COPY

Dmea-3789
(denied 7-15-55)

Classified Advertisement appearing in August 1956 issue of THE HOTEL MONTHLY, page 73.

MOUNTAIN LODGE SITE. Ideal location in Southwest Virginia. An oasis of 250 acres in the midst of Jefferson National Forest. Crescent shaped mountain crest gently sloping to permanent springs. 100 acres cleared for development. Deer and elk roam undisturbed. Recreation possibilities abound. Price $75,000. Mineral rights reserved. Write or call ODIN V. KLOVSTAD, Attorney, Severna Park, Md. Phone Severna Park 438 W.

(BLM lease 038127)

400

JUL 21 1955

400

Mr. Odin V. Klovstad
Route 2, Box 502 D
Severna Park, Maryland

Re: Docket No. DMEA-3789, Manganese
Mineral Lease BLM 038127
Bland County, Virginia

Dear Mr. Klovstad:

Your application for aid for an exploration project and other data available to us in Washington relating to the above-noted property have been carefully reviewed.

Projects approved by the Defense Minerals Exploration Administration must, in its judgment, show definite promise of yielding materials of acceptable grade in quantities that will significantly improve the mineral supply position for the National Defense Program.

Careful study of all our information indicates to us that, although some scattered manganese mineralization occurs within the leased area, the probability of disclosing minable ore reserves by your proposed program is not sufficiently promising to justify Government participation. We regret to advise you, therefore, that your application for exploration assistance is denied.

The enclosed copy of the subject lease is returned as requested.

We wish to thank you for your interest in the Defense Minerals Exploration Administration program and for bringing your property to our attention.

Sincerely yours,

C. O. Mittendorf

Administrator

cc: Docket
Adm. Read. File
Code 400
Oper. Comm.
T. Kiilsgaard, USGS
G. DeHuff, USBM
Field Team, Reg. V

TLChapman/ls
7/15/55

July 15, 1955

MEMORANDUM

To: Administrator, DMEA

From: Iron and Ferro-Alloys Division, DMEA

Subject: Denial of application for exploration assistance to the amount of $25,558.94
Docket No. DMEA 3789 - Manganese
Odin V. Klovstad
Mineral Lease, BLM 038127
Bland County, Maryland

Denial of the subject application is recommended by this Division and is based on the following information:

1. The applicant, Odin V. Klovstad, Route 2, Box 502D, Severna Park, Maryland, requested exploration assistance to the amount of $25,558.94 for access road construction, new installations, bucket drilling, sampling and assaying.

2. The Bureau of Land Management issued Lease BLM-038127 to E. B. Hutton, 1824 North Lincoln Street, Arlington, Virginia, on March 1, 1955, which was assigned to Odin V. Klovstad, the applicant, on March 1, 1955. The lease is for a term of 20 years. The property covered by the above lease consists of 2291 acres, starting at point CA7-1947 (115), Bland County, Virginia. The proposed work would be done on a designated 10 acres within the lease plot.

3. The proposed exploration zone is along an anticline composed of sandstones, cherts, and a narrow band of limestone. Some of the limestone zone has been altered to clays. A series of small faults have broken and fractured the sandstones and within this fractured zone manganese mineralization has occurred. The Becraft and upper layers of sandstone and some clays have been the chief mineral bearing formations of the district, but have been almost entirely eroded from the proposed exploration area.

4. The property lies within a forest area and the proposed work would entail the stripping of this forest land for roads and drill sites. If the work should be done without finding mineral, reforestation of the land would be necessary.

5. The Field Team concludes that there is little probability of making a significant ore discovery and recommends denial. The Commodity Divisions of the Geological Survey and the Bureau of Mines concur in the recommendations.

W. S. Martin, Chief
Iron and Ferro-Alloys Division

cc: Docket
Code 400
Adm. Read. File
Oper. Committee

TLChapman/ls
7/15/55

IN REPLY REFER TO:

400

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

RECEIVED
JUL - 6 1955

July 5, 1955

Copy retained 400

Re: DMEA 3789
Odin V. Elevated
Bland Co., Va.
$25,558.94 - Manganese

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

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

Subject: Review of Field Team report.

The conclusions of the Field Team are in keeping with the information furnished by U. S. Geological Survey and U. S. Bureau of Mines reports on the immediate and nearby areas.

I concur with the recommendation of denial.

N. E. Nelson

N. E. Nelson

NENelson:iml
G-7/5/55

cc: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
G. DeRuff, 3521

400

MAY - 4 1955

400

Mr. Robert A. Laurence, Executive Officer
DMEA Field Team, Region V
Room 13, Post Office Building
Knoxville, Tennessee

Re: Docket No. DMEA 3789 - Manganese
Odin V. Elevated
Mineral Lease EIM 038127
Bland County, Virginia

Dear Mr. Laurence:

The above-docketed application for exploration assistance is being referred to your office for a field examination of the property.

Two copies of a relevant memorandum dated May 3, 1955, by N. E. Nelson, Geological Survey, are enclosed for your information.

Sincerely yours,

W. S. Martin

ACTING Chairman, Operating Committee

Enclosures

APPROVED:

M. E. Volin

Member, Bureau of Mines

/s/ R. D. Trace

Member, Geological Survey

cc: Docket
Adm. Read. File
Oper. Committee
Code 400
Thor Kiilsgaard, USGS
Gilbert DeHuff, USBM
FT, Region V

TLChapman/ls
5/4/55

MAY - 4 1955

400

Mr. Odin V. Klovstad
Route 2, Box 302 D
Severna Park, Maryland

Re: Docket No. DMEA 3789-Manganese
Mineral Lease BLM 038127
Bland County, Virginia

Dear Mr. Klovstad:

The above-docketed application for exploration assistance for manganese ores has been reviewed by the Iron and Ferro-Alloys Division of the Defense Minerals Exploration Administration and has been referred to Mr. Robert A. Laurence, Executive Officer, DMEA Field Team, Region V, Room 13, Post Office Building, Knoxville 2, Tennessee, for a field examination of the property.

Any assistance that you can render the members of the Field Team will be appreciated.

Sincerely yours,

Frank E. Johnson

ACTING Administrator

CC: Docket
Adm. Read. File
Oper. Committee
Code 400
Thor Kiilsgaard, USGS
Gilbert DeHuff, USBM
Field Team, Reg. V

TLChapman/ls
5/4/55

400

IN REPLY REFER TO:

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

Copy retained 400

RECEIVED
MAY 4 - 1955

May 3, 1955

Re: DMRA-3789
Odin V. Klevstad
Bland Co., Virginia
$25,558.94 - Manganese

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

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

Subject: Review of application

This application pertains to two cornering strips of ground totalling ten acres on Flat Top Mtn., Bland County, Virginia. The two pieces, or legs, as shown on a map submitted by the applicant adjoin on the northwest and northeast the Byrnes-Haire property and would seem to include parts of the Byrnes and Stange properties, though such is not said. From pits on the Byrnes and Stange properties a fair tonnage of manganese ore has been produced.

Unfortunately, due to lack of exact common points, the maps of the application cannot be tied to points on the maps of the Ladd-Stead report (U.S.G.S. Bulletin 940-E) and those of the Bureau of Mines R.I. 4659. Using the place where the Sing Branch crosses the Bland-Giles county line as an inexact common point, the applicant's ground can be roughly plotted on the Ladd geologic maps on one of which are shown the churn drill holes, drilled by the Bureau in 1941. Holes 10, 21, and 22 would seem to be near, probably within the limits of the applicant's ground and three of Ladd's vertical sections cross the northeast leg and one section crosses the northwest leg.

These drill hole data and the structure sections assist in the process of evaluating the reasonableness of the application. One churn drill hole, No. 10, shows 0-20 feet of 11.15% manganese which may since have been mined out. Nine blank and low grade holes in a 'fence' with No. 10 would seem, as no doubt intended, to delimit the favorable area on the north. The sections, A-A' of Plate 37 and A-A' and B-B' Plate 32 indicate the larger part of the area of the application is on the northern flank of the anticline and over some of it the productive Bearpaw sandstone is thin or missing. The masses of manganese ore mined here in the past occurred on the crest of the anticline near the top of the Bearpaw formation.

The applicant should be asked to furnish a map which can be conveniently used with the pertinent data-full Ladd and E.L. 4659 maps. Probably the elaborate drilling program of the applicant is not warranted. Four or five pits may be sufficient to extend the data of the drill holes and interpretations of the geologic sections.

A field inspection should be made and such is recommended.

N. E. Nelson

NENelson:hlm
G-5/3/55

Copy to: Director's reading, 4212
Branch reading, 4212
MMA (3)
Docket file
Gilbert DeRuff, 3523 Interior

400

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.
ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

RECEIVED
JUN 2 3 1955

June 21, 1955

Memorandum

To: Operating Committee, DMEA, Washington 25, D. C.

From: DMEA Field Team, Region V, Knoxville, Tennessee

Subject: Field Examination Report - DMEA-3789 (manganese)
OdinV. Klovstad, Bland County, Virginia

Enclosed are four copies of subject examination report.

We are in agreement with the examiners' recommendation that the application be rejected.

V. J. Lynch
Acting Executive Officer
DMEA Field Team, Region V

D. H. Amos, Geologist
U. S. Geological Survey

VJL:mc
Attachments 4

cc Θ Lynch
Neumann
Pavlides
Files
Operating Committee (1)

Field Team Report on Examination of Property

RECEIVED
JUN 1955

by
G. L. Neumann and Louis Pavlides 1/

DMEA Docket No. 3789 - (Manganese)
Applicant: Odin Klovstad, Severna Park, Maryland
Property: Klovstad Tract, Bland County, Virginia

Summary

A Field Team referral on this application was made by the Operating Committee on May 12, 1955. The Field Team composed of Louis Pavlides, U. S. Geological Survey, and G. L. Neumann, Bureau of Mines, made an examination of the property on May 16, and May 17, 1955. The applicant has never performed any work on the tract. A consulting geologist, Mr. R. M. Allen of Bluefield, West Virginia, had drawn a property map and made out the application and work program in the office.

The applicant's proposal for exploration includes 2,000 linear feet of 36-inch diameter bucket drill holes to be distributed between approximately 42 holes spaced on a rectangular grid pattern, within two tracts of land which meet at a common corner and jointly contain 10 acres. In addition, a composite sample from splits of all the drill holes, and which will aggregate 100-short tons, is proposed to be mill-tested at a local plant within the district.

The applicant's property lies immediately to the north of the Stange and Byrnes Heirs properties, and the geologic setting and conditions of ore localization within these properties are directly applicable to the land proposed for exploration by the applicant.

1/ G. L. Neumann, engineer, Bureau of Mines, and
Louis Pavlides, geologist, U. S. Geological Survey

The upper parts of the Becraft sandstone, which contain the Stange and Byrnes Heirs deposits, are mostly missing within the applicant's property. In addition, the property appears to be poorly situated structurally with respect to the ore localizing fractures developed as a result of anticlinal arching and related minor folding. Physical exploration of the Stange and Byrnes Heirs properties by the U. S. Bureau of Mines in 1941, and the past production history of these deposits, demonstrates that the manganese ore is localized near the crest of Flat Top Mountain and on its immediate upper southern slope in this particular area.

Conclusion

The applicant's property, because of its relatively unfavorable structural and stratigraphic position, probably does not contain any significant reserves of recoverable manganese oxides. In addition, the type of drilling by which it is proposed to explore this property is not considered practical, as it is designed primarily to test clays. The applicant's property appears to be underlain mostly by fairly indurated Becraft sandstone and probably a thin clay or soil blanket within which are large slumped blocks of Becraft sandstone.

Recommendation

The Field Team recommends rejection of this application.

Time Spent on Property

Louis Pavlides, U. S. Geological Survey, V. J. Lynch, Bureau Member of DMEA Field Team, Region V, and G. L. Neumann, Bureau of Mines, spent Monday afternoon May 16 and Tuesday morning May 17, 1955, on the property with Mr. Odin V. Klevstad, the applicant, Mr. R. M. Allen, consulting geologist for Mr. Klevstad, and Mr. Clay Sanford, of the Southern Manganese Company and operator of the Stange property, also spent considerable time aiding in the examination.

Name and Location of Property

The Klevsted 10 acre tract proposed exploration site is located in Bland County, Virginia, in a National Forest area. It lies on the northwest slope of Flat Top Mountain. It adjoins the Stange-Byrnes Heirs property (see fig. 1). The property is accessible from Hollybrook, Virginia, by Va. Highway 609 north for 0.2 mile, then northward by Va. Highway 629, 1.3 miles, and its continuation on the Stange-Byrnes Heirs mine road to Southern Manganese mill, 1.0 mile. The distance over the crest of Flat Top Mountain to the property is 0.2 mile. Va. Highways 609 and 629 are black-top all-weather roads, from then on the road is mostly clay with some waste overlay from the mining operations. Trucks travel this road most of the year, at times with difficulty.

Competency of Applicant and Operating Personnel

The applicant appears financially able to carry his part of the contract. He is an astute lawyer and general business executive. However, it is very doubtful if his background and experience would qualify him as an overseer or superintendent of any exploratational program for manganese without a great deal of technical assistance. Mr. R. M. Allen is a practicing consulting geologist and apparently is well qualified as a manganese consultant.

Applicant's Property Rights

The applicant according to the application and interview has an option on some 2,291 acres of National Forest Land and an active lease of the 10 acre tract proposed as an exploratational site.

Description of Property

The 10 acre Klevsted tract lies on the northwest slope of Flat Top Mountain. There are several Forest Service roads on or near the tract. There

has been no exploration development, or mining work performed on this tract, other than the three U. S. Bureau of Mines trenches dug in 1941 (see fig. 2).

Geology and Ore Reserves

Geology: The 10 acres of land which the applicant has proposed for exploration are in the Flat Top manganese district in Bland County, Virginia. The Stange and Arms mines, which are the largest deposits of the district, lie near the southwest end of the crest of Flat Top Mountain (after which the district is named) at an altitude of 3,000 feet. As shown in figure 2, the applicant's property lies north of these deposits on the north-facing upper slope of Flat Top Mountain.

The geology of the Flat Top Mountain district has been described by Ladd and Stead 2/ (1944, pp. 221-223, 225).

> "Flat Top Mountain is carved from a broad anticline that plunges to the southwest. Several formations are exposed along its crest, the largest areas of outcrop being those of the Clinton formation [Silurian] and Beeraft sandstone [Devonian]. Between the two lies the comparatively thin Tonoloway limestone [Silurian], but at the highest altitudes this formation is altered to clay, and outcrops of it near the mountain crest are exceedingly rare. Above the Beeraft, on the flanks of the mountain, lie 50 feet of chert and sandstone of Onondaga age [Devonian]. All of these formations dip beneath a wide belt of younger Devonian shales which borders the plunging southwest nose of the anticline. * * *
>
> "The Flat Top Mountain anticline is broken by five small faults. Three of these are parallel to the axis of the fold; the other two, which are tear faults, cross the regional strike. These minor faults, together with still smaller breaks that were formed when the beds were folded, have fractured the sandstones and have thus facilitated the circulation of manganese-bearing waters. * * *

2/ Ladd, H. S. and Stead, F. W., 1944, Manganese deposits of the Flat Top and Round Mountain districts, Bland and Giles Counties, Virginia: U. S. Geological Survey Bull. 940-H, pp. 219-234.

"Concentration of manganese oxides in workable quantities are found in the Flat Top Mountain district at two horizons. The older ore-bearing layer, which is in the top of the Clinton formation, consists chiefly of nodular masses of psilomelane in clays and sandy clays. The younger is in the porous, fractured sandstones of the Beeraft. The beds in the Beeraft contain better ore on the average than those in Clinton formation. The manganese deposits at both horizons lie close to the surface. * * *

"At several places in the district the porous sandstones of the Beeraft are impregnated with manganese oxides. At the western end of the plunging Flat Top Mountain anticline, where these beds have been fractured by folding and broken by small faults, a sizable ore body has been uncovered in the Stange and Arms mine. The deposit extends west-southwest along the crest of the anticline for a distance of nearly 1,000 feet. The mineralized zone has a maximum width of 300 feet, and ore has been mined from the surface downward through 60 feet of sandstone.

"The manganese oxides are chiefly psilomelane and pyrolusite. They occur along bedding planes, in joint cracks and in irregular fractures. In some places the oxides fill pore space; in others they fill molds left by the removal of calcareous fossils; and in many places they cement angular fragments of sandstone to form a breccia. Some of the sandstone fragments included in bodies of manganese oxides are rounded, suggesting that the oxides have replaced parts of the sandstone. * * *

"In the Stange and Arms mines the Beeraft sandstone is 100 feet thick and contains three recognizable lithologic units: (1) a basal zone of yellowish and reddish silt and sandy clay, (2) a zone of slabby sandstone that in some places is cross-bedded, and (3) an upper zone of coarse sandstone with pebble beds and molds of fossils, which are especially numerous near the top. The two upper zones, which have a total thickness of about 70 feet, contain most of the known manganese deposits.

"The Beeraft is underlain by a thick mass of residual clay derived from the Tonoloway limestone. * * * It is about 60 feet thick, but its lower limit is gradational, its lower part becoming calcareous before passing into unaltered limestone. On Flat Top Mountain this clay shows only traces of manganese oxide, but on Round Mountain it contains the main ore deposit."

The applicant's exploration proposal is confined to two tracts of land, one of which is rectangular and the other L-shaped. The tracts meet at a

common corner (see fig. 2). Together they aggregate 10 acres. These tracts had not been surveyed nor staked out on the ground at the time of the Field Team examination. Their position had to be determined by Brunton and tape survey from the northwest corner of the Byrnes Heirs - Stange property line to the National Forest corner post 112. The plot of the Klovstad tracts on figure 2 is by geometric construction from the applicant's map A.

The applicant's property is directly underlain by Becraft sandstone, with the exception of the northeast tract which, in part, is underlain by residual clay from Tonoloway limestone (fig. 2). With the exception of the trenches across the Tonoloway clay (dug in 1941 by the U. S. Bureau of Mines), there has been no physical prospecting or exploration within the Klovstad property proposed for exploration. The property is heavily wooded and covered for the most part with a forest soil. Becraft sandstone protrudes in an irregular manner through the soil cover at numerous places within the northeastmost of the two tracts. It is not clear if these are mostly bedrock outcrops or chiefly slumped blocks derived from higher on the slope of Flat Top Mountain. The applicant's property is probably directly underlain by Becraft sandstone with only a thin soil cover or by only a relatively thin clay mantle within which are large slumped blocks of Becraft sandstone. At any rate, none of the Becraft outcrops or boulders contain veinlets of manganese oxides, nor notable amounts of manganese oxide stains. The northwesternmost of the tracts contains fewer outcrops and slump blocks of Becraft than noted in the other tract.

The lack of manganese mineralization in the Becraft boulders and outcrops encountered on the Klovstad property is a result, in part, of the removal by erosion of the upper parts of the Becraft sandstone (see section B-B', figure 2), which contains most of the known manganese deposits in the

district (Ladd and Stead, 1943, p. 225). In addition, Moon 3/ (1950, p. 5) has pointed out that, "the general trend of the ore zone parallels the axis of the anticline, apparently controlled by longitudinal fractures. Limits of the ore zone coincide with the location of a minor cross fold and it seems probable that ore localization may be due to fracturing incident to the two-way folding." The cross fold referred to by Moon is probably the small syncline described by Stose and Miser 4/ (1922, p. 137) who state, "that a syncline, although one of small size, lies just south of the North cut is shown by northward dips in the Middle cut."

The structural controls which probably operated to localize the manganese oxides in the upper Bedraft layers therefore appear to be fracturing related both to anticlinal arching and minor folding. The apparent absence of manganese oxide veinlets within the exposures observed on the applicant's property may therefore reflect, in part, the unfavorable structural position of the property with respect to such fractures, and in part, the removal by erosion of the "favorable horizons" of the Bedraft sandstone in this area.

The Bureau of Mines churn drilling north of the Stange and Byrnes Heirs workings, in the direction of the applicant's property, encountered little or no manganese (Moon, 1950, fig. 4, C.D.H. 7, 8, 9, 11, 18, 19, 22, 25, and 26).

The Bureau of Mines trenches across the residual clay of the Tenclo-way, which lies within the northwest rectangular tract of the applicant's property (see fig. 2), indicated only sparse manganese showings in the southern portion of the northeastmost trench (idem, fig. 8, and p. 31). At present there are some lumps of psilomelane-type oxides strewn along the northern portion

3/ Moon, L. B., 1950, Investigation of Stange and Byrnes Heirs manganese mines, Bland and Giles Counties, Virginia: U. S. Bureau of Mines R.I. 4659.
4/ Stose, G. W. and Miser, H. D., 1922, Manganese deposits of western Virginia: Virginia Geological Survey Bulletin 23.

of the trench. These manganese nodules, however, may represent some sample-splitting operations subsequent to the original Bureau of Mines work, since the Bureau data do not indicate any manganese showings in this part of the trench when it was originally sampled.

Ore Reserves: The property proposed for exploration by the applicant is not believed to contain any significant reserves of recoverable manganese oxides. This is concluded from the following:

(1) The upper zones of the Becraft sandstone, which contain most of the known deposits of the district, are probably missing, for the most part, within the applicant's property. Becraft sandstone boulders and outcrops within the property do not contain any showings of manganese oxides.

(2) Churn drilling by the U. S. Bureau of Mines in 1941 has demonstrated that the samples from churn drill holes north of the Stange-Byrnes Heirs workings (in the general direction of the applicant's property) have a low manganese tenor.

(3) The Tomelloway clay residuum in the Flat Top Mountain district does not contain any manganese deposits, but only traces of manganese oxides (Ladd and Stead, 1944, p. 225). Within the applicant's property, only the south half of one U. S. Bureau of Mines trench out of the three cut across the Tomelloway clay residuum contained any manganese showings.

Past Operations

No exploration, development or mining work has ever been done on this tract, other than the three U. S. Bureau of Mines trenches dug in 1941.

Availability of Manpower, Equipment, etc.

Common labor is easily available for any mining and milling work in this district. Trained labor might be difficult to obtain. Supplies, materials and equipment are available in Bluefield, West Virginia, 30 miles distant, or in Roanoke, Virginia, 70 miles distant. An electric power line runs across the Stange property so power is available. There is a spring and a reservoir on the tract for moderate supply of water.

Applicant's Proposal

Bucket drilling as proposed by the applicant does not appear feasible on account of the numerous large sandstone boulders and the apparent lack or thinness of a residual blanket.

G. L. Neumann

G. L. Neumann, Mine Examination
and Exploration Engineer
Eastern Experiment Station

Louis Pavlides

Louis Pavlides, Geologist
U. S. Geological Survey

College Park, Md.
June 14, 1955

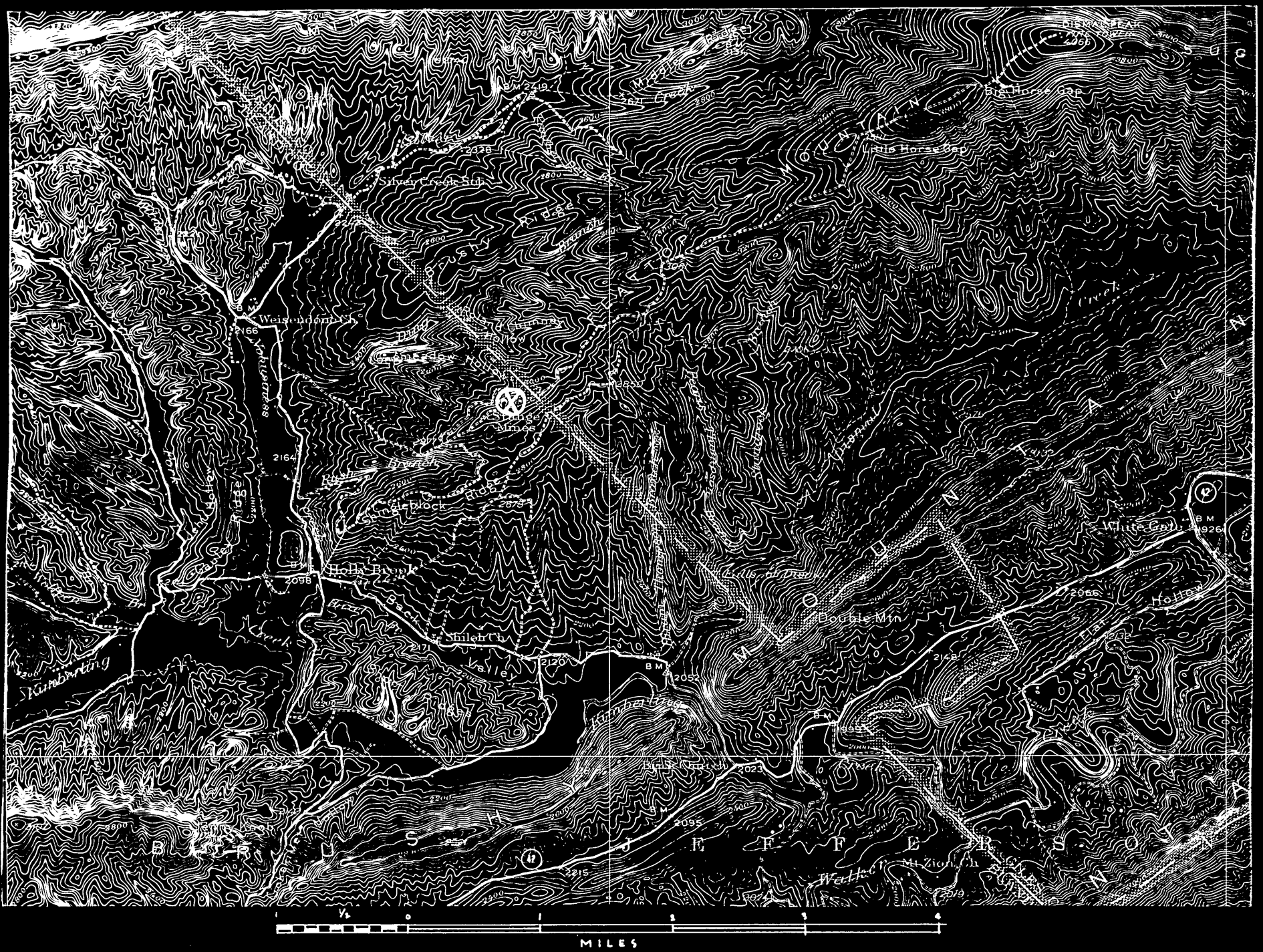


Figure 1 — Location of Stange mine. Klovstad property lies immediately to the north. Base map is Pulaski Quadrangle, U.S.G.S.

COPY

DMEA-3789 (denied July 1955)

Classified Advertisement appearing in August 1956 issue of THE HOTEL MONTHLY, page 73.

MOUNTAIN LODGE SITE. Ideal location in Southwest Virginia. An oasis of 250 acres in the midst of Jefferson National Forest. Crescent shaped mountain crest gently sloping to permanent springs. 100 acres cleared for development. Deer and elk roam undisturbed. Recreation possibilities abound. Price $75,000. Mineral rights reserved. Write or call ODIN V. KLOVSTAD, Attorney, Severna Park, Md. Phone Severna Park 438 W.

(BLM lease 038127)

files

400

DOCKET
Surname:
Chapman
Martin
DeHuff
Kiilsgaard
Geyhan
Johnson

JUL 21 1955

Mr. Odin V. Klovstad
Route 2, Box 502 D
Severna Park, Maryland

Re: Docket No. DMRA-3789, Manganese
Mineral Lease BLM 038127
Bland County, Virginia

Dear Mr. Klovstad:

Your application for aid for an exploration project and other data available to us in Washington relating to the above-noted property have been carefully reviewed.

Projects approved by the Defense Minerals Exploration Administration must, in its judgment, show definite promise of yielding materials of acceptable grade in quantities that will significantly improve the mineral supply position for the National Defense Program.

Careful study of all our information indicates to us that, although some scattered manganese mineralization occurs within the leased area, the probability of disclosing minable ore reserves by your proposed program is not sufficiently promising to justify Government participation. We regret to advise you, therefore, that your application for exploration assistance is denied.

The enclosed copy of the subject lease is returned as requested.

We wish to thank you for your interest in the Defense Minerals Exploration Administration program and for bringing your property to our attention.

Sincerely yours,

C. O. Mittendorf

Administrator

cc: Docket
Adm. Read. File
Code 400
Oper. Comm.
T. Kiilsgaard, USGS
G. DeHuff, USBM
Field Team, Reg. V

TLChapman/ls
7/15/55

R.P.J.

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

July 15, 1955

MEMORANDUM

To: Administrator, DMEA

From: Iron and Ferro-Alloys Division, DMEA

Subject: Denial of application for exploration assistance to the amount of $25,558.94
Docket No. DMEA 3789 - Manganese
Odin V. Klovstad
Mineral Lease, BLM 038127
Bland County, Maryland

Denial of the subject application is recommended by this Division and is based on the following information:

1. The applicant, Odin V. Klovstad, Route 2, Box 502D, Severna Park, Maryland, requested exploration assistance to the amount of $25,558.94 for access road construction, new installations, bucket drilling, sampling and assaying.

2. The Bureau of Land Management issued Lease BLM-038127 to E. B. Hutton, 1824 North Lincoln Street, Arlington, Virginia, on March 1, 1955, which was assigned to Odin V. Klovstad, the applicant, on March 1, 1955. The lease is for a term of 20 years. The property covered by the above lease consists of 2291 acres, starting at point CA7-1947 (115), Bland County, Virginia. The proposed work would be done on a designated 10 acres within the lease plot.

3. The proposed exploration zone is along an anticline composed of sandstones, cherts, and a narrow band of limestone. Some of the limestone zone has been altered to clays. A series of small faults have broken and fractured the sandstones and within this fractured zone manganese mineralization has occurred. The Becraft and upper layers of sandstone and some clays have been the chief mineral bearing formations of the district, but have been almost entirely eroded from the proposed exploration area.

4. The property lies within a forest area and the proposed work would entail the stripping of this forest land for roads and drill sites. If the work should be done without finding mineral, reforestation of the land would be necessary.

5. The Field Team concludes that there is little probability of making a significant ore discovery and recommends denial. The Commodity Divisions of the Geological Survey and the Bureau of Mines concur in the recommendations.

W S Martin
W. S. Martin, Chief
Iron and Ferro-Alloys Division

DOCKET

Chapman
Martin
Deckert

July 15, 1955

MEMORANDUM

To: Administrator, DMEA

From: Iron and Ferro-Alloys Division, DMEA

Subject: Denial of application for exploration assistance to the amount of $25,558.94
Docket No. DMEA 3789 - Manganese
Odin V. Klovstad
Mineral Lease, BLM 038127
Bland County, Maryland

Denial of the subject application is recommended by this Division and is based on the following information:

1. The applicant, Odin V. Klovstad, Route 2, Box 502D, Severna Park, Maryland, requested exploration assistance to the amount of $25,558.94 for access road construction, new installations, bucket drilling, sampling and assaying.

2. The Bureau of Land Management issued Lease BLM-038127 to E. B. Hutton, 1824 North Lincoln Street, Arlington, Virginia, on March 1, 1955, which was assigned to Odin V. Klovstad, the applicant, on March 1, 1955. The lease is for a term of 20 years. The property covered by the above lease consists of 2231 acres, starting at point CA7-1947 (115), Bland County, Virginia. The proposed work would be done on a designated 10 acres within the lease plot.

3. The proposed exploration zone is along an anticline composed of sandstones, cherts, and a narrow band of limestone. Some of the limestone zone has been altered to clays. A series of small faults have broken and fractured the sandstones and within this fractured zone manganese mineralization has occurred. The Becraft and upper layers of sandstone and some clays have been the chief mineral bearing formations of the district, but have been almost entirely eroded from the proposed exploration area.

4. The property lies within a forest area and the proposed work would entail the stripping of this forest land for roads and drill sites. If the work should be done without finding mineral, reforestation of the land would be necessary.

5. The Field Team concludes that there is little probability of making a significant ore discovery and recommends denial. The Commodity Divisions of the Geological Survey and the Bureau of Mines concur in the recommendations.

W. S. Martin, Chief
Iron and Ferro-Alloys Division

cc: Docket
Code 400
Adm. Read. File
Oper. Committee

TLChapman/ls
7/15/55

Docket

IN REPLY REFER TO:

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

RECEIVED
JUL - 6 1955

July 5, 1955

Re: DMEA 3789
Odin V. Klovstad
Bland Co., Va.
$25,558.94 - Manganese

Copy retained 400

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

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

Subject: Review of Field Team report.

The conclusions of the Field Team are in keeping with the information furnished by U. S. Geological Survey and U. S. Bureau of Mines reports on the immediate and nearby areas.

I concur with the recommendation of denial.

N. E. Nelson

N. E. Nelson

Docket

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.
ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

RECEIVED
JUN 23 1955

June 21, 1955

Memorandum

To: Operating Committee, DMEA, Washington 25, D. C.

WSM

From: DMEA Field Team, Region V, Knoxville, Tennessee

Subject: Field Examination Report - DMEA-3789 (manganese)
OdinV. Klovstad, Bland County, Virginia

Enclosed are four copies of subject examination report.

We are in agreement with the examiners' recommendation that the application be rejected.

V. J. Lynch
Acting Executive Officer
DMEA Field Team, Region V

D. H. Amos

D. H. Amos, Geologist
U. S. Geological Survey

Attachments 4

Reviewed by
DMEA OPERATING COMMITTEE
6-27-55
(date)

Field Team Report on Examination of Property

RECEIVED
JUN 23 1955

by
G. L. Neumann and Louis Pavlides 1/

DMEA Docket No. 3789 - (Manganese)
Applicant: Odin Klovstad, Severna Park, Maryland
Property: Klovstad Tract, Bland County, Virginia

Summary

A Field Team referral on this application was made by the Operating Committee on May 12, 1955. The Field Team composed of Louis Pavlides, U. S. Geological Survey, and G. L. Neumann, Bureau of Mines, made an examination of the property on May 16, and May 17, 1955. The applicant has never performed any work on the tract. A consulting geologist, Mr. R. M. Allen of Bluefield, West Virginia, had drawn a property map and made out the application and work program in the office.

The applicant's proposal for exploration includes 2,000 linear feet of 36-inch diameter bucket drill holes to be distributed between approximately 42 holes spaced on a rectangular grid pattern, within two tracts of land which meet at a common corner and jointly contain 10 acres. In addition, a composite sample from splits of all the drill holes, and which will aggregate 100-short tons, is proposed to be mill-tested at a local plant within the district.

The applicant's property lies immediately to the north of the Stange and Bymes Heirs properties, and the geologic setting and conditions of ore localization within these properties are directly applicable to the land proposed for exploration by the applicant.

1/ G. L. Neumann, engineer, Bureau of Mines, and
Louis Pavlides, geologist, U. S. Geological Survey

Reviewed by
DMEA OPERATING COMMITTEE
6-27-55
(date)

The upper parts of the Becraft sandstone, which contain the Stange and Byrnes Heirs deposits, are mostly missing within the applicant's property. In addition, the property appears to be poorly situated structurally with respect to the ore localizing fractures developed as a result of anticlinal arching and related minor folding. Physical exploration of the Stange and Byrnes Heirs properties by the U. S. Bureau of Mines in 1941, and the past production history of these deposits, demonstrates that the manganese ore is localized near the crest of Flat Top Mountain and on its immediate upper southern slope in this particular area.

Conclusion

The applicant's property, because of its relatively unfavorable structural and stratigraphic position, probably does not contain any significant reserves of recoverable manganese oxides. In addition, the type of drilling by which it is proposed to explore this property is not considered practical, as it is designed primarily to test clays. The applicant's property appears to be underlain mostly by fairly indurated Becraft sandstone and probably a thin clay or soil blanket within which are large slumped blocks of Becraft sandstone.

Recommendation

The Field Team recommends rejection of this application.

Time Spent on Property

Louis Pavlides, U. S. Geological Survey, V. J. Lynch, Bureau Member of DMEA Field Team, Region V, and G. L. Neumann, Bureau of Mines, spent Monday afternoon May 16 and Tuesday morning May 17, 1955, on the property with Mr. Odin V. Klovstad, the applicant, Mr. R. M. Allen, consulting geologist for Mr. Klovstad, and Mr. Clay Sanford, of the Southern Manganese Company and operator of the Stange property, also spent considerable time aiding in the examination.

Name and Location of Property

The Klovstad 10 acre tract proposed exploration site is located in Bland County, Virginia, in a National Forest area. It lies on the northwest slope of Flat Top Mountain. It adjoins the Stange-Byrnes Heirs property (see fig. 1). The property is accessible from Hollybrook, Virginia, by Va. Highway 609 north for 0.2 mile, then northward by Va. Highway 629, 1.3 miles, and its continuation on the Stange-Byrnes Heirs mine road to Southern Manganese mill, 1.0 mile. The distance over the crest of Flat Top Mountain to the property is 0.2 mile. Va. Highways 609 and 629 are black-top all-weather roads, from then on the road is mostly clay with some waste overlay from the mining operations. Trucks travel this road most of the year, at times with difficulty.

Competency of Applicant and Operating Personnel

The applicant appears financially able to carry his part of the contract. He is an astute lawyer and general business executive. However, it is very doubtful if his background and experience would qualify him as an overseer or superintendent of any explorational program for manganese without a great deal of technical assistance. Mr. R. M. Allen is a practicing consulting geologist and apparently is well qualified as a manganese consultant.

Applicant's Property Rights

The applicant according to the application and interview has an option on some 2,291 acres of National Forest Land and an active lease of the 10 acre tract proposed as an explorational site.

Description of Property

The 10 acre Klovstad tract lies on the northwest slope of Flat Top Mountain. There are several Forest Service roads on or near the tract. There

has been no exploration development, or mining work performed on this tract, other than the three U. S. Bureau of Mines trenches dug in 1941 (see fig. 2).

Geology and Ore Reserves

Geology: The 10 acres of land which the applicant has proposed for exploration are in the Flat Top manganese district in Bland County, Virginia. The Stange and Arms mines, which are the largest deposits of the district, lie near the southwest end of the crest of Flat Top Mountain (after which the district is named) at an altitude of 3,000 feet. As shown in figure 2, the applicant's property lies north of these deposits on the north-facing upper slope of Flat Top Mountain.

The geology of the Flat Top Mountain district has been described by Ladd and Stead 2/ (1944, pp. 221-223, 225).

> "Flat Top Mountain is carved from a broad anticline that plunges to the southwest. Several formations are exposed along its crest, the largest areas of outcrop being those of the Clinton formation [Silurian] and Becraft sandstone [Devonian]. Between the two lies the comparatively thin Tonoloway limestone [Silurian], but at the highest altitudes this formation is altered to clay, and outcrops of it near the mountain crest are exceedingly rare. Above the Becraft, on the flanks of the mountain, lie 50 feet of chert and sandstone of Onondaga age [Devonian]. All of these formations dip beneath a wide belt of younger Devonian shales which borders the plunging southwest nose of the anticline. * * *
>
> "The Flat Top Mountain anticline is broken by five small faults. Three of these are parallel to the axis of the fold; the other two, which are tear faults, cross the regional strike. These minor faults, together with still smaller breaks that were formed when the beds were folded, have fractured the sandstones and have thus facilitated the circulation of manganese-bearing waters. * * *

2/ Ladd, H. S. and Stead, F. W., 1944, Manganese deposits of the Flat Top and Round Mountain districts, Bland and Giles Counties, Virginia: U. S. Geological Survey Bull. 940-H, pp. 219-234.

5

"Concentration of manganese oxides in workable quantities are found in the Flat Top Mountain district at two horizons. The older ore-bearing layer, which is in the top of the Clinton formation, consists chiefly of nodular masses of psilomelane in clays and sandy clays. The younger is in the porous, fractured sandstones of the Becraft. The beds in the Becraft contain better ore on the average than those in Clinton formation. The manganese deposits at both horizons lie close to the surface. * * *

"At several places in the district the porous sandstones of the Becraft are impregnated with manganese oxides. At the western end of the plunging Flat Top Mountain anticline, where these beds have been fractured by folding and broken by small faults, a sizable ore body has been uncovered in the Stange and Arms mine. The deposit extends west-southwest along the crest of the anticline for a distance of nearly 1,000 feet. The mineralized zone has a maximum width of 300 feet, and ore has been mined from the surface downward through 60 feet of sandstone.

"The manganese oxides are chiefly psilomelane and pyrolusite. They occur along bedding planes, in joint cracks and in irregular fractures. In some places the oxides fill pore space; in others they fill molds left by the removal of calcareous fossils; and in many places they cement angular fragments of sandstone to form a breccia. Some of the sandstone fragments included in bodies of manganese oxides are rounded, suggesting that the oxides have replaced parts of the sandstone. * * *

"In the Stange and Arms mines the Becraft sandstone is 100 feet thick and contains three recognizable lithologic units: (1) a basal zone of yellowish and reddish silt and sandy clay, (2) a zone of slabby sandstone that in some places is cross-bedded, and (3) an upper zone of coarse sandstone with pebble beds and molds of fossils, which are especially numerous near the top. The two upper zones, which have a total thickness of about 70 feet, contain most of the known manganese deposits.

"The Becraft is underlain by a thick mass of residual clay derived from the Tonoloway limestone. * * * It is about 60 feet thick, but its lower limit is gradational, its lower part becoming calcareous before passing into unaltered limestone. On Flat Top Mountain this clay shows only traces of manganese oxide, but on Round Mountain it contains the main ore deposit."

The applicant's exploration proposal is confined to two tracts of land, one of which is rectangular and the other L-shaped. The tracts meet at a

common corner (see fig. 2). Together they aggregate 10 acres. These tracts had not been surveyed nor staked out on the ground at the time of the Field Team examination. Their position had to be determined by Brunton and tape survey from the northwest corner of the Byrnes Heirs - Stange property line to the National Forest corner post 112. The plot of the Klovstad tracts on figure 2 is by geometric construction from the applicant's map A.

The applicant's property is directly underlain by Becraft sandstone, with the exception of the northeast tract which, in part, is underlain by residual clay from Tonoloway limestone (fig. 2). With the exception of the trenches across the Tonoloway clay (dug in 1941 by the U. S. Bureau of Mines), there has been no physical prospecting or exploration within the Klovstad property proposed for exploration. The property is heavily wooded and covered for the most part with a forest soil. Becraft sandstone protrudes in an irregular manner through the soil cover at numerous places within the northeastmost of the two tracts. It is not clear if these are mostly bedrock outcrops or chiefly slumped blocks derived from higher on the slope of Flat Top Mountain. The applicant's property is probably directly underlain by Becraft sandstone with only a thin soil cover or by only a relatively thin clay mantle within which are large slumped blocks of Becraft sandstone. At any rate, none of the Becraft outcrops or boulders contain veinlets of manganese oxides, nor notable amounts of manganese oxide stains. The northwesternmost of the tracts contains fewer outcrops and slump blocks of Becraft than noted in the other tract.

The lack of manganese mineralization in the Becraft boulders and outcrops encountered on the Klovstad property is a result, in part, of the removal by erosion of the upper parts of the Becraft sandstone (see section B-B', figure 2), which contains most of the known manganese deposits in the

district (Ladd and Stead, 1943, p. 225). In addition, Moon 3/ (1950, p. 5) has pointed out that, "the general trend of the ore zone parallels the axis of the anticline, apparently controlled by longitudinal fractures. Limits of the ore zone coincide with the location of a minor cross fold and it seems probable that ore localization may be due to fracturing incident to the two-way folding." The cross fold referred to by Moon is probably the small syncline described by Stose and Miser 4/ (1922, p. 137) who state, "that a syncline, although one of small size, lies just south of the North cut is shown by northward dips in the Middle cut."

The structural controls which probably operated to localize the manganese oxides in the upper Becraft layers therefore appear to be fracturing related both to anticlinal arching and minor folding. The apparent absence of manganese oxide veinlets within the exposures observed on the applicant's property may therefore reflect, in part, the unfavorable structural position of the property with respect to such fractures, and in part, the removal by erosion of the "favorable horizons" of the Becraft sandstone in this area.

The Bureau of Mines churn drilling north of the Stange and Byrnes Heirs workings, in the direction of the applicant's property, encountered little or no manganese (Moon, 1950, fig. 4, C.D.H. 7, 8, 9, 11, 18, 19, 22, 25, and 26).

The Bureau of Mines trenches across the residual clay of the Tonoloway, which lies within the northwest rectangular tract of the applicant's property (see fig. 2), indicated only sparse manganese showings in the southern portion of the northeastmost trench (idem, fig. 8, and p. 31). At present there are some lumps of psilomelane-type oxides strewn along the northern portion

3/ Moon, L. B., 1950, Investigation of Stange and Byrnes Heirs manganese mines, Bland and Giles Counties, Virginia: U. S. Bureau of Mines R.I. 4659.
4/ Stose, G. W. and Miser, H. D., 1922, Manganese deposits of western Virginia: Virginia Geological Survey Bulletin 23.

of the trench. These manganese nodules, however, may represent some sample-splitting operations subsequent to the original Bureau of Mines work, since the Bureau data do not indicate any manganese showings in this part of the trench when it was originally sampled.

Ore Reserves: The property proposed for exploration by the applicant is not believed to contain any significant reserves of recoverable manganese oxides. This is concluded from the following:

(1) The upper zones of the Becraft sandstone, which contain most of the known deposits of the district, are probably missing, for the most part, within the applicant's property. Becraft sandstone boulders and outcrops within the property do not contain any showings of manganese oxides.

(2) Churn drilling by the U. S. Bureau of Mines in 1941 has demonstrated that the samples from churn drill holes north of the Stange-Byrnes Heirs workings (in the general direction of the applicant's property) have a low manganese tenor.

(3) The Tonoloway clay residuum in the Flat Top Mountain district does not contain any manganese deposits, but only traces of manganese oxides (Ladd and Stead, 1944, p. 225). Within the applicant's property, only the south half of one U. S. Bureau of Mines trench out of the three cut across the Tonoloway clay residuum contained any manganese showings.

Past Operation

No exploration, development or mining work has ever been done on this tract, other than the three U. S. Bureau of Mines trenches dug in 1941.

Availability of Manpower, Equipment, etc.

Common labor is easily available for any mining and milling work in this district. Trained labor might be difficult to obtain. Supplies, materials and equipment are available in Bluefield, West Virginia, 30 miles distant, or in Roanoke, Virginia, 70 miles distant. An electric power line runs across the Stange property so power is available. There is a spring and a reservoir on the tract for moderate supply of water.

Applicant's Proposal

Bucket drilling as proposed by the applicant does not appear feasible on account of the numerous large sandstone boulders and the apparent lack or thinness of a residual blanket.

G. L. Neumann, Mine Examination
and Exploration Engineer
Eastern Experiment Station

Louis Pavlides, Geologist
U. S. Geological Survey

College Park, Md.
June 14, 1955

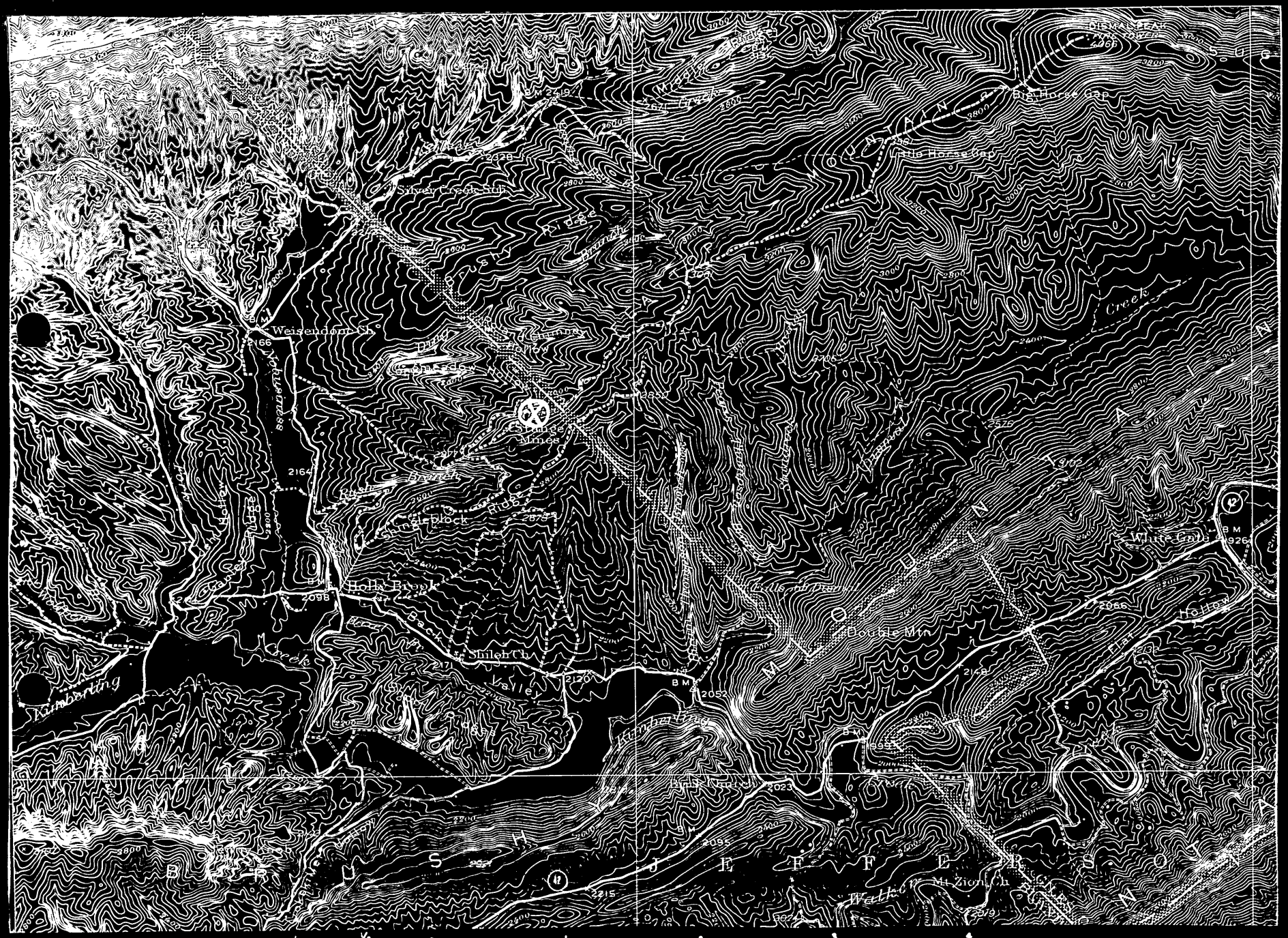


Figure 1 — Location of Stange mine. Klovstad property lies immediately to the north. Base map is Pulaski Quadrangle, U.S.G.S.

DOCKET
Surname:
Chapman
Martin
DeHuff
Kjelstrom

400

MAY - 4 1955

Mr. Robert A. Laurence, Executive Officer
DMEA Field Team, Region V
Room 13, Post Office Building
Knoxville, Tennessee

Re: Docket No. DMEA 3789 - Manganese
Odin V. Klevstad
Mineral Lease BLM 038127
Bland County, Virginia

Dear Mr. Laurence:

The above-docketed application for exploration assistance is being referred to your office for a field examination of the property.

Two copies of a relevant memorandum dated May 3, 1955, by N. E. Nelson, Geological Survey, are enclosed for your information.

Sincerely yours,

W. S. Martin
ACTING Chairman, Operating Committee (2/B)

Enclosures

APPROVED:

M. E. Volin (2/B)
Member, Bureau of Mines

/s/ R. D. Trace (2/B)
Member, Geological Survey

cc: Docket
Adm. Read. File
Oper. Committee
Code 400
Thor Kiilsgaard, USGS
Gilbert DeHuff, USBM
FT, Region V

TLChapman/ls
5/4/55

R.G.L.

400

DOCKET
Surname:
Chapman
Martin
DeHuff
Trale
Volin

MAY - 4 1955

Mr. Odin V. Klovstad
Route 2, Box 502 D
Severna Park, Maryland

Re: Docket No. DMEA 3739-Manganese
Mineral Lease BLM 038127
Bland County, Virginia

Dear Mr. Klovstad:

The above-docketed application for exploration assistance for manganese ores has been reviewed by the Iron and Ferro-Alloys Division of the Defense Minerals Exploration Administration and has been referred to Mr. Robert A. Laurence, Executive Officer, DMEA Field Team, Region V, Room 13, Post Office Building, Knoxville 2, Tennessee, for a field examination of the property.

Any assistance that you can render the members of the Field Team will be appreciated.

Sincerely yours,

Frank E. Johnson

ACTING Administrator

CC: Docket
Adm. Read. File
Oper. Committee
Code 400
Thor Kiilsgaard, USGS
Gilbert DeHuff, USBM
Field Team, Reg. V

TLChapman/ls
5/4/55

Docket

IN REPLY REFER TO:

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

Defense Minerals Administration
RECEIVED
MAY 4 - 1955

May 3, 1955

Copy retained 400

Re: DMEA-3789
Odin V. Klovstad
Bland Co., Virginia
$25,558.94 - Manganese

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

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

Subject: Review of application

This application pertains to two cornering strips of ground totalling ten acres on Flat Top Mtn., Bland County, Virginia. The two pieces, or legs, as shown on a map submitted by the applicant adjoin on the northwest and northeast the Byrnes-Heirs property and would seem to include parts of the Byrnes and Stange properties, though such is not said. From pits on the Byrnes and Stange properties a fair tonnage of manganese ore has been produced.

Unfortunately, due to lack of exact common points, the maps of the application cannot be tied to points on the maps of the Ladd-Stead report (U.S.G.S. Bulletin 940-H) and those of the Bureau of Mines R.I. 4659. Using the place where the Ding Branch crosses the Bland-Giles county line as an inexact common point, the applicant's ground can be roughly plotted on the Ladd geologic maps on one of which are shown the churn drill holes, drilled by the Bureau in 1941. Holes 10, 21, and 22 would seem to be near, probably within the lines of the applicant's ground and three of Ladd's vertical sections cross the northeast leg and one section crosses the northwest leg.

Thus drill hole data and the structure sections assist in the process of evaluating the reasonableness of the application. One churn drill hole, No. 10, shows 0-20 feet of 11.15% manganese which may since have been mined out. Nine blank and low grade holes in a 'fence' with No. 10 would seem, as no doubt intended, to delimit the favorable area on the north. The sections, A-A' of Plate 37 and A-A' and B-B' Pl. 38 indicate the larger part of the area of the application is on the northern flank of the anticline and over some of it the productive Becraft sandstone is thin or missing. The masses of manganese ore mined here in the past occurred on the crest of the anticline near the top of the Becraft formation.

The applicant should be asked to furnish a map which can be conveniently used with the pertinent data-full Ladd and R.I. 4659 maps. Probably the elaborate drilling program of the applicant is not warranted. Four or five pits may be sufficient to extend the data of the drill holes and interpretations of the geologic sections.

A field inspection should be made and such is recommended.

N. E. Nelson

N. E. Nelson

April 26, 1955
Subject: DMEA 3789
Re: Exploration Assistance

Mr. Odin V. Klovstad
Route 2, Box 502 D
Severna Park, Md.

Dear Mr. Klovstad:

The receipt of your application dated April 22, 1955 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA 3789 and referred to the Iron and Ferro-Alloys 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

60932

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

Defense Minerals Administration
RECEIVED
APR 25 1955

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. 3789
Metal or Mineral Manganese
Date Received 4-25-55
Estimated Cost $25,558.94
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: Odin V. Klovstad
Route 2, Box 502 D,
Severna Park, Md.

(*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. Not applicable

(*c*) If a corporation, add to above statement, titles, names and addresses of officers. Not applicable

(*d*) If a partnership, add to the above statement the names and addresses of all partners. Not applicable

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 Legal description of the 10 acre tract to be explored is shown on Map A. The area to be explored is a portion of a tract of 2,291 acres as described in mineral lease BLM 038127 as shown on Map B.

(*b*) State any mine name by which the property is known. None

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise Lessee

(*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. One copy submitted. Original lease on file with the Bureau of Land Management. (Please return copy).

(*e*) If you own the land, describe any liens or encumbrances on it Not applicable

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. Not applicable

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 page 3)

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades (See attached pg. 3)

(*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 page 3)

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points. (See attached page 4)

(*e*) State the availability of manpower, materials, supplies, equipment, water, and power. (See attached page 4)

16—66551-1

5. *The exploration project.*—(*a*) State the mineral or minerals for which you wish to explore (See attached page 4)

(*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 Map A and pages 1, 2, and 4)

(*c*) The work will start within 5 days and be completed within 4 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 page 6)

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: (Attached)

(*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.).

(*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.

(*c*) *Operating materials and supplies.*—Furnish an itemized list, including items of equipment costing less than $50 each, and power, water and fuel.

(*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.

(*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.

(*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.

(*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.

(*h*) *Contingencies.*—Give an estimate of any necessary allowances for contingencies not included in the costs stated above.

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.

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 April 22, 1955

Odin V. Klovstad
(Applicant)

By

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

Box 609
Bluefield, W. Va.
April 18, 1955

Defense Materials Exploration Administration
U. S. Department of Interior
Washington 25, D. C.

Gentlemen:

As geologic consultant for Mr. O. V. Klovstad, I have incorporated below a preliminary description of the area for which a manganese exploration contract is desired and also a preliminary plan for exploration.

To comply with the requirements of the Forest Service, a ten acre tract has been selected for exploration and prospecting. This tract, as shown on the map accompanying the application, is adjacent to the active manganese operations of the Stange mine (Flat Top Mining Company) and the Byrnes Heirs mine (Southern Manganese Corporation).

The 10 acre tract lies along the crest of Flat Top Mountain and in part is on the north slope and also in part on the south slope. The entire 10 acre area is underlain by the Becraft (lower Devonian) sandstone. The Becraft has weathered to a residual clay and in addition some transported clays from the general degredation of the surface have covered the area. The structure of the rock of this immediate area is a southwestwardly plunging anticline. Dips along the axis of plunge are about 5 degrees and dips along the flanks increase from zero to 20 degrees with some local steepening. The geology of the area has been described in detail by H. S. Ladd and F. W. Stead in "Manganese Deposits of the Flat Top and Round Mountain Districts, Bland and Giles Counties, Va.", U. S. Geological Survey Bulletin 940-H, 1944. This publication contains maps and sections which indicate the structure and stratigraphy of the region. Manganese oxide minerals occur as fracture fillings in the Becraft sandstone and it has also been reported by Ladd and Stead that manganese oxides occur in fractures in the underlying Clinton formation (middle and upper Silurian), although the undersigned has not investigated this latter occurrence. However, the great bulk of the manganese oxides, and the ore that is now recovered, is from the clays overlying the Becraft and also from the clays resulting from the weathering of the underlying Tonoloway limestone (upper Silurian).

It appears that in places the Becraft has completely weathered to clay, but there is no regularity to the weathered zones and the exact nature of the lithologic units in depth can be determined only by drilling.

In view of the erratic nature of the manganese ore and its occurrence in the clay and weathered rock, a drilling program of sufficient magnitude to adequately test the 10 acre exploration tract would be the most feasible method of proving the quantity and quality of ore present. A 10 acre tract has been marked out bordering on the present Stange and Byrnes Heirs operations. Drilling is planned on 100 foot centers and 42 holes are planned in the location. It is thought that a depth of 50 feet for each hole will adequately test the area. Some holes may bottom on solid rock before the 50 foot depth is reached, and it may be that it is desireable to continue other holes to a greater depth than 50 feet if ore showings and the nature of the drilled material warrents further depth. Also, because of the nature of the terrain and the presence of solid rock, some of the located holes may not be drilled, and in addition it may be desirable to alter the drilling plan somewhat in order to give better results from the proposed drilling program.

It is hoped that a drill can be obtained that will drill each hole 36 inches wide (diameter), which will result in a sufficient quantity of material recovered for examination. Access roads will of necessity have to be constructed through the 10 acre tract to accomodate the drilling rig.

Samples from the test holes will be run through the mill of the Southern Manganese Corporation to determine the quantity of ore present. It is planned to take approximately 100 pounds from each foot of hole drilled (if 36 inches in diameter) for test. The manganese ore recovered from the mill test will be analysed for manganese, iron oxide, silica, alumina and phosphorus oxide.

Very truly yours,

R. M. Allen
Geologist

ITEM 4.

(a) At the present time there are no active mine workings nor any active operations for manganese on lease tract known as BLM-A-038127 ~~037504~~ consisting of 2,291 acres. However, there have been active workings within the tract in the past in the Johnson prospect which is located on the southern boundary of the tract and is described as to location, geology and ore shipments on page 133 of reference (1) and page 283 of reference (2). In addition reference (1) on page 132 and 133 describes the Flat Top and Thompson prospects which are within the leased tract.

In addition, there are two active operations mining and milling manganese ore from leases which adjoin the 2,291 acre tract and these workings, from which ore is now being taken, are within about 200 feet of the property line of the 2,291 acre lease. These operations are known as the Stange Mine and the Byrnes Heirs mine, (see reference (2) Plate 37).

The 2,291 acre area is easily accessible from Holly Brook, Bland County, Virginia on State roads 606 and 629. These roads will take one to the mill of the Southern Manganese Corporation and old logging roads and Forest Service roads, passable with a jeep, make accesible the greater part of the 2,291 acre area.

(b) No production data are available from workings within the 2,291 acre tract except the reported shipment of 15 tons of ore from the Johnson prospect as noted above in reference (1), page 133. Shipments have been recorded from the Stange Mine and Byrnes Heirs mine on pages 228, 229, and 230 of reference (2). There is continuing production at this time from these two operations.

(c) The area is underlain by rocks of upper Silurian and lower Devonian age. The oldest rock exposed in the tract is the Clinton Sandstone of middle to upper Silurian age and these sandstones are in sequence, overlain by the Tonoloway limestone (upper Silurian) Becraft sandstone and Onondaga chert (lower Devonian) within the tract. These beds are located on the crest of a Southwestward plungimg, broad anticline. The beds generally have gentle dips, with maximum dips of about 20 degrees. A strike fault has been mapped passing northeastward through the area, paralleling the crest of Flat Top ridge. This fault is essentially a normal fault and although beds may be displaced, the stratigraphic throw is probably not over 100 feet. However, this faulting has served to fracture the contiguous rocks.

Manganese oxides, generally psilomelone or cryptomelone, and some pyrolusite, are found within the Flat Top Mountain area. Mining in the Stange and Byrnes Heirs pits has recovered manganese oxides from within fractures in the Becraft sandstone and as nodules in the residual and transported clays under and associated with the Becraft. Ore has also been reported (Reference 2, page 223) from the upper part of the Clinton Sandstone.

Within the 2,291 acre tract, surface examination shows nodules of manganese oxide in road cuts, stream beds, and within the soil cover. The cuts in the Johnson prospect show the presence of manganese oxides. The general type of deposit is of a bedded nature, with the manganese oxide nodules recovered by stripping or earth moving equipment from the residual and transported clays associated with the Clinton Sandstone, Tonoloway limestone (which everywhere seen has altered to clay), and the Becraft sandstone.

In addition to published data mentioned, reference 1 and 2, work on the manganese oxides of this immediate area has been done by the Bureau of Mines. A report on trenching and drilling conducted by the Bureau of Mines, with essay reports, on the Stange and Byrnes Heirs

properties is given in reference (3) and ore dressing studies on ore from these properties are given in reference (4).

(1) Stose, G. W. and Miser, H. D., Manganese Deposits of Western Virginia. Va. Geol. Survey Bull. 23, 1922
(2) Ladd, H. S, and Stead, F. W., Manganese Deposits of the Flat Top and Round Mountain Districts, Bland and Giles Counties, Va., U. S. G. S. Bull. 940-H, 1944
(3) Moon, L. B., Investigation of Stange and Byrnes Heirs Manganese Mi Mines, Bland and Giles Counties, Va. U. S. B. M. R.I. No. 4659, 1950.
(4) Shelton, S. M. and others. Concentration of Manganese-bearing ore from the Stange Mine, Bland Co., Va. U.S.B.M. R.I- No. 3633, 1942

(d) Accessibility of the project is such that the property can be entered by an all weather road, Virginia 629, from Virginia 609 at Holly Brook, Bland County. Logging roads traverse the entire 2,291 acres and make the property accessible by jeep.

The nearest railroad loading point is on the Norfolk and Western Railroad at Eggleston, about 25 miles distant. The nearest large community is Bluefield, W. Va., about 24 miles distant. At Bluefield are several large wholesale supply houses, contractors, and other supply and building facilities

(e) Ample manpower is available in the immediate area as the region has been classed as a labor surplus area by virtue of lay-offs at the nearby coal mines. Materials, supplies and equipment of all sorts are available from the wholesale supply houses in Bluefield. Water can be made available on the property either by piping from streams or from a drilled well. A well on the adjacent Byrnes Heirs property is adequately supplying water for the jig mill processing ore. Electric power is not available in the immediate area, but the Appalachian Electric Power Company has available power about 2 miles distant.

ITEM 5.

(a) The mineral for which exploration will be conducted are manganese oxides. Pyrolusite, psilomelane and crystomelane are the common minerals

(b) The location of the proposed 10 acre exploration area is shown on attached map B. This 10 acre tract will lie adjacent to that part of the lease property line which is a common boundary with the present manganese mining on the Stange and Byrnes Heirs properties.

It is contemplated to trench, or preferably drill this 10 acre tract to determine the quality and quantity of manganese ore present in the clay and sandy clay overlying the Becraft and Tonoloway formations. If drilling can be accomplished on 100' centers, each hole carried to a depth of about 50', with a hole diameter of 36"; this method will probably be followed. The depth of residual clay may in some places exceed 50' and in other places may be less than 50'; however a minimum of 1800' of drilling is comtemplated. It is requested that authority be given to modify the location of the drill holes from that shown on map A, as terrain conditions may require location changes and such flexibility in the exploration work will be desirable.

For test sampling, about 100 pounds of recovered clay from each foot of hole drilled, or a total of about 100 short tons, will be run through the mill of the Southern Manganese Company in 20 lots of about 5 tons each. This procedure will determine the quantity of ore present and analytical work on the manganese ore recovered will determine the quality.

This exploration area will be within the residual and transported clays and sandy clays which result from the weathering and degredation of the Becraft and Tonoloway formations. Outcrops of the Becraft sandstone ore present along the crest of Flat Top ridge and will also be present in the proposed 10 acre exploration tract.

ITEM 6.

(b) As it is contemplated that approximately 4 months or 18 ~~9~~ weeks will be required to complete the exploration of the 10 acre tract; the payroll of superviser will consist of a foreman or superintendent at $125.00 per week for a total of $~~1125~~ 2250.00; ~~and an engineer-~~ geologist consultant who will spend an average of 2 days per week on the job or a total of 35 days at $100 per day for a total of $3500. An additional $500 is allowed the consultant for necessary expenses in traveling, preparation of maps and assay returns, drawing equipment and supplies, and incidental expenses for a total of $4000.

High No. 3

(c)	Hand tool items; shovels, picks, mattocks	$50.00
	Screens for testing ore	100.00
	Miscellaneous items and tools	50.00

(h) Ten percent of cost estimates ~~in items (a), (c), (e) and (f)~~ is included to allow for contingencies which may arise because of unforseen operating conditions.

April 15, 1955

R. M. Allen

Geologist

ITEM 5. The exploration project.--

(a) (See attached page 4)

(b) (See attached Map A and pages 1, 2, and 4)

(c) (See application)

(d) I, Odin V. Klovstad, have had 20 years of operating experience in fields of administrative law. I have also conducted a chemical jobbing business and have been associated for the past 8 years with the manganese processing business. The proposed exploration operations will be supervised by myself in consultation with Mr. R. M. Allen who is an experienced Mining Engineer and Geologist. I propose to personally devote my entire time to the supervision of the proposed exploration project.

ITEM 6. Estimate of costs.--

(a) Independent contracts.--

Test drilling - 2,000 feet @ $5.00 per foot.	$10,000.00
(See attached estimate from Cunningham Core Drilling and Grouting Corp. - Appendix A)	
Road building and drainage - 3,000 feet @ $1.00 per ft.	3,000.00
Estimated contract cost for building access roads (10' wide) including the furnishing and installation of sufficient 12" corrigated pipe, rock head walls and necessary rock drilling, blasting, and removal of rock. (Suitable drainage for roads within the leased area required under Item C of the Special Terms and Conditions contained in mineral lease BLM-A 038127).	
(See Appendix F and Map A)	
Total	$13,000.00

(b) Labor, supervision, consultants.-

Mining Engineer and Geologist	$4,000.00
(See attached page 5 and attached estimate by Mr. R. M. Allen - Appendix C)	
Supervisor - 18 weeks @ $125.00 per week	2,250.00
Total	$6,250.00

(c) Operating materials and supplies.-- $200.00

Hand tool items: shovels, picks, mattocks -	$ 50.00
Screens for testing ores	100.00
Miscellaneous items and tools	50.00
Total	$200.00

(See attached page 5)

(d) Operating equipment.--

Pick-up truck - 1/2 ton $783.00

Rental - 18 weeks @ $27.50 per week	$495.00
Mileage - 3600 miles @ $.08 per mile	288.00
(Approx. 200 miles per week, including maintenance and expenses)	
Total	$783.00

(See attached estimate from Hertz Stations, Inc. - Appendix D)

(e) Rehabilitation and repairs. -- None

(f) New buildings, improvements, installations.-

Warehouse for storage of ore samples, tools and equipment $1,616.00

(Estimate based on informal quotation of $1,316.00 from Armco Drainage and Metal Products Co., Charleston, W. Va. for furnishing and erecting one Armco Steel Building, 12'W X 24'L X 10' high on foundation to be supplied by the buyer. Estimated cost of laying foundation - $300.00).

(g) Miscellaneous.-

Analytical work - 600 determinations $686.40

480 determinations @ $1.04 per determination -	$499.20
120 determinations @ $1.56 per determination -	187.20
Total	$686.40

(See attached estimate from Lerch Brothers Inc. - Appendix E)

Test sampling - 100 short tons of recovered clays $500.00

(Estimate based on actual cost of processing 5% of recovered clays by the Southern Manganese Corp. separation plant). (See attached page 4)

Revegetation and reforestation - 2 acres @ $100.00 per acre. (Estimated liability incurred by lessee, Odin V. Klovstad, under Items H and J of the Special Terms and Conditions contained in Mineral Lease BLM-A 038127, as a direct result of the proposed exploration project). (See estimate by Mr. R. M. Allen - Appendix F) $200.00

Total $1,386.40

(h) Contingencies.-

10% allowance for contingencies - (See attached page 5) $2,323.54

RECAPITULATION

ITEM 6 - ESTIMATE OF COSTS

(a) Independent contracts-		$13,000.00
(b) Labor, supervision, consultants-		6,250.00
(c) Operating materials and supplies-		200.00
(d) Operating equipment-		783.00
(e) Rehabilitation and repairs-	(None)	
(f) New buildings, improvements, installations-		1,616.00
(g) Miscellaneous-		1,386.40
(h) Contingencies-		2,323.54
Total		$25,558.94

REMARKS.-

Initially, it was contemplated that the proposed exploration work would be done by bulldozing and trenching. Accordingly, estimates were obtained from two local contractors. (See attached estimates from Lilly Construction Company and Thomas J. Seay - Appendices and). These estimates were based on identical specifications which consisted of bulldozing to a depth of 10 feet and trenching to a further depth of 12 feet (the maximum depth for back hoe equipment), for a total length of 1600 lineal feet. A maximum depth of some 25 feet is all that could be expected from this plan of exploration.

In view of the limited depth of trenching which could be obtained, without a greatly enlarged program of earth moving, and because of the attendant costs, this plan was abandoned. In liew thereof, it was decided to undertake a program of test drilling which would permit exploration to a greater depth (up to 200 feet, if required). It was also found that exploration by this method would be less costly.

With respect to the type of equipment selected for the proposed test drilling program, it appears that there are only two other such rigs in the Eastern United States, neither of which are available for contract work. Contact was made with Mr. Mott of Mott Core Drilling Corp., Huntingtonk W. Va., with respect to the availability of equipment that would do a comparable job of test drilling. Mr. Mott advised that his organization does not have equipment that could even approach the diameter and depth of test drilling as can be accomplished by the equipment available from the Cunningham Core Drilling and Grouting Corp., Salem, Va., as outlined in the attached extract from a brouchure on the "Calwell Bucket Type Earth Drill".

With respect to a plan of exploration which would utilize either a core drill or auger equipment, Mr. R. M. Allen has advised that neither of these methods would be satisfactory for the area to be explored. His experience has demonstrated that in clay material, the manganese oxide nodules are pushed or forced into the surrounding clays by the core drill or auger. Thus, a representative sample cannot be obtained.

Appendix A

DIAMOND & SHOT CORE DRILLING
FOUNDATION INVESTIGATION
SOIL SAMPLING

Department of the Interior
Defense Minerals Administration
APR 25 1955

FOUNDATION GROUTING
TEST PITS
MINERAL & QUARRY TESTING

CUNNINGHAM CORE DRILLING AND GROUTING CORP.

P. O. BOX 513, SALEM, VA.

TELEPHONE 2396

April 11, 1955

Mr. Odin V. Klovstad
Route 2, Box 502D
Severna Park, Maryland

Dear Sir:

Confirming my conversation of last Friday afternoon with you in regards to the test drilling of some 36 holes approximately 50 feet deep and about 36" in diameter, I wish to advise that it would probably take about 3 months to do this program, although this time might be reduced by working long hours overtime which would also be desirable from our point of view in order to make the drill available for other work.

I believe this could be done for $5.00 per foot of drilling through overburden, clays, and sandy clays with loose ore. If it became necessary to drill below the bottom of these large holes into material too hard for large bucket to drill, we could move over the hole with a core drill and get a good core with an "M" type core barrel. I believe this could be done for $6.00 per foot and it would perhaps be unnecessary to drill but a few feet in each hole.

It looks like I could probably do this about May 15, but as I am getting so many calls for this machine, I would want to have the job lined up definitely for that time so as not to have the drill idle.

In addition to above unit costs, it would be necessary for you to have trails bulldozed to site of each hole so that an Army surplus 6 x 6 truck could safely reach the hole with a gross load of 23,000 pounds.

Very truly yours,

CUNNINGHAM CORE DRILLING
AND GROUTING CORPORATION

Sam J. Cunningham

Sam J. Cunningham, President

SJC: nhd

cc: Mr. R. M. Allen
Box 609
Bluefield, W. Va.

Appendix C

Box 609
Bluefield, W. Va.
April 18, 1955

Mr. O. V. Klovstad
Rt. 2
Severna Park, Maryland

Dear Mr. Klovstad:

My estimate for acting as engineer-geologist consultant during the exploration work on the 10 acre tract of your 2,291 acre lease on Flat Top Mountain, Bland County, Virginia is as follows:

For a period of four months or approximately 18 weeks for an average of 2 days per week or a total of 35 days at $100.00 per day, making a total of $3,500. An additional $500.00 is estimated for transportation, preparation of maps and assay returns, drawing materials and supplies and incidental expenses, making a total of $4,000.

Very truly yours,
R. M. Allen
Geologist.

HERTZ STATIONS, INC.

BALTIMORE, MARYLAND

HEADQUARTERS AND TRUCKS: 300 KEY HIGHWAY, ZONE 30, SARATOGA 7-5625
PASSENGER CARS: MID-CITY GARAGE, 27 S. CHARLES ST. ZONE 1, LEXINGTON 9-4115

April 15, 1955

Mr. O. V. Klovstad
Severna Park, Maryland

Dear Mr. Klovstad:

We are pleased to quote you our rates for furnishing a ½ ton pick up truck.

Weekly Rate	$27.50
Mileage Rate	.08

If you prefer furnishing the gasoline for the operation of the unit the rate would be reduced 2¢ per mile.

The above rate covers your renting the truck for a period of four months or more.

This rate is comparable to similar equipment in the southwestern Virginia area.

Very truly yours,

HERTZ STATIONS, INC.

H. E. Gambrill

H. E. Gambrill
City Manager

HEG:mvs

ESTABLISHED 1892

LERCH BROTHERS INCORPORATED

THE IRON ORE CHEMISTS

MINNESOTA LABORATORIES
EMBARRASS MINE
VIRGINIA
ALBANY MINE
HIBBING (Special)
MAHONING MINE
BENNETT MINE
HAWKINS MINE

CONSULTING SERVICE — MINNESOTA, ONTARIO AND QUEBEC
GENERAL OFFICES
CORNER N. 4TH AVE. W. AND GRANT STREET
MAIL ADDRESS — P. O. BOX 810
HIBBING, MINNESOTA

MINNESOTA LABORATORIES
COLERAINE
DANUBE MINE
CROSBY
SPRING VALLEY MINES
CANADIAN LABORATORIES
STEEP ROCK LAKE, ONT.
KNOB LAKE, QUEBEC
SEVEN ISLANDS, QUEBEC

April 5, 1955

Mr. Odin V. Klovstad
Route 2, Box 502 D
Severna Park, Maryland

Dear Mr. Klovstad:

Thank you for your letter of March 29. We will be very happy to run the analyses for you. We are enclosing a copy of our latest Schedule of Rates & Terms, but because this Schedule is so complicated, we feel you will need a little further explanation.

According to your letter, we would estimate that the work you anticipate would amount to between 500 and 1,000 determinations. We would, however, invoice this work at $1.50 for each determination of iron, phos., manganese and silica run by our usual Mesabi Range method. The alumina would be charged at 50% additional.

If your work would amount to between 500 and 1,000 determinations, this rate would be adjusted at the end of our fiscal year which is December 19, 1955, to approximately $1.04 per determination. The alumina would be adjusted accordingly.

If the ore will not react to this method, the rates for the various determinations would be governed in accordance with page 3 of our Schedule of Rates & Terms.

We wish you would review this Schedule and if you have any further questions, please let us know and we will do our best to explain. Our usual terms are 30 days net cash and we would prefer to have you send us some credit reference or let us have approximate payment in advance.

Sincerely,

Leo J. Storms
Treasurer

Enc.

Box 609
Bluefield, W. Va.
April 18, 1955

Mr. O. V. Klovstad
Rt. 2
Severna Park, Maryland

Dear Mr. Klovstad:

An estimate of the area to be disturbed in exploring and prospecting the 10 acre tract indicated on the exploration map is as follows:

Access road, 3000 feet by 10 feet width, for a total of 30,000 sq. ft. or 0.69 acre.

Location of 42 holes with access to holes of 500 sq. ft. per hole or 21,000 sq. ft. Also 400 sq. ft. per hole for setting up rig or 20,000 sq. ft. This gives a total of 41,000 sq. ft. or approximately 0.92 acre.

Total area to be disturbed in the 10 acre tract will therefore be 1.61 acre. It would appear that a minimum of 2 acres should be allowed although final figures will rest on the ruling of the Forest Service.

Very truly yours,
R. M. Allen
Geologist

LILLY CONSTRUCTION COMPANY

GENERAL CONTRACTORS P. O. BOX 281 - PHONE 6017

BLUEFIELD, W. VA.

C. SCOTT LILLY

Apr. 8th-1955

Mr. O. V. Klovstad,
Servena Park, Md.

Subject:- Exploration work on 10 acre tract,Flat Top Mtn. Road Construction, Area next to present Manganese wwashings(Vandeventer,Clay Sanfords Operation, 200' to 500' of Road Work.

We are pleased to submit a tentative proposal as follows.

a - Back hoe or trenching 1600 lineal feet approximately 2' 3" wide, 12' deep
Total approx. 2130 Cu Yds.X 10% = 2.250 Cu. Yds.

b - Dozer work, Approx. 4200 Cu. Yds. (1600' X 14'5"

Estimate to include moving in, setting up, clearing, trenching and backfilling. for the sum of $13.400.00 Thirteen Thousand Four Hundred Dollars

Thanking you for the privilege to place this bid and trusting we hear favorably from you, we are,

Yours very truly,

Lilly Construction Co.,,

By C. S. Lilly

CSL-s

Rt 3 Box 746
Cedy

Bluefield, West Virginia
April 7, 1955

O. V. Klaustad
Sewena Park, Md.
Dear Sir:

I hereby submit my estimate on exploration wash on ten (10) acre tract on Flat Top mountain, $18,000.00 for work as outlined by Mr. Allen and Forest Service Specifications.

Thomas J. Seay

T. J. Seay

CALWELD
BUCKET TYPE
EARTH DRILL

Model 150-A

Drills 16 to 84 in. holes 200 feet deep

CALWELD

MODEL 150-A BUCKET TYPE

EARTH DRILL

BORES Caisson Pier Holes

PRE-BORES Concrete Piles

DIGS Belled Footings

DRILLS Water Wells, Cesspools

EXPLORES Mineral Deposits

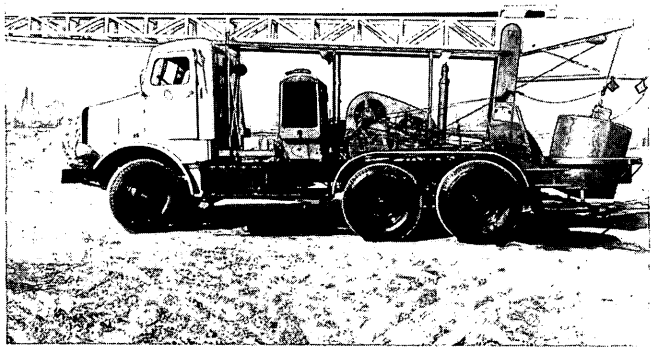
TESTS Soil Conditions

Save time and labor with the Calweld (Bucket type) Earth Drill. Every operation is performed mechanically and so old-time manual digging practices become obsolete. Model 150-A drills 16 to 84 in. holes 200 ft. deep. It removes 21.5 cu. ft. of earth per pass to speed up such varied jobs as are required in heavy duty construction, mining and oil field work.

Interchangeable buckets and a side reamer attachment permit boring every type of soil. One-man control will raise the derrick, lower the drill, lift the bucket and power the drill. Bucket is unloaded by a simple hand-tripping operation. All controls are centered in a single unit for efficient, trouble-free operation. Adjustments and maintenance of controls can be made quickly and easily.

Since the Calweld Earth Drill, Model 150-A is built on a skid frame it can be mounted on any commercial truck chassis two tons or larger. This permits easy maneuverability and all the equipment required for the drilling job is carried on the truck.

Extensively tested under on-the-job conditions, the Calweld Earth Drill has proved successful in such varying jobs as sinking caissons, construction footings, soil testing, shallow water drilling and exploration of mineral deposits.

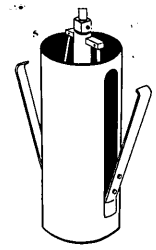


Completely maneuverable, the truck rig moves to job location and is quickly and easily spotted. The operator raises the 32 ft. derrick to drilling position. Heavy duty jacks level the chassis and the Calweld drill is ready for digging.

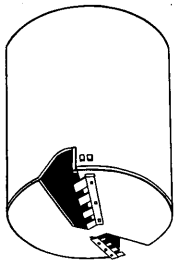
Construction features. Model 150-A Calweld Earth Drill is mounted on a four-inch channel iron subframe, suitable for mounting on any truck chassis having 7½ ft. from cab to axle or more. The 32-ft derrick is arc welded, chrome moly structural steel tubing. The hoist consists of two drums with a line pull of 4500 lbs. at a line speed of 225 feet per minute. It is equipped with heavy duty brake and clutch bands. Each drum has a safety dog which holds the load at any desired position for indefinite period of time.

The ring gear is cast from 1040 carbon steel and is mounted on two hundred and seventy-five ⅝ in. diameter ball bearings. The ball bearings prevent any sliding friction and so insure longer wear. The teeth of the gear are enclosed under guards to avoid accidents and lost time. The ring gear drive has a heavy duty friction clutch with a capacity of 9 HP per 100 RPM.

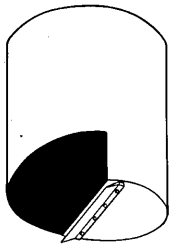
Adaptable to all subsoil



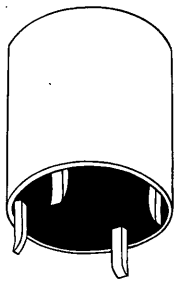
Belling Bucket



Ripper Teeth

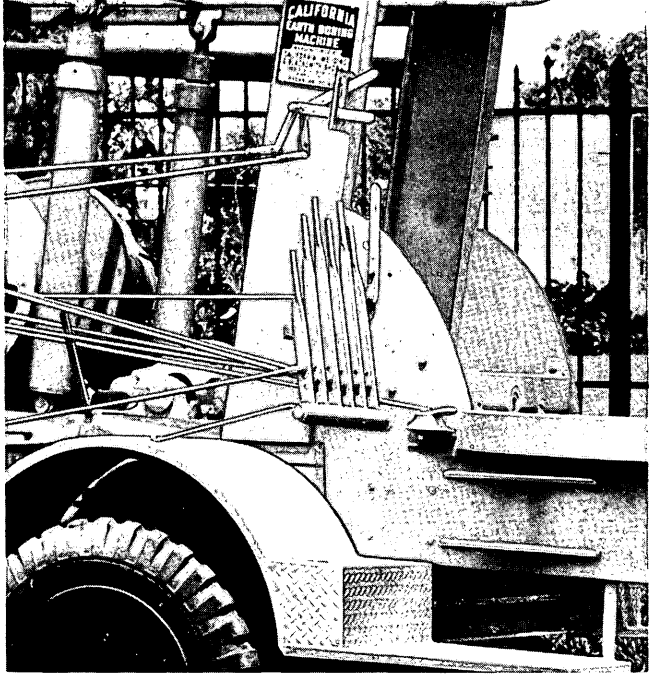


Rock Bucket

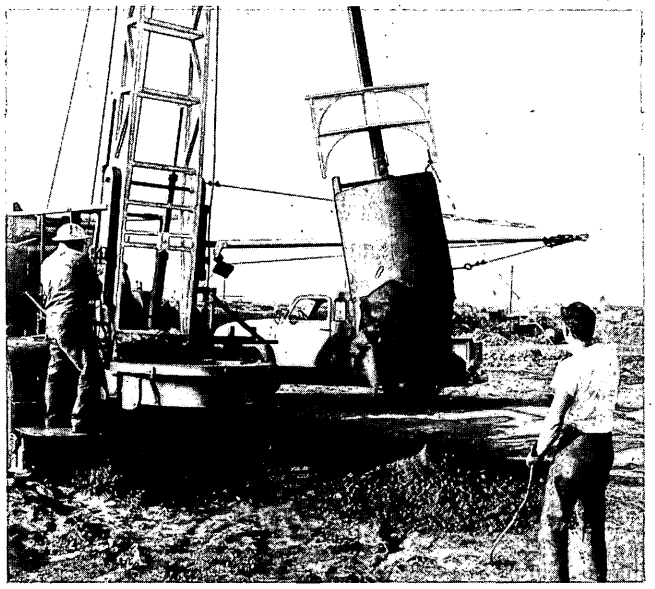


Chopping Bit

The Calweld Earth Drill can be equipped with a variety of bucket-drill accessories such as shown here. Regardless of the underground conditions or the drilling problem there is a Calweld tool to handle the job.



Easy control is achieved by centralization of control levers. Elevated platform permits operator to check each operation while raising derrick, lifting the bucket, lowering or powering the drill. Adjustments of these exposed controls can be made quickly and easily.



Bucket unloading is accomplished by simple, hand tripping arrangement. Since the workman stays clear of dumping operation the safety factor is increased.

The standard kelly bar is made of heat-treated alloy steel 3½ in. square and 23 ft. long. The end of the kelly bar is equipped with a heavy duty thrust bearing swivel. This kelly bar will drill a hole to a depth of 22 ft. without extra drill stems, or a telescoping kelly can be furnished to allow drilling to a depth of 42 ft. without extra drill stems.

For sewage disposal. The Calweld Earth Drill is built to obtain as much volume and drainage as is practical for each installation. Usually this machine can drill an average of 100 ft. of 4 ft. cesspool per day.

For water well drilling. Model 150-A is practical in drilling large diameter wells to a depth of 200 ft. Drilling usage varies with water requirements and soil formation of each vicinity.

For soil testing. The Calweld Earth Drill has proved excellent for this work because of the large diameter hole needed and its ability to take out uncontaminated samples by the use of a simple push sampler working from the secondary hoist line. Has been used by the U. S. Army Engineers to test for dam sites and similar jobs.

For mineral exploration. Model 150-A Calweld digs a large diameter hole so that a man can be lowered to record the stratigraphy and structure of the soil. In low grade deposits the samples thus obtained are large enough to be representative and so provide sufficient material for beneficiation tests. Used by the U. S. Bureau of Mines.

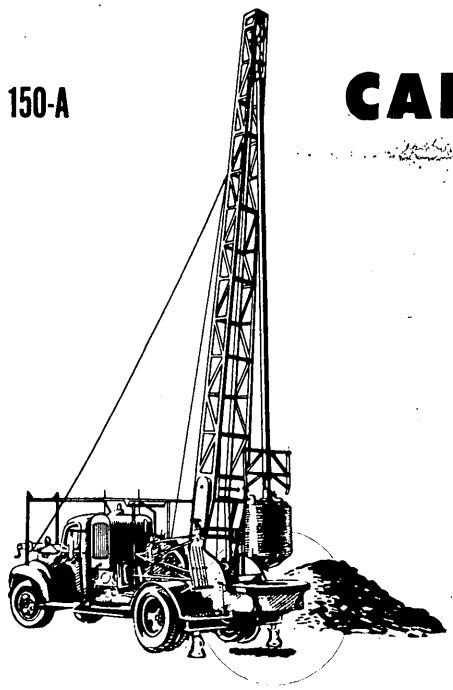
For Calyx drilling. A simple adaptation is made so that the Calyx method can be used merely by adding a hollow kelly, water swivel and small slush pump with the shot bit of any desired size up to 36 inches.

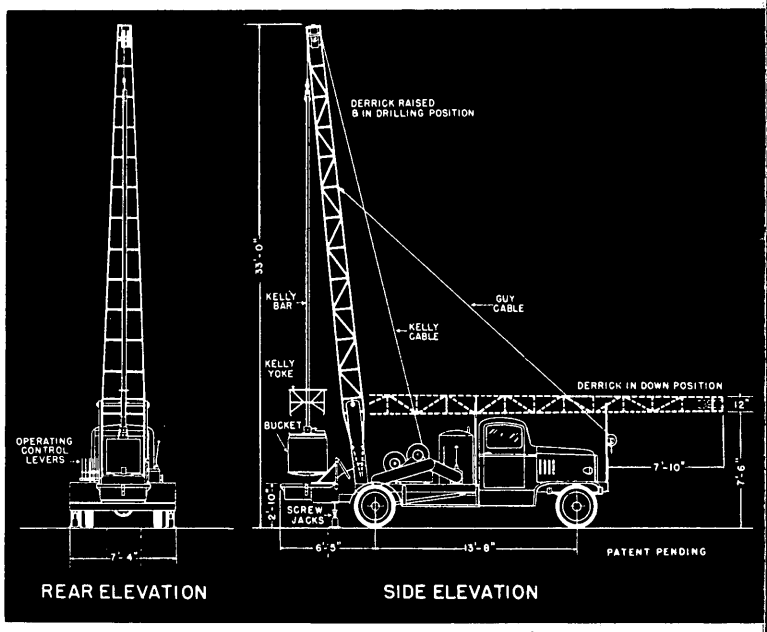
For belled footings and pier holes. By drilling and belling pier holes with the Calweld Earth Drill, often the costly hand labor and danger of men having to work underground are eliminated and no forms have to be used. In many cases this method results in savings up to 40% over the old methods used to accomplish this same job.

conditions in construction, mining and oil field work

Model 150-A

CALWELD EARTH DRILL





Mechanical specifications:

Derrick — 2" and 1½" square structural tubing; arc welded; 32' long, rising 35' from ground; Capacity, 16,000 pounds.

Crown Block — Fabricated from ¼" plate; cast steel sheaves.

Derrick Lift — Two telescoping hydraulic rams.

Kelly — 3½" square 4142 chrome-moly heat treated; 23' long; weight, 950 pounds.

Kelly Swivel — Ball bearing type with leaded in rope socket.

Ring Gear & Pinion — Cast from 1040 high carbon steel; gear runs on hardened ball race using 275 - ⅝" steel ball bearings; opening will permit 40" bucket to pass through.

Yoke — Fabricated from ⅝" plate.

Bearings — Roller bearings throughout; Dodge type pillow blocks.

Drives — Standard roller chain throughout; all steel sprockets.

Guards — Steel fabricated for safety.

Hoist — Model 40-A American; external friction clutches; 225 feet per minute at 4500 single line pull.

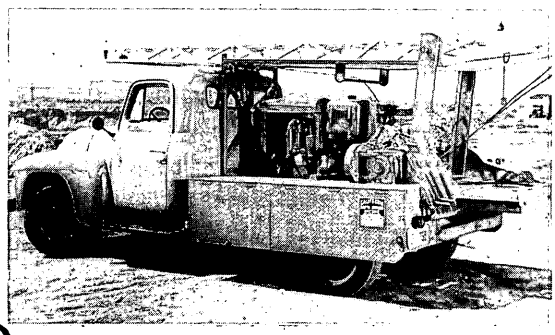
Rotary Clutch — Dodge PB-209Mi Friction type.

Drilling Buckets — Cutting shoes are cast of a 1040 carbon steel; shell from ⅜" plate; cutting teeth, forged oil tempered plow steel.

Truck — Any 2 ton chassis. Unit also suitable for skid mounting or trailer mounting.

Model 50-A Bucket type Drill for soil sampling. Bores 20 inch dia. holes to 100 ft. depth.

Model 100-A Bucket type Drill bores holes 10 to 72 in. dia. to 200 ft. depth.



REPRESENTED BY:

CALIFORNIA WELDING AND BLACKSMITH SHOP
Sales and Service
DRILLING EQUIPMENT
7222 E SLAUSON AVE
LOS ANGELES 22, CALIF

"CALWELD"

CALIFORNIA WELDING & BLACKSMITH SHOP, INC.

7222 EAST SLAUSON AVE., LOS ANGELES 22, CALIF.