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

224 New Customhouse
Denver 2, Colorado

July 20, 1955

Memorandum

To: Secretary to the Operating Committee, DMEA

From: DMEA Field Team, Region III

Subject: Joint Report of Examination, Docket DMEA-3777 (Uranium), Mustang Oil & Exploration Co., (A and B claim groups), Campbell County, Wyoming

Enclosed are the original and three copies of the report pertaining to the above application.

The property has not been adequately prospected. Additional geologic information should be obtained by the applicant at his expense in order to plan a logical program of exploration.

We recommend that this application be denied without prejudice.

DMEA Field Team, Region III

W. M. Traver

W. M. Traver

E. N. Harshman

E. N. Harshman

Enclosures

DMEA
Date Rec'd.
JUL 15 1955
BUREAU OF MINES
Denver, Colorado

Rapid City Experiment Station
School of Mines Campus
Rapid City, South Dakota

July 13, 1955

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JUL 20 1955

Memorandum

To: W. M. Traver, Executive Officer, DMEA Field Team, Reg. III

From: Examining Team, N. P. Cuppels and E. O. Binyon

Subject: Report of Examination, Mustang Oil and Exploration Company, A and B Claim Groups, Campbell County, Wyoming, Docket DMEA 3777 (Uranium)

Transmitted herewith are the original and ten copies of the subject report, with a tracing of Figure 1, Location Map, A and B Claim Groups.

It will be appreciated if we can have two prints of the map for our files here.

Norman P. Cuppels
E. O. Binyon

By:

E. O. Binyon

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JUL 25 1955

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

DMEA 3777, Mustang Oil and Exploration Company, et al, Applicant

A and B Claim Groups

Campbell County, Wyoming

Uranium

E. O. Binyon, Mining Engineer
Bureau of Mines

N. P. Cuppels, Geologist
Geological Survey

July 13, 1955

DMEA 3777

MUSTANG OIL AND EXPLORATION COMPANY, et al, APPLICANT

A and B CLAIM GROUPS
CAMPBELL COUNTY, WYOMING

Summary, Conclusions, and Recommendations

By E. O. Binyon
Mining Engineer
Bureau of Mines

N. P. Cuppels
Geologist
Geological Survey

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JUL 20 1955

DMEA 3777

MUSTANG OIL AND EXPLORATION COMPANY, et al, APPLICANT
A and B CLAIM GROUPS
CAMPBELL COUNTY, WYOMING

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JUL 25 1955

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

By E. O. Binyon and N. P. Cuppels

The Mustang Oil and Exploration Company, et al, 1200 South Windermere Ave., Littleton, Colorado, has applied to the Defense Minerals Exploration Administration for assistance to explore A and B Claim groups, Campbell County, Wyoming, for uranium.

An examination of the property was made by the examining team on May 17 and 18, 1955, in company with John C. Ostlund, one of the partnership, and Dale Ruby, the original locator and owner of the claims.

The A and B Claim groups are 12 miles apart by road and include 14 unpatented lode mining claims, all in the Pumpkin Buttes Mining District, Campbell County, Wyoming. The A Group, A-1 through A-8, is in sections 34 and 35, T. 43 N., R. 75 W. and sec. 3, T. 42 N., R. 75 W., and the B-1 through B-6 claims of the B Group are in secs. 16, 17 and 20, T. 44 N., R. 75 W. of 6th P.M.

Rock units exposed in the Pumpkin Buttes are the Wasatch of Eocene age and the White River formation of the Oligocene with the White River capping the Buttes.

Only the Wasatch formation is exposed in the area immediately surrounding and within the boundaries of the A and B Claim groups. According to several geologic publications (and unpublished A.E.C. reports)

on the area,[1/2/] most of the uranium, except for trace amounts and that occurring in a few coal seams and carbonaceous shales, is found in sandstone of the Wasatch formation at a stratigraphic interval between 450 and 900 feet above the base of the Wasatch.

Mineralized deposits of the Pumpkin Buttes area in general are of two types: small, high-grade concretions and a low-grade disseminated type of considerably greater extent. Neither type is exposed on the property; however, one small concretion in deposits was noted off the property 325 feet southwest of the B-1 claim, cor. No. 1. The small anomaly on the A-1 claim indicates that the mineralization is probably of the concretionary type. On the A-4 claim the anomaly is considerably larger and it may indicate a low-grade disseminated mineralization. There is nothing whatever to indicate the type of deposit mineralization at the anomaly on the A-6 claim.

As proposed in the application, 250 auger and/or rotary drill holes, with a total footage of 12,000 feet, are to be drilled on a 200- by 200-foot grid pattern covering all claims in both groups. In addition, 2,000 feet of core drilling and some dozer work are also proposed. The applicant's estimate of the total cost of exploration, including supervision, consultants and analyses, is $25,300, of which the government's share at 75 percent participation is $18,975.00.

1/ Geological Survey Circular 176, Preliminary Report on Uranium Deposits in the Pumpkin Buttes Area, Powder River Basin, Wyoming, by J. D. Love.

2/ Geological Survey Circular 338, Summary of Investigations of Uranium Deposits in the Pumpkin Buttes Area, Johnson and Campbell Counties, Wyoming, by Max L. Troyer, Edward J. McKay, Paul E. Soister and Stewart R. Wallace.

While it may be possible that additional work on the anomalies on the A-1, A-4, and A-6 claims will result in exposure of mineralization or of sufficient evidence of mineralized deposits to warrant exploration, at present, more information as to possible extent, grade and type of deposit is required before an intelligent exploration program can be planned. Therefore, it is recommended that the application be denied without prejudice pending submission by the applicant of information that might justify aid by the government in exploration of favorable areas on the property.

DMEA 3777

MUSTANG OIL AND EXPLORATION COMPANY, et al, APPLICANT
A and B CLAIM GROUPS
CAMPBELL COUNTY, WYOMING

Engineering and Geologic Report

By E. O. Binyon
Mining Engineer
Bureau of Mines

N. P. Cuppels
Geologist
Geological Survey

DMEA 3777

MUSTANG OIL AND EXPLORATION COMPANY, et al, APPLICANT
A and B CLAIM GROUPS
CAMPBELL COUNTY, WYOMING

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DMEA 3777

MUSTANG OIL AND EXPLORATION COMPANY, et al
A and B CLAIM GROUPS
CAMPBELL COUNTY, WYOMING

ENGINEERING AND GEOLOGIC REPORT

by

E. O. Binyon and N. P. Cuppels

INTRODUCTION

The Mustang Oil and Exploration Company, et al, has applied to the Defense Minerals Exploration Administration for a loan of $25,300.00 for exploration of the 14 unpatented lode mining claims in the A and B Claim groups for uranium.

As proposed by the applicant, exploration is to be by auger or rotary drilling and some core drilling equally distributed over the claims of each group on a 200- by 200-foot grid pattern. In all, 250 holes with an estimated total of 12,000 feet of auger or rotary drilling and 2,000 feet of core drilling are proposed.

A joint field examination was made by the examining team on May 17 and 18, 1955 in company with John C. Ostlund, a partner, and Dale Ruby, the original owner of the claims.

ACKNOWLEDGEMENTS

Acknowledgement is made to John C. Ostlund, one of the applicants, and to Dale Ruby for the courtesy and assistance in guiding the examining team over the property.

LOCATION, TOPOGRAPHY, AND PHYSICAL FEATURES

Both the A and B Claim groups are in the immediate vicinity of the Pumpkin Buttes. The claims of the A Group are 2 miles south of

South Butte, the southernmost of the four that make up the Pumpkin Buttes, and are in sec. 3, T. 42 N., R. 75 W., and secs. 34 and 35, T. 43 N., R. 75 W., Campbell County, Wyoming. The B Group, 12 miles by road north and slightly west of the A Group, is 3 miles east of North Butte and the claims, also in Campbell County, are in secs. 16, 17 and 20, T. 44 N., R. 75 W. (Figure 1).

From Gillette, Wyoming, the A and B Claim Groups are 56 and 46 miles respectively by way of the secondary state road through Savageton, or by way of State Highways 59 and 387 to Pine Tree Junction, the distances are about 10 miles farther, but in time of travel is the shorter route, particularly in bad weather.

Gillette, the county seat of Campbell County, is on the Chicago, Burlington and Quincy Railroad and is a supply center for the area.

From Midwest, Wyoming, the nearest sizeable community, it is 31 miles by surfaced road (U. S. Highway 87 and State Highway 387) to Pine Tree Junction, and the A and B groups are 6 and 13 miles respectively from the Junction by way of the secondary road to Savageton. Inquiries should be made at the Dale Ruby ranch for more specific directions to the B Group as there are two locked gates on the road to these claims.

Except for the Pumpkin Buttes, there are no outstanding topographic features in the area. The Buttes rise 700 to 800 feet above the surrounding country, the altitude of North Butte being 6,050 feet and that of the surface in the immediate vicinity of the B and A Groups being 5,200 and 5,300 feet above sea level.

The topography is of low relief, with gently rolling hills cut only by a few small draws.

No timber is found in the area and the only source of water are the wells and stock ponds on nearby ranches. Water for drilling or a small mining operation would have to be hauled.

The climate, typical of the northwestern plains states, with periods of extremely low temperature and heavy snows during the winter, fairly wet early springs, and dry, hot summers, permits continuous operations for about 10 months, but for the remaining two-months period, operations would be only intermittent and may have to cease entirely.

There are no living facilities at the property and unless trailers are used, arrangements would have to be made for living quarters at either Gillette or Midwest.

Sufficient man power and equipment for the proposed exploratory work, as well as small scale mining operations, are readily available in the area.

HISTORY AND PRODUCTION

According to county records, the claims of both groups were first located in December 1954 by Dale Ruby, a rancher living in the vicinity.

There has been no production from the property. However, an open cut stripping operation just 3 miles south and slightly west of the B Group has produced some ore.

OWNERSHIP AND EXTENT

The 14 unpatented mining claims comprising the A and B Groups are owned by a partnership between the Mustang Oil and Exploration Co., 1200 South Windermere Ave., Littleton, Colorado, C. D. Roberts, Sundance, Wyoming, and Axel R. and John C. Ostlund, Gillette, Wyoming.

The claims were acquired under two assignments; one by Dale Ruby, the original locator and owner, to John C. and Axel R. Ostlund, C. D. Roberts and E. W. Thorson, and one by E. W. Thorson, who assigned his rights to the Mustang Oil and Exploration Co. Photostatic copies of both assignments are included with the application.

Eight claims, A-1 through A-8, make up the A Group and in the B Group there are 6 claims designated B-1, B-2, B-3, B-4, B-5, and B-6. All claims are full size, 1500 x 600 feet, and have been recorded, as stated by the applicant, in Book 5, Placer Mining Records, Pages 1 through 14, at the office of the Register of Deeds of Campbell County at Gillette, Wyoming.

GEOLOGY

The Wasatch and White River formations, of Eocene and Oligocene ages respectively, are the only rock units exposed in or near the claim areas. Regionally, the Wasatch formation consists of lenticular beds of sandstone, mudstone, carbonaceous clays, and low rank coal. Although the sandstone is moderately well consolidated in many exposures, the sediments for the most part are poorly consolidated. Partial erosion of the Wasatch sediments has produced a topography of low relief and gently rolling hills. In most places, bedrock is concealed by a grass cover and outcrops are found chiefly at the heads of small draws where erosion has been most active or at rare blowouts that are found on topographic highs where differential wind erosion has exposed sandstone facies of the Wasatch. The quartzitic ferruginous sandstone of the White River formation caps all the Pumpkin Buttes. The formation is 250 feet thick at North Butte and thins southward to about 100 feet

on top of South Butte. The general level of the land surface is at an altitude of about 5,300 feet above which the Buttes project another 700 to 800 feet.

The A and B groups of claims of the Mustang Oil and Exploration Co. lie east and south of the Pumpkin Buttes. The A claims are near Little Black Butte 2 miles south of South Butte and the western boundary of the B claims is 2.5 miles east of North Butte.

According to U. S. Geological Survey Circular 338, one of the chief prospecting guides to uranium ore in the Pumpkin Buttes area is a favorable stratigraphic interval in the Wasatch formation. This interval extends from 450 to 900 feet above the base of the Wasatch and includes most known uranium deposits of ore grade. Lenses of sandstone in this stratigraphic interval commonly have a red coloration that partially stains the sandstone in an outcrop area 10 to 15 miles wide and 25 miles long around the Buttes. The long axis of this outcrop area trends a little west of north. The stratigraphic position of the rocks at the A and B claims with respect to the favorable stratigraphic interval described above is not clear.

According to J. D. Love in U. S. Geological Survey Circular 176, the Wasatch-White River contact is 250 feet below the top of North Butte. A projection of this contact into the area near the B claims, without regard to dip of the beds, would place ground level at the claims 500 feet below the contact. If the Wasatch is more than 2,000 feet thick as estimated by Love and others, ground level at the B claims is at least 1,500 feet above the base of the Wasatch and 600 feet above the favorable stratigraphic interval. As seen in the field,

the White River formation on North Butte appears to be essentially horizontal but in Plate 2 of U. S. Geological Survey Circular 176, the axis of the Powder River Basin is a short distance east of the claims which would give the regional dip of the formation a slight easterly component between North Butte and the claims. If this component is as much as 1 degree, the rocks at the B claims would be 700 feet above the favorable stratigraphic interval. A bed of sandstone exposed at a blowout in the claim area strikes N. 5° W. and dips 8° NE. The attitude of this sandstone is probably due to a local flexure in the Wasatch and may have no regional significance.

According to Max L. Troyer, et al, in the U.S.G.S. Circular 338, the Wasatch is 1,500 feet thick in the vicinity of the Pumpkin Buttes and has a uranium-bearing zone extending from 450 to 900 feet above the base. This stratigraphic position of the uranium-bearing zone places ground level at the B claims near the top of the zone and conforms more closely with field observations made by the examining team. A producing mine and several strong anomalies are known to exist at roughly the same stratigraphic level as that occupied by the B claims and within a radius of 3 miles from the claims. Similar stratigraphic relations exist at and near the A claims.

Host rock for most deposits in the Pumpkin Buttes area is a sandstone stained red by iron oxides or a gray to buff-colored sandstone associated with the iron-stained sandstone. Manganese is concentrated in the rocks near many deposits. The ore is commonly in a medium- to coarse-grained, cross-bedded facies of the sandstone. The sandstone is characteristically lenticular with an average thickness of 30 to 60 feet.

The only exposure of red sandstone seen on the claims of the applicant is in a small pit on claim A-1. This sandstone is fine-grained, 6 to 8 inches thick, and has the dull red color characteristic of some vanadiferous sediments. Little Black Butte near the A claims is capped by a dark brown, ferruginous sandstone.

Most uranium ore in the Buttes area is in small, high-grade, concretionary deposits or in large, low-grade, disseminated deposits. The concretionary deposits are generally found in buff to pink sandstone with grades as high as 15 percent uranium. These concretions are extremely variable in size but are rarely more than 15 to 20 feet in length and 5 to 10 feet in width. Radioactive minerals are either yellow or black and both uranophane and uraninite have been identified from this type of deposit. The disseminated type of deposit is generally found in a gray to green, poorly consolidated, fine- to coarse-grained sandstone. This sandstone is lenticular and commonly several hundred feet in length. Grade of the mineralized sediments is generally less than 1.0 percent uranium and the eU/U ratio tends to be greater than 1.0.

Although no anomalies or uraniferous rocks were found on any of the B claims, a concretionary-type deposit, 1 foot thick and 8 feet long, was found in a small outcrop of buff-colored, medium-grained sandstone 325 feet S. 45° W. of the south corner of claim B-1. This deposit was discovered by U. S. Geological Survey airborne reconnaissance and designated anomaly No. 12. The deposit produces a maximum reading of 2.0 MR/hr on a model 111 scintillator. Source of the radioactivity is a greenish-yellow mineral that permeates the sandstone. The host sandstone strikes N. 5° W., dips 2° E., is exposed for 30 feet along the strike, 20 feet down dip and is 8 feet thick. There is no evidence that the sandstone is continuous for more than several hundred feet

along the strike.

The only visibly mineralized rocks found on the A claims are in a small pit on claim A-1. Because of the small exposure, the nature of this deposit is undertain, but it appears to have the characteristics of a concretionary type of deposit. Source of the radioactivity seems to be a greenish-yellow, non-fluorescent mineral that forms a thick coating on the sand grains giving the mineral a rounded, reniform-like texture. A channel sample (8 inches long, 2 inches wide, and 2 inches deep) taken across the ore zone has a grade of 5.04 percent equivalent uranium as determined by the scaler operated by the Hot Springs office of the A.E.C. Another channel sample (with the same dimensions) taken across a brownish-red, medium-grained sandstone, 3 to 11 inches above the ore zone has a grade of 0.03 percent equivalent uranium. A green to gray, medium-grained sandstone exposed in a small pit near the south side-line of claim A-4 may be a disseminated-type deposit. No visible mineralization was found in the pit.

The lowest reading taken on the Scintillator near the A claims was 0.015 MR/hr which was used as background. This background radioactivity is unusually high compared with background values in the Edgemont district where readings of 0.007 to 0.010 are commonly taken for background. It is possible that the abnormally high background radioactivity was caused by atomic explosions at the A.E.C. test site in Nevada.

Four anomalies discovered by airborne reconnaissance are listed by the applicant as being present on his claims A-1 through A-6.

Two distinct anomalies were detected by the examining team; anomaly No. 97 is near the discovery cut on claim A-1 and anomaly No. 144 is near the south side-line of claim A-4. A weak anomaly was found 40 to 50 feet below the summit of a small hill in the southern part of claim A-6, which may be the U.S.G.S. anomaly No. 145.

The 0.05 MR/hr isorad at anomaly No. 97 is 5 to 10 feet wide, 40 to 50 feet long, and is elongated parallel to the topographic contour at an altitude of 5,240 feet. Intensity of this anomaly increases to 0.16 MR/hr at the discovery cut of claim A-1. Anomalous radioactivity was also found in two pits dug to a depth of 2 feet at the same stratigraphic interval 150 and 200 feet south of the discovery cut. Maximum scintillator readings in these pits was 0.25 MR/hr. Bedding plane features have apparently localized mineralization of the sediments in this locality.

An anomaly bounded by the 0.03 MR/hr isorad is over 100 feet long and 10 to 15 feet wide near the south side of claim A-4. Maximum anomalous radioactivity on this claim is in a pit 2 feet deep where a reading of 1.2 MR/hr was obtained. A weak anomaly was found 40 to 50 feet below the summit of a small hill in the southern part of claim A-6. This may be anomaly No. 145 discovered by U. S. Geological Survey air-borne reconnaissance. Magnitude of the anomaly is about 0.03 MR/hr and it tends to follow the topographic contour at an altitude of 5,220 feet. This anomaly is very close to the same stratigraphic interval occupied by the anomaly on claim A-1. The anomaly is in a light brown, fine- to medium-grained, poorly consolidated sandstone that caps the hill. No visible mineralization was found associated with this anomaly.

ORE RESERVES

An estimate of ore reserves is not feasible at this time.

PRESENT STATUS, EXPLORATION AND DEVELOPMENT

Except for the discovery pits and the rotary drill holes drilled to validate claims, no development or other work has been done on the property.

A check of several of the rotary drill holes, reported to have been drilled to a depth of 50 feet, showed no radioactivity in the cuttings.

MINING AND MILLING EQUIPMENT AND OTHER FACILITIES

There are no facilities, buildings, or equipment on the property.

PROPOSED EXPLORATION

As proposed in the application, the 14 claims in the A and B Claim groups are to be explored by 250 auger or rotary drill holes and by some core drilling in the rotary or auger holes where warranted. A grid pattern with a spacing of 200 by 200 feet blankets each group of claims, allowing 14 holes to all claims except A-5, which has 21, or a total of 202 holes in the primary grid. The additional 48 holes proposed are for offsets at 50 to 100 feet spacing. Drilling depth is estimated to vary from 20 to 50 feet or an average of 32 feet for the holes. In all, the applicant proposes to drill a total of 12,000 feet of auger or rotary holes in the primary and offset drilling program and an additional 2,000 feet of core drilling for detailed information on any mineralized holes of the primary grid and offsets.

Estimated total cost of the proposed work is $25,300.00, of which the government's share at 75 percent participation would amount to $18,975.00.

The breakdown of the costs as presented in the application is as follows:

Work to be done by independent contracts:			
Rotary drilling, 12,000 feet @ $1.00		$12,000.00	
Core drilling, 2,000 feet @ $3.00		6,000.00	
Dozing, 80 hours @ $12.50		1,000.00	
	Total		$ 19,000.00
Labor, Supervision, and Consultants:			
Supervision, 3 months @ $500.00		$ 1,500.00	
Consultants, 16 days @ $100.00		1,600.00	
Testing		900.00	
	Total		4,000.00
Contingencies, 10 percent			2,300.00
			$ 25,300.00

CONCLUSIONS

While the claims of the A and B groups are in a mineralized stratigraphic interval of the Wasatch formation, the evidence of mineralization is not sufficient to warrant a government loan for exploration at this time. The lack of anomalies or other indications of mineralization on the B Claims requires that additional prospecting is necessary before it is possible to logically plan exploration of the group. Of the three anomalies found in the A Group on the A-1, A-4, and A-6 claims, that on the A-4 is the most promising. The anomaly is the largest of the three in extent and it is possible that a relatively small amount of dozer work or shallow drilling may result in

sufficient evidence of disseminated-type mineralization to warrant exploration. Also, the applicant should do the small amount that would be required to determine the type and roughly the extent of the other anomalies.

The property has not been adequately prospected and additional geologic information which can be easily obtained at little expense to the applicant is necessary before any logical program of exploration can be planned.

RECOMMENDATIONS

It is recommended that the application be denied without prejudice pending submission by the applicant of additional information or evidence that anomalies on the A group, as well as newly discovered anomalies on other claims, do warrant investigation with DMEA assistance.

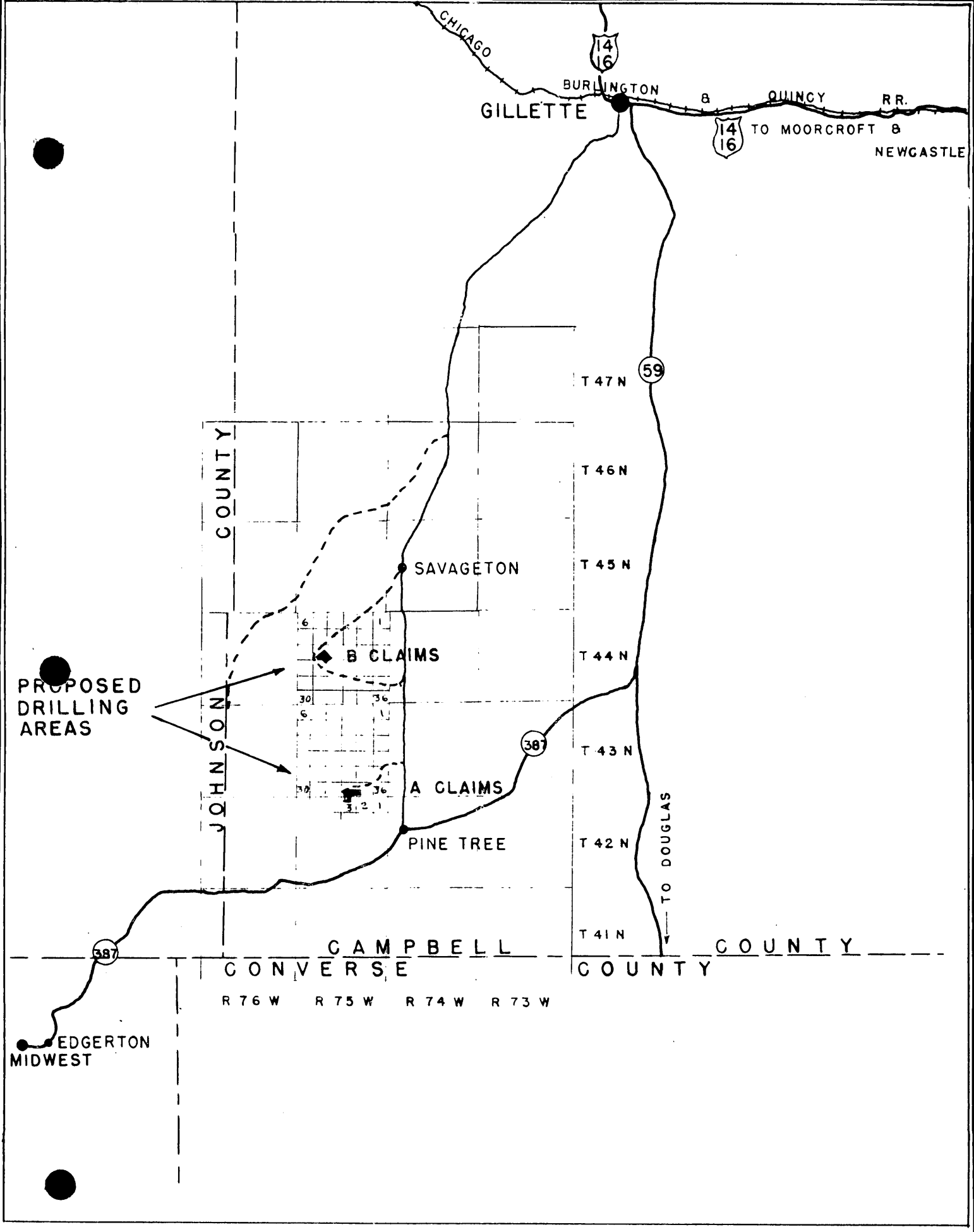

Figure 1, LOCATION MAP, A & B CLAIM GROUPS
MUSTANG OIL & EXPLORATION CO., CAMPBELL COUNTY, WYO, DMEA 3777