-.3	03-.3										.01	
	255		003-.03																
	258		001-.01				.1-1.							01-.1				.01	
	283		001-.01				03-.3											.01	
	295		003-.03	003-.03			.1-1.	03-.3						005-.05		05-.5		.01	
	325		003-.03	≠-½			.1-1.	05-.5						005-.05		01-.1		.01	
	345		003-.03				.1-1.	05-.5						01-.1		01-.1		.01	
	355		003-.03				05-.5	01-.1						01-.1		005-.05		.01	
	390		003-.03				01-.1							005-.05				.01	
	420		003-.03			03-.3	03-.3							005-.05				.01	
	430		003-.03			03-.3	03-.3							005-.05				.01	
	528		005-.05				.1-1.	03-.3						01-.1				.01	
	529		005-.05				.1-1.	03-.3				.003	005-.05					.03-.05	
Hole C-3	286		01-.1				03-.3	01-.1										.01	
	295		005-.05	003-.03		01-.1	03-.3											.01	
	590																		
Hole C-4	12		005-.05				.1-1.	05-.5					005-.05	01-.1				.02	
	32		003-.03				.1-1.	05-.5					005-.05	01-.1				.02	
	44		005-.05				03-.3											.02	
	58		005-.05					03-.3										.02	
	102		003-.03				01-.1											.01	
	120		005-.05	003-.03			01-.1											.01	
	132		003-.03				05-.5	03-.3										.01	
	142		003-.03				03-.3											.01	
	174		003-.03				.1-1.	03-.3										.01	
	185		003-.03				01-.1											.01	
	205		003-.03	003-.03			05-.5	05-.5										.01	
	225		003-.03				05-.5	03-.3						01-.1				.01	
	255		.3-3.	005-.05			03-.3	03-.3										03-.3	
	282		03-.3	003-.03			05-.5	03-.3										01-.1	
	298		01-.1				05-.5	03-.3										001-.01	
	334		003-.03				01-.1											.01	
	355		005-.05	003-.03			03-.3	03-.3										.01	
	376		001-.01				03-.3											.01	
	384		003-.03			01-.1	03-.3											.01	
	404		001-.01			01-.1	03-.3	03-.3										.01	
	416		003-.03			.3-3.	03-.3											.01	
	426		003-.03			05-.5	03-.3											.01	
	463		003-.03	003-.03			03-.3	03-.3										.01	
	495		003-.03	003-.03			03-.3	03-.3						01-.1				.01	
	508		003-.03				03-.3	03-.3						005-.05				.01	
	522		005-.05				05-.5	05-.5						005-.05				.01	
	542		001-.01				01-.1											.01	
	560		003-.03				01-.1											.01	
	564		001-.01				03-.3											.01	
	580		003-.03				03-.3											.01	
	591		003-.03				03-.3											.01	
	601		003-.03				03-.3											.01	
	637		003-.03				01-.1											.01	
	646		005-.05				03-.3	03-.3										.01	
	664		005-.05				.1-1.	03-.3										.01	



LOCATION
PART OF S/2 SW/4 OF
S.32 TWP.37 N. RNG.16 W. 5TH. P.M.
AND PART N/2 NW/4 SEC.5 TWP.36 N.
RNG.16 W.

DECATURVILLE DOME.
GRANITE PEGMATITE
UNCOVERED PART — FELDSPAR — QUARTZ — MICA AND PYRITES.

SCALE.
1 INCH = 50 FEET.

LEGEND
RADIOACTIVITY (ABOVE BACKGROUND)
400 C.P.M. AREA
300 C.P.M. AREA

THE OZARKS EXPLORATION CO. INC.
CAMDENTON MO.

TRIUMPH MINE AREA
Geology
1" = 1000'