Crawford

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

RECEIVED
AUG 17 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. 3950
Metal or Mineral Uranium
Date Received 8-17-55
Estimated Cost No Amount
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: TWIN ARROW PETROLEUM CORPORATION, a Delaware corporation
901 Sherman Street
Denver 3, Colorado (See separate sheet for officers names and addresses)

(*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.

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

(*d*) If a partnership, add to the above statement the names and addresses of all partners.

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

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

(See separate sheet)

(*b*) State any mine name by which the property is known. (See separate sheet)

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

(See separate sheet)

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

(*e*) If you own the land, describe any liens or encumbrances on it

(See separate sheet)

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. (See separate sheet)

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.

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

(*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.

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

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

16—66551-1

(See separate sheet for information required by 4.)

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

URANIUM

(*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 accompanying engineer's report and maps). Also separate sheet.

(*c*) The work will start within 60 days and be completed within 6 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 separate sheet).

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:

(*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 August 12, 195 5.

TWIN ARROW PETROLEUM CORPORATION
(Applicant)

By [signature]
Melvin G. Schroeder Pres

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

TWIN ARROW PETROLEUM CORPORATION
901 SHERMAN; DENVER 3 COLORADO

SEPARATE SHEET SUPPLEMENTAL TO APPLICATION

1. Name of Applicant.

Officers names and addresses of applicant:

Melvin Schroeder, President, 3246 Niagara; Denver, Colorado
S. T. Rabourn, Vice-President, Rangely, Colorado
A. M. Biderman, Secretary-Treasurer, 901 Sherman, Denver 3, Colo.

3. Applicant's property rights.

(a) Legal description of lands upon which exploration drilling is desired and proposed:

The following unpatented lode mining claims located in the Sylvia Mining District, Montrose County, Colorado, T. 45 N., R. 19W., NMPM, Sections 3 and 10:

Name of Claim	Recording Data of Location Notices	
	Book	Page
East ½ of American Eagle	296	469
SW½ of American Eagle #0	213	299
East ½ of American Eagle #6	296	475
East ½ of American Eagle #7	296	476
South ½ of American Eagle #8	213	290
West ½ of Judy #1	349	340

Legal description of lands upon which exploration drilling as desired and proposed will benefit:

The following unpatented lode mining claims are located in the Sylvia Mining District, Montrose County, Colorado, T. 45 N., R. 19 W., NMPM, Sections 3 and 10:

Name of Claim	Recording Data of Location Notices	
	Book	Page
Remainder of American Eagle	296	469
Remainder of American Eagle #0	213	299
Remainder of American Eagle #6	296	475
Remainder of American Eagle #7	296	476
Remainder of American Eagle #8	213	290
Remainder of Judy #1	349	340
American Eagle #1	296	470
American Eagle #2	296	471
American Eagle #3	296	472
American Eagle #4	296	473
American Eagle #5	296	474

(Part of American Eagle #2 and all of #3 and #4 are located in Section 3; Judy #1 is mostly in the SE¼ of Section 10 and the SW¼ of Section 11; the remaining claims are in Section 10).

3. (continued)

(b) Mine name: American Eagle Mine (Located on American Eagle Nos. 0 and 8, which overlap; see map attached to engineer report).

(c) Twin Arrow Petroleum Corporation is the owner of the above properties. Refer to the "AGREEMENT" which is attached.

(e) Encumbrances on the properties:

The properties are subject to an ore payment of $111,000, payable to Boyd and Gale Oliver of Norwood, Colorado. The balance unpaid as of June 30, 1955, was $76,207.84. The owner, applicant, is also obligated to issue 200,000 shares of its Class A stock to the Olivers pursuant to the "AGREEMENT", which accompanies this application.

(f) See (a), above, for recording data of location notices.

4. (a) Mining operations have been conducted on the American Eagle mine since 1951 and are presently being conducted. The mine is presently owned and operated by Twin Arrow Petroleum Corporation and is mined under a split-check lease arrangement, the miners receiving 50% and the corporation 50%, of the gross proceeds. (Refer to the "AGREEMENT"). The mine workings are accessable for examination purposes. The mine shaft is located on American Eagle #0 and #8 and is an underground operation. (Refer to Page 8 of the accompanying Engineer Report for condition of the mine and the mining equipment which is at the property and is being used, as well as the living accomodations.)

(b) Production and Reserves. The total production to July 12, 1954, according to AEC records was 7,399 tons, which averaged 0.23% U308 and 2.42% V205. From December of 1954 through June, 1955, the period which the properties have been owned and operated by the Applicant, 3,653.28 tons have been shipped and sold averaging 0.22% U308 and 2.81% V205.

Reserves: According to the accompanying engineer's report, as of August 1, 1954, a total of not less than 8,457 tons of indicated and inferred ore still remained in the immediate vicinity of the workings on the American Eagle No. 0 claim. (See "Conclusions" on Page 1 and "Ore Reserves" on page 5 of the Engineer's Reports.)

(c) For geological features of the property, including mineralization, type of deposit, etc., refer to the accompanying engineer's report, "Geology and Ore Occurences" on page 3.)

The Applicant's reason for wishing to explore the properties is to find new and additional bodies of commercial uranium ore, but not to develop present ore bodies.

(d) For information as to access roads and distance to the mill, see "Access Roads" on Page 3 of the accompanying engineer's report.

(e) Manpower, materials, supplies, equipment, water and power are all available and are supplied by the split-check miners-lessees.

5. (d) Operating Experience. Since the Applicant intends to contract the exploration out on a footage basis (see accompanying bids), the contractee will perform all the exploration work and will provide the supervision. The split-check lessees of the property have mined the American Eagle Mine since the inception of the Olivers' ownership. In reference to their abilities and past performance see page 6, "Evaluation of Property", in the accompanying engineer's report.

SEPARATE SHEET SUPPLEMENTAL TO APPLICATION

5 (b). The Proposed Work. Refer to the Map attached to the Engineer's Report showing the American Eagle Group of claims. Witha particularity, refer to American Eagle Nos. 0, 8, and American Eagle. American Eagle Nos. 0 and 8 are located mainly in the NE¼ of Section 10 and American Eagle is located mostly in the NW¼ of Section 10. They have been outlined in red pencil for reference purposes, as have the other main claims referred to below.

The Company intends to perform exploratory drilling on American Eagle #0 and #8 south of the present workings. This drilling is intended to be performed on as close centers as the Defense Minerals Exploration Administration will allow. The Company and the engineering advise it has received suggests that the initial drilling be done on two hundred foot centers and that any favorable ground then be drilled on fifty foot centers. This drilling will probably be from one hundred-thirty to three hundred-fifty feet deep.

The Company then intends to drill the East end of the American Eagle claim on two hundred foot centers. The estimated depth of these holes is from one hundred-eighty to two hundred-fifty feet. Any favorable ground thus encountered would be drilled on fifty feet centers. Further, this same plan should be carried out on American Eagle No. 6, the east half of American Eagle No. 7, and the West half of Judy No. 1.

If there is any further drilling expenditures to be made out of unused funds, the remaining claims should be drilled on five hundred foot centers to determine the depth and favorability of the ore horizon. Favorable areas would then be drilled on spacings similar to those above.

Wagon drilling is intended wherever the wide spaced drillings reveal that the horizon can be reached and where water is not encountered.

A total amount of $50,000 of exploratory drilling is desired to be performed, on a contract basis, including supervision.

Twin Arrow Petroleum Corporation
901 Sherman; Denver, Colorado

SEPARATE SHEET SUPPLEMENTAL TO APPLICATION

6. Estimate of Costs. Attached hereto are two bids for the exploration work.

Twin Arrow Petroleum Corporation
901 Sherman; Denver 3, Colo.

PACIFIC WESTERN EXPLORATION COMPANY
1944 Broadway
Denver, Colorado MA 3 - 7136
August 4, 1955

Twin Arrow Petroleum Company
901 Sherman Street
Denver, Colorado

Gentlemen:

With reference to our drilling your American Eagle Claims 0 - 8, Gypsum Valley Mining District, Montrose County, Colorado, we wish to bid as follows:

Minimum total footage: 20,000 feet, estimated at 16,000 feet of plug drilling and 4,000 feet of core drilling, at the following rates:

	0 - 100 feet	100 - 200 feet	200 - 300 feet	300-400 ft.
Plug:	$ 1.58	$ 1.83	$ 2.25	$ 2.85
Core:	$ 2.90	$ 3.15	$ 3.60	$ 4.40

(per foot)

For a minimum total footage of 50,000 feet, reduce the above rates by $ 0.06 per foot. For a minimum total footage of 100,000 feet, reduce the above rates by $ 0.09 per foot.

Supervision will be included in the above work for $ 0.50 per foot.

Very truly yours,

PACIFIC WESTERN EXPLORATION CO.

R. W. Greene, Vice-President

RWG/gjm

TWIN ARROW PETROLEUM CORPORATION
901 SHERMAN
DENVER 3 COLORADO

Sidon Harris, President

SOUTHERN
GEOPHYSICAL
COMPANY

Precision Seismic Surveys - Data Reanalysis

P. O. Box 1398
Grand Junction, Colorado
June 11, 1955

Mr. A. V. Whitam, Attorney
Twin Arrow Corporation
420 First National Bank Bldg.
Denver 2, Colorado

Dear Mr. Whitam,

Pursuant to our past correspondence we take pleasure in submitting the following bid for exploratory drilling on the American Eagle Group of claims located in Gypsum Valley, Montrose County, Colorado. It is understood that this bid applies only to work done on the claims American Eagle #0 through American Eagle #8.

20,000 feet minimum contract (estimated at 14,000 feet of plug bit drilling and 6,000 feet of core drilling)

	0 - 100	100 - 200	200 - 300	300 - 400
Plug	$1.60	$1.85	$2.25	$2.85
Core	$2.95	$3.20	$3.60	$4.40

Supervision: $.50 foot added to the above figures.
(Supervision to include direction and aplanning of program, preparation of maps and reports and services of one full time geological field assistant for sampling)

50,000 feet minimum contract

Reduce above plug and core prices by $.05 per foot.
No change in supervision prices.

100,000 feet minimum contract

Reduce above plug and core prices by $.08 per foot.
No change in supervision prices.

It is our recommendation that all of the drill holes contemplated under this program be probed and this can be easily accomplished by the geological field assistant.

If we are favored with this assignment the planning and supervision of the program will be under the direction of Mr. Howard Dutro, Geologist. Mr. Dutro will spend as much time on the property as is necessary to assure a complete and accurate job of evaluation and exploration.

Very truly yours,
SOUTHERN GEOPHYSICAL COMPANY
s/John N. Botkin, Supervisor

JNB/db

ENGINEERS ASSOCIATES, Incorporated
Post Office Box 118 411½ Main Street
Telephone 2499
GRAND JUNCTION, COLORADO

TWIN ARROW PETROLEUM CORPORATION
901 SHERMAN
DENVER 3, COLORADO

RECEIVED
AUG 17 1955

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ENGINEERS ASSOCIATES, Incorporated
Post Office Box 118 411½ Main Street
Telephone 2499
GRAND JUNCTION, COLORADO

Following is a report on the American Eagle Mine in Gypsum Valley, Montrose County, Colorado

SUMMARY

Engineers Associates, Inc. was commissioned by Mr. Wayne Gray of Dolores, Colorado, and Mr. Boyd Oliver of Norwood, Colorado, to make an examination of this property for the purpose of calculating reserves of uranium ore. All the workings are confined to a single claim, therefore no data has been compiled on the other claims in this group. This examination was made July 26th and 31st, August 1st and 2nd, and 15th, 1954.

CONCLUSIONS

According to the records of the Atomic Energy Commission, a total of 7,399 tons has been produced to July 12, 1954. Based upon field examination and mapping of underground workings, together with drill logs of the U.S.G.S. diamond drill holes, a total of not less than 8,457 tons of indicated and inferred ore still remains (August 1, 1954) in the immediate vicinity of the workings on the American Eagle No. 0 claim. There are certain portions of this particular claim that still require additional drilling (these areas will be discussed later in this report). It is quite probable that such drilling will increase the ore reserves indicated above.

LOCATION AND TITLES

A total of nineteen claims is included in this group. These have been recorded in the County Court House at Montrose, Colorado, as follows:

American Eagle	Book 296	Page 469
American Eagle No. 0 (amended)	Book 213	Page 299
American Eagle No. 1	Book 296	Page 470
American Eagle No. 2	Book 296	Page 471
American Eagle No. 3	Book 296	Page 472
American Eagle No. 4	Book 296	Page 473
American Eagle No. 5	Book 296	Page 474
American Eagle No. 6	Book 296	Page 475
American Eagle No. 7	Book 296	Page 476

American Eagle No. 8 (amended)	Book 213	Page 290
Judy No. 1	Book 349	Page 340
Cabin	Book 343	Page 374
Cabin No. 1	Book 343	Page 375
Cabin No. 2	Book 343	Page 375
Cabin No. 3	Book 343	Page 376
Cabin No. 4	Book 343	Page 376
Cabin No. 5	Book 343	Page 377
Cabin No. 6	Book 343	Page 377
Cabin No. 7	Book 343	Page 378

The claims are held by possessory right in the names of Boyd Oliver and Gale Oliver, Norwood, Colorado. Eleven of the claims are located in Sections 3 and 10, Township 45 North, Range 19 West, N.M.P.M. Data concerning the location of the eight Cabin claims was not available. However, they were pointed out as being located less than one mile from the American Eagle Group in a generally southeasterly direction.

HISTORY

When the American Eagle group of claims was certified for Atomic Energy Commission bonus payment in October 1951, the records indicated that 5280 pounds of U_3O_8 had been produced prior to March 1, 1951. The total production according to the Atomic Energy Commission records to July 12, 1954, is 7,399 tons, which averaged 0.23% U_3O_8 and 2.42% V_2O_5. This tonnage contained 34,039.4 pounds of U_3O_8 and 358,112 pounds of V_2O_5. The property is in operation at the present time.

MAPS

Attached to this report is a claim map copied from a survey plat made by H. L. Owens, Civil Engineer, March 1952, together with a Brunton tape map of the underground workings on the American Eagle No. 6 claim, as prepared by Engineers Associates, Inc. The tracing from the Owens's map also indicates the approximate location of the Cabin group of claims These particular claims have not as yet (August, 1954) been surveyed and are only approximately located.

ACCESS ROADS

The access roads to these claims are in excellent condition. A good gravel road beginning at Colorado State Highway 30 traverses Gypsum Valley a distance of approximately nineteen miles. The road from this gravel to the workings on the American Eagle mine is less than one mile. This road is the usual dirt road that will occasionally require some maintenance after heavy rains or snow fall. The total distance from the mine to V. C. A.'s mill at Naturita is approximately 52 miles.

GEOLOGY AND ORE OCCURRENCES

Very little time was devoted to a study of the ore occurrences on this property since calculation of ore reserves was the paramount issue. However, the ore occurs in a down faulted block of the Salt Wash member of the Morrison sandstone of Upper Jurassic Age. This mine is located practically in the center of the Uravan Ore Belt as indicated by Dr. R. F. Fisher in his strategic minerals investigation report "Vanadium Deposits of Southwestern Colorado and Southeastern Utah." From observations made by the writer on the adjoining V. C. A. Gyp No. 1 claim and the American Eagle No. 9 claim, the uranium ore occurs in long, narrow, lenticular lenses, one of which exceeds 1600 feet in length. These lenses have a general strike of between N 50-62 W. The lenses, disclosed to date, appear to occur in an eschelon manner in a general northwesterly direction. Drilling by two adjoining operators on the Mary Jane and Hummingbird claims has indicated that the mineralization is scant in the Hummingbird claim but appears to cross the northeastern corner of the Mary Jane claim. Further exploration drilling on the American Eagle and American Eagle No. 1 would have excellent possibilities of disclosing additional ore lenses. The ore occurs within the mineralized lenses as laminations of uranium-vanadium streaks between barren sandstone. These ore streaks range from a few inches to five or more feet in thickness,

with a total mineralization in the thickest part of the lense ranging from one foot to as much as eleven feet. Except where the barren sandstone is massive, this mineralization does not lend itself to selective mining. The past operators have mined the entire thickness of mineralized matter, picking out the obviously barren sandstone, either underground or prior to dumping into the ore bin. Examination of the property showed that the waste dumps are very small in comparison to the total tonnage of ore shipped. Considering the fact that this total tonnage has averaged 0.23% U_3O_8 and 2.42% V_2O_5, the presence of the barren sandstone within the mineralized lenses is not of serious consequence.

SAMPLING

Because of the long past production from this property detailed sampling was not indicated, however the writer cut a few samples simply as checks. These assayed as follows:

Sample No.	% of U_3O_8	% of V_2O_5
1	0.25%	2.77%
2	0.14%	3.30%
3	0.30%	3.15%
4	0.22%	2.80%

Where taken, these samples included both waste and mineral, and are therefore indicative of the probable grade of ore that could be produced. Examination of the settlement sheets of ore produced from this property shows that the uranium content ranged from 0.15% to 0.43%, and vanadium from 1.29% to 5.50%. It is reported that a recent shipment from the bottom of the No. 3 incline, made since the examination, averaged better than 1% U_3O_8. Examination by the writer of this face on August 15th, showed five solid feet of extremely high grade ore that would assay at least 1% U_3O_8 or better. This ore is located in the vicinity of diamond drill hole G V 193 shown on the accompanying map.

ORE RESERVES (August 1, 1954)

Following is a tabulation of "indicated" and "inferred" ore in certain blocks designated by letters A, B, C, etc. The "indicated" ore is that ore now visible on the ribs and/or breasts of the present underground workings, together with blocks around diamond drill holes. The "inferred" ore is an additional block of ore beyond the limits of the "indicated" ore blocks. The widths of these blocks is predicated on the observations made of the underground workings. The tonnages cannot of course be guaranteed, but considering the extensiveness of the present underground workings together with the thicknesses of mineralization reported by the U.S.G.S. drilling, such calculated tonnages appear to be reasonable. The underground workings were carefully drawn to scale from measurements made in the field. The areas of various blocks were determined by planimeter measurement. The cubic contents of the blocks were calculated by the planimetric measurements, multiplied by arithmetical averages of mineralized thicknesses. Thirteen cubic feet of rock in place was used to compute tonnages.

Block	"Indicated" Tons Ore	"Inferred" Tons Ore
A	249 Tons Ore	---
B	---	132 Tons Ore
C	911 Tons Ore	---
D	---	480 Tons Ore
E	1021 Tons Ore	---
F	---	523 Tons Ore
G	1108 Tons Ore	---
H	---	469 Tons Ore
I	801 Tons Ore	---
J	---	325 Tons Ore
K	358 Tons Ore	---
L	---	290 Tons Ore
M	349 Tons Ore	---
N	---	99 Tons Ore
	4797 Tons Ore	2314 Tons Ore
Incline # 1 (USGS data)	837	509
	5634 Tons Ore	2823 Tons Ore

Total Both Types 8457 Tons Ore

The average grade of the ore remaining in the No. 1 Incline by U.S.G.S. data is 0.24% U_3O_8 and 3.00% V_2O_5. The writer's check sample assayed 0.22% U_3O_8 and 2.80% V_2O_5.

In addition to the blocks in incline No. 2 and No. 3 and around the ore holes G V 190 to G V 142, remaining blocks of ore were calculated by the Atomic Energy Commission in incline No. 1 and have been included. A total tonnage of 8,457 tons compares favorably with ore reserves computed by the Atomic Energy Commission as of April 1953 after deducting production since that date. At that time the U.S.G.S. data computed 6,900 tons of "indicated" ore averaging 0.20% U_3O_8 and 2.85% V_2O_5 and 6,800 tons of "inferred" ore averaging 0.18% U_3O_8 and 2.76% V_2O_5, making a total of 13,700 tons. Since May 15, 1953 the owners have shipped (data from settlement sheets) 3,928.53 tons. Assuming that 2,200 tons of this was produced from areas that they had considered as "indicated" ore, there would be a remainder of 4,700 tons of "indicated" ore. Assuming that 1,728 tons was produced from areas that had contained "inferred" ore there would be approximately 5,072 tons of this type remaining. However, the ore reserves calculated by the U.S.G.S. include all ore in excess of 0.10% U_3O_8, therefore the actual reserves of commercial grade ore would be less than the 13,700 tons estimated by the U.S.G.S. Since all the initial production bonus on this property has been paid out, 0.10% ore cannot be classified as commercial grade unless there is higher grade ore to be blended. The writer's calculations of 5,634 tons of "indicated" ore is somewhat higher than the U.S.G.S. balances and the 2,823 tons of "inferred" ore is somewhat lower. However, the total of 8,457 tons (by the writer) compares quite closely with the 9,772 tons by the U.S.G.S. calculations, if allowances for omission of a certain percentage of 0.10% ore is made.

On the mapping of the underground workings it will be noted that the drilling, both by the U.S.G.S. and by the owners to the northwest did not disclose appreciable ore, therefore it was necessary to terminate the ore block approximately 40 feet in a northwesterly direction from drill hole G V 114.

It will be further noted that a very excellent body of ore is indicated by drill hole G V 193, at the No. 3 incline. However, the drill hole G V 192, approximately 97 feet in the northwesterly direction, contains scant mineralization. There has been no additional drilling either by the U.S.G.S. or by the owners in this area, therefore it was necessary to terminate the ore block approximately 70 feet northwest of said good drill hole. Continuing further in the northwesterly direction to the drill holes G V190 to G V 142, respectively, the lack of drilling in this area makes it impossible to indicate anything except a long, narrow channel of mineralization containing rather weak values of uranium. It will be noted however, that the vanadium content in this arearemains quite high, therefore it might be possible that the drill records do not accurately represent the grade of uranium ore that actuallyexists. It may be possible also that drilling on a more closely spaced pattern, on both sides of this channel, may greatly enlarge the ore reserves. There is the further possibility that mining of the ore block at incline No. 3 may continue through the blank space in a northwesterly direction towards drill hole G V 190 and further increase the ore reserves.

In addition to the drilling by the U.S.G.S., the owners of this property have wagon drilled a large area of the American Eagle No. 0 claim. The writer did not attempt to probe all of these holes, simply those that would have some bearing on the determination of potential ore reserves. In each case, where holes were probed by the writer, the drill records by the owners were found to be very accurate. Attached to this report is a tabulation of said drill logs as furnished by the owners. It will be noted that to the south of incline No. 3 the owners have drilled a considerable number of holes. Certain ones of these were shown to contain ore, when these holes were probed by the writer, some were found to be caved. However two of them (54-35 and 53-24) contained sufficient radioactivity to indicate that there might

be an "off-shoot" trend of ore from G V 193 in a southeasterly direction. These two holes could also indicate the presence of a parallel lense of ore. Further drilling in this area is indicated.

Since detailed sampling was not done, the best estimation of the possible grade of future production would be to use the average of 7,400 tons produced in the past, namely, 0.23% U_3O_8 and 2.42% V_2O_5. This average is lower than the average of the samples taken by the writer, compares favorably with the estimated grade of U.S.G.S. tabulations and allows for dilution during mining operations. Therefore, mining conditions being comparable, it is not unreasonable to expect that further production should be of a grade similar to that produced in the past.

EVALUATION OF PROPERTY

This mine can be classified as an excellent uranium property both from past production and future potential. The property has been worked in an exceptionally clean workman-like manner. The inclines and underground workings are clear and all waste material has been removed to the surface. The roof is adequately supported by timbers and where necessary roof bolting has been used. The track in the workings is in good shape but the transportation problem could have been better engineered in order that there be less handling of the ore cars and more useage of gravity for the loaded cars.

The property contains sufficient operating equipment to continue present production. Following is a tabulation of the mining equipment now present at the property:

1 Ingersoll-Rand Compressor (gasoline) 105 cu, ft.
1 Ingersoll-Rand 45# Jackhammer
1 Chicago Pneumatic 55# Jackhammer & Jackleg (air and water hoses)
2 Two ton ore cars
1 Skagit double drum hoist, Wisconsin air-cooled motor
1 Ingersoll-Rand Air Tugger
1 Gardner-Denver Tugger
1 Joy double drum Slusher and Scraper
1 35 Ton steel bin
1 10' x 36' air receiver and misc. small tools

1 Underground steel loading ramp
1 6" blower
misc. timber, pipe, rail, ties etc.

There are adequate living accomodations for a small crew of approximately six people. There are three cabins on the premises.

1 12 x 14 to accommodate two men
1 12 x 16 to accommodate two men
1 14 x 26 a combination mess hall and living accommodations for two

The mess hall is equipped with a butane refrigerator and cook stove; beds, tables, chairs etc. The other two cabins are equipped with coal heating stoves and beds.

The total production from this mine has been obtained from a single claim. The brief geological reconnaissance made by the writer indicates that an intelligently directed drilling campaign should produce additional ore lenses on other claims of this group. There is also the possibility that drilling exploration on the Cabin Group of claims might disclose further uranium mineralization. No attempt was made at this time to examine this particular group from a geological standpoint. The ore bearing formations are present in this group and could produce further uranium tonnages.

In summation, it is the writer's considered opinion that this property is one of the few on the Colorado Plateau that is available for purchase that can continue to ship commercial ore immediately. There is no delay or preparation work involved. The property has had a successful past production history and still contains significant reserves of commercial Uranium ore.

Respectfully submitted,

Charles W. Yetter

Charles W. Yetter
Registered Professional Engineer No. 1972

CWY/ch

DRILL LOG FOR 1952

HOLE NO.

52-1 5½ ft. of ore @ 58-63½ total depth 72 ft.
V2O5 1.54 mill assays .35 U3O8 probe showed .25-.54

52-2 72 feet deep 3½-4 feet of ore at 58-62 ft.
V2O5 1.56 U3O8 .39 mill assay no probe

52-3 90 ft. deep 5 ft. of ore @ 55-65 ft.
sample no. 1 7 ft. V2O5 U3O8 .21
sample no. 2 2 ft. V2O5 .82 U3O8 .05

(New Hole)
52-4 108 ft. 5½ ft. of ore 81-87
V2O5 U3O8 .16 mill assay U3O8 .20-.79 probe

52-5 108 ft. 6 ft. of ore at 78-84 U3O8 .14 mill assay

52-6 108 ft. 4 ft. of ore at 79-83 ft.
V2O5 U3O8 .16 mill assay probe .20-.46

52-7 90 ft. no ore

8 108 ft. no ore

9 108 ft. no ore

52-10 90 ft. no ore

52-11 72 ft. no ore

52-12 72 ft. no ore

52-13 72 ft. no ore

52-14 72 ft. no ore

52-15 72 ft. no ore

DRILL LOGS FOR 1953

53-1 90 ft. 9 ft. of ore at 72 to 81 ft. probe

53-2 90 ft. 2-3 ft. at 75-78 ft. in foot wall

53-3 90 ft. 2 ft. at 72-74 ft. hanging wall

53-4 90 ft. blank too far in hanging wall

53-5 90 ft. 9 ft. of ore at 72-81 ft. no peg in road

53-6 90 ft. 9 ft. of ore at 72-81 ft. no peg in road

53-7 90 ft. 9 ft. of ore at 72-81 ft. no peg in road

53-8 90 ft. 9 ft. of ore at 72-81 ft. no peg in road

53-9 90 ft. 9 ft. of ore at 78-87 ft.

HOLE NO.	
53-10	90 ft. blank too far in hanging wall
53-11	108 ft. 6 in.-1 ft. at about 100 ft. no peg across wash from intersection
53-12	108 ft. 6 in. -1ft. at about 100 ft. no peg 7 ft. south of 53-11 no peg
53-13	108 ft. 2 ft. at 100-102 7 ft. south of 53-12 no peg
53-14	108 ft. blank in foot wall close to main road across wash no peg
53-15	126 ft. 2 ft. at 116 ft. in edge of 3rd road trend toward Mayfields no peg
53-16	126 ft. blank
53-17	126 ft. blank no peg 9 ft. on foot wall side of 53-16
53-18	90 ft. lost steel before we reached ore horizon in line with No. 53-17 third roll dark end in draw
53-19	lost at 85 ft. probe shows ore in bottom of hole
53-20	108 ft. streak and carbon at 90 ft.
53-21	100 ft. carbon at 90 to 100 ft.
53-22	108 ft. carbon at 90 to 100 ft.
53-23	108 ft. carbon at 90 to 100 ft.
53-24	2 ft. ore at 104 hole 108
53-25	126 ft. 1½-2 ft. of ore at 112 ft.
53-26	lost at 100 ft.
53-27	126 ft. ore horizon at 107-118 ft. possibly low grade V_2O_5 no U_3O_8
53-28	126 ft. 2 inch streak of good ore at 108 ft.
53-29	90 ft. no ore southeast end of 2nd row
53-30	90 ft. no ore southwest end of 2nd row
53-31	140 ft. no ore, ore horizon 122-132 ft. east end of 3rd row
53-32	missing

DRILL LOGS OF 1954

HOLE NO.	
54-1	135 ft. at end of 1st roll no ore
54-2	125 ft. at end of 1st roll streak of .06 by probe at 100 ft.
54-3	125 ft. at end of 1st roll 1 ft. of .10 at 100 ft. 10 ft. from clay
54-4	see below
54-5	120 ft. at end of 1st roll streak at 108 ft. top of ore sand.
54-6	100 ft. at end of 1st roll no ore
54-7	125 ft. no ore ore sand at 113 ft.
54-8	135 ft. 1 ft. ore ore that shows .14% on counter and streak in cuttings
54-9	105 ft. .20 streak at 60 ft.
54-10	135 ft. east end of 3 rd roll lost hole before we reached ore sand water
54-11	165 ft. lost end of 3rd roll water at 140 before we reached ore sand. Probable ore sand at 160 ft.
54-12	next four holes at top of portal 40 ft. ore at 40 ft. in top of 4 ft. of ore sand cuttings on counter ran 1 ft. .60/6" .20
54-13	70 ft. ore at 39 ft. in top of 9 ft. ore sand cuttings ran 1 ft. 1% 6 inch. .30 on counter
54-14	48 ft. ore at 36 ft. 1 ft. of 1% and 6 in. of .10
54-15	48 ft. streak at 36 ft. in top of 9 ft. of ore sand.
54-16	48 ft. about 20 ft. north of track at portal no ore ore sand at 32-48 ft.
54-17	48 ft. ore sandat 36 ft. streak at 38
54-18	48 ft. close to ore bin no ore ore sand at 32-40 ft.
54-19	48 ft. probe shows .08 at 32 ft.
54-20	45 ft. of ore O.S. at 27 ft. hole is in road, 7 ft. north of peg near ore bin
54-4	120 ft. at end of 1st roll. 6 inch of .08 at 100 ft. 8 ft. from clay

HOLE NO.	
54-21	48 ft. no ore o.s. at 26 ft. hole is in road 10 ft. south of post
54-22	40 ft. ore sand broken up into streaks from 20-30 ft. count of .08 probe at 23 ft and 28 ft.
54-23	105 ft. NE of Cabin streak probes .20 at 85 ft. 6 ft. ore ore sand then 3 ft of clay and ore sand in streaks
54-24	75 ft. probe shows streak of 1% at 62 ft. cuttings show streak good ore sand streak in top of o.s.
54-25	90 ft. probe shows streak at 76 ft. cuttings did not show ore sand broken up into streaks
54-26	20 ft. from cook shack 34 ft. lost hole caved
54-30	93 ft. o.s. 77-82 ft. no ore
54-31	90 ft. o.s. 77-84 ft. no ore
54-32	90 ft. no ore
54-33	100 ft. 1½ ft. of 1% on 3rd range of probe ore in middle of sand
54-34	115 ft. o.s. at about 98 ft. driller Gale
54-35	105 ft. o.s. at 88-100 ft. 12 ft. ore sand 1 ft. of ore at 94-95 ft. probe shows .10
54-36	100 ft. wet did not reach horizon
54-37	64 ft. o.s. at 42-54 ft. pluged could not probe no ore
54-38	84 ft. o.s. at 41-53 ft. no ore probe hole plugged
54-39	48 ft. ore sand 35-48 ft. no ore
54-40	46 ft. ore sand 33-48 ft. no count
54-41	106 ft. o.s. 90-103 no ore red clay under o.s.
54-42	109 ft. o.s. at 94-108 ft. barren
54-43	109 ft. o.s. at 92-104 ft. barren
54-44	109 ft. o.s. at 97-109 barren
54-45	125 ft. o.s. at 113-121 ft. barren
54-46	NE end of 3rd roll. 166 ft. o.s. 150-153 ft. red and blue clay underneath 3 ft ore sand barren

RECEIVED
AUG 17 1955

AGREEMENT

THIS AGREEMENT, Made and entered into this 10th day of December, 1954, by and between BOYD OLIVER and GALE OLIVER, both of Norwood, Colorado, (hereinafter sometimes referred to as the "Sellers") and TWIN ARROW PETROLEUM CORPORATION, a corporation duly authorized to do business in the State of Colorado, with its principal office at 622 First National Building, Denver, Colorado, (hereinafter sometimes referred to as the "Buyer")

W I T N E S S E T H :

WHEREAS, The Sellers are the owners of certain unpatented lode mining claims located in the County of Montrose and State of Colorado in the unorganized Little Gyp Mining District, and certain personal property thereon located, specifically described in Schedule "A" attached hereto and incorporated herein by reference, and

WHEREAS, The parties hereto are mutually desirous of entering into a contract for the sale of all of such unpatented mining claims and personal property according to terms and conditions hereinafter specified,

NOW, THEREFORE, THESE PRESENTS:

Section 1.

SALE

For and in consideration of the payments, covenants and agreements hereinafter specified to be paid, kept and performed by the Buyer, the Sellers have agreed, and by these presents do hereby agree, to sell, convey and deliver unto the Buyer, its successors and assigns, all of the right, title and interest of the Sellers in and to all of the unpatented lode mining claims and personal property, specifically described in Schedule "A" attached hereto.

Section 2.

PURCHASE PRICE PAYMENT

In consideration of the premises herein contained, the Buyer has agreed to make the following payments unto the Sellers:

(a) Thirty-nine Thousand Dollars ($39,000) to be paid upon execution of this agreement, receipt whereof is hereby acknowledged by the Sellers.

(b) One Hundred Eleven Thousand Dollars ($111,000) to be paid from, but only from, production obtained from the above described claims as follows:

(1) Five Thousand Dollars ($5,000) to be paid Sellers from the first Fourteen Thousand Dollars ($14,000) of gross proceeds received from monthly production, to be paid on the 10th day of each month following the month in which such production was obtained, such payments to begin January 10, 1955. In the event said gross proceeds should be less than Fourteen Thousand Dollars ($14,000) for any month then the amounts to be received by the parties shall be reduced proportionately.

(2) In addition, one-sixth (1/6) of any excess of any gross proceeds received from said monthly production over and above said Fourteen Thousand Dollars ($14,000) but less than Twenty Thousand Dollars ($20,000) shall be paid unto Sellers at the times the payments provided in (1), immediately above, are paid.

(3) The term "gross proceeds" as used in sub-paragraphs (1) and (2) above shall mean all amounts received from or for the sale of ores mined and removed from said mining claims, including all bonuses and premiums, but excluding amounts received as transportation and development allowances.

(4) The buyer shall have the option, should it so desire, at any time to pay all or any part of said One Hundred Eleven Thousand Dollars ($111,000) specified in sub-paragraph B above and thereby discharge any further obligation upon it to make the payments of percentages of production as set forth in sub-paragraphs 1 and 2 above.

(c) Two Hundred Thousand (200,000) shares of the Class A common capital stock shall be issued unto Sellers as soon in the year 1955 as such stock can be registered and qualified for resale to the public within the State of New York. The Buyer agrees to institute appropriate action and diligently take all steps necessary to register and qualify said shares in compliance with applicable federal securities laws and blue sky laws of the State of New York. It is agreed that in any event such stock shall be registered, qualified and issued unto Sellers no later than September 15, 1955. If, however, said stock can be resold to the public thru authorized securities dealers without the necessity of such stock being registered or qualified as above provided then such stock may be issued unto Sellers without such registration or qualification and the buyer agrees that it will promptly obtain a determination of whether such stock can be resold to the public without such registration or qualification and in the event that such determination determines that such stock can be so resold then, and in that event, said stock shall be issued unto the Sellers as soon in the year 1955 as possible.

(d) In the event of the discovery or development of additional ore as defined in Section 3 hereof, but only in such event, Sellers shall be issued an additional two hundred thousand (200,000) shares of the capital stock of Twin Arrow Petroleum Corporation, which stock shall be Class B common stock, if such stock be then in existence, otherwise to be Class A common stock. Such stock shall be issued to Sellers at such time as they shall demand the same after January 1, 1956. Sellers agree to take and hold said stock for bonafide investment purposes and not for distribution. In the event that Seller should later decide to offer to sell and/or sell such stock publicly and in the event that Sellers should so request, the Buyer shall cause such stock to be registered for resale, the expense of such registration to be advanced and paid by the Sellers.

paragraph (c), immediately above, so that such shares may be eligible for immediate resale to the public through qualified securities dealers without further registration thereof being required, or in the event that such shares should require further registration, then Buyer shall register the same. The Buyer shall have the privilege, at its sole option, to register said additional shares at the same time as the registration of the initial two hundred thousand (200,000) shares is made and issue such shares unto the Sellers at such time if such stock is due Sellers pursuant to Section 3.

Section 3.

DISCOVERY OF DEVELOPMENT OF ADDITIONAL ORE

(a) The Sellers shall be entitled to receive the additional issuance of two hundred thousand (200,000) shares of stock as specified in Section 2(d) above in any of the following events:

(1) A deposit of ore, economically capable of being mined, is discovered or developed on any of the mining claims described in Schedule "A" other than the two presently being mined, namely, American Eagle No. 0 and American Eagle No. 8.

(2) A deposit of ore, separate from present known ore bodies, economically capable of being mined, is developed or discovered upon the American Eagle No. 0 or the American Eagle No. 8.

(3) An extension of known ore bodies, economically capable of being mined, is discovered or developed.

(4) Sellers convey unto the Buyer a mining claim or claims other than those listed in Schedule "A" and upon which there exists a deposit of ore economically capable of being mined.

(b) The term "known ore deposits" as used in this Section 3 refers to those ore deposits presently known to exist on American Eagle No. 0 and American Eagle No. 8 claims which are shown and delimited on the "Brunton-Tape map of underground workings and diamond drill holes of of American Eagle Mine," the same being an exhibit to the report on the American Eagle property prepared by Engineers Associates, Inc., Grand Junction, Colorado, in the summer of 1954, and, in addition, shall include the ore deposit delimited by three (3) wagon drill holes on American Eagle No. 8 claim, but not shown on said

RIDER

Section 3.5

ARBITRATION

In the event the parties hereto should fail to agree as to whether discovery or development of additional ore is made in the manner and of the type defined in Section 3 above, then the parties agree that such dispute shall be referred to arbitration. Each party shall nominate one arbitrator and the arbitrators so appointed shall nominate the third arbitrator. Said arbitrators as so appointed shall be authorized to make such investigations as they deem necessary to resolve the dispute and thereafter shall make their determination as to whether there has been a discovery or development of additional ore as defined in said Paragraph 3 which determination shall be reduced to writing and shall be binding upon the parties hereto for all purposes of this contract. The cost of such arbitration shall be borne equally by the parties hereto. The arbitrators so appointed shall be disinterested persons experienced in the mining of uranium ore deposits.

exhibit to such report. The term "economically capable of being mined" shall mean such a deposit as a reasonably prudent miner would consider as being economically feasible of being mined, without reference, however, to any capital payment required for acquisition of the property upon which such deposit is located.

Section 4.

INSTRUMENTS OF CONVEYANCE

Upon the execution of these presents, the Sellers shall prepare and execute a proper mining deed unto the Buyer in quit claim form, covering all of the real property listed in Schedule "A" and a bill of sale transferring title to all personal property therein described. At such time the Buyer shall execute a quit claim deed releasing and quit claiming unto Sellers any interest of the Buyer in and to said mining claims and a bill of sale retransferring title to said personal property. Such deed and bill of sale shall be utilized for the purpose of releasing any record interests which Buyer may have acquired hereunder in the event of default in the terms and conditions hereof, and in the event that Sellers should elect to declare a forfeiture as hereinafter more fully specified.

Section 5.

TITLE

It is expressly understood by and between the parties that no warranty of title to said mining claims is made by the Sellers and Sellers represent only that they have in good faith staked the mining claims described in Schedule "A" and have asserted ownership over the respective claims since the same were staked. The Buyer has had a survey conducted to determine the position of the claims on the ground and the possible existence of any overlapping or conflicting claims. The Sellers have no knowledge of any overlapping or conflicting claims except as indicated on the said map prepared for Buyer with the exception of the possible overlap of a portion of the Brook claim, and of the Miracle and Gyp No. 2 claims.

Section 6.

SELLERS' REPRESENTATIONS

It is expressly understood by the parties that no warranty or representations of quality of any of the mining claims covered hereby, or of

the quantities of ore which may be thereon, have been made by the Sellers unto the Buyer and that Sellers have not and do not warrant or guarantee the accuracy or reliability of any drill logs, radiometric probing reports, maps, surveys or other geologic or other information which has been furnished unto the Buyer. Any of such information or data furnished by the Sellers has been furnished in good faith to enable the Buyer to conduct its own independent investigation of the property, and the Buyer for its part has relied solely upon its independent investigation in consummating this agreement.

Section 7.

SUPERVISION OF OPERATIONS

Until the One Hundred Eleven Thousand Dollar ($111,000) payment, specified in Section 2(b) above, has been paid unto the Sellers from production obtained from the mine, the Sellers shall reserve the right, if they desire to exercise the same, to have supervisory control over the mining, exploration and development operations conducted upon the property. Said supervisory control shall be directed to the end of insuring that the property is operated and developed in a good and sound mine-like fashion and that mining operations are conducted so as to remove the greatest amount of ore possible with due regard to the preservation and maintenance of the property as a workable mine. The Sellers, however, shall not be entitled to receive additional compensation for their services in connection with such supervision and control. Not withstanding the rights invested in the Sellers by this Section 7, the Buyer shall have full and free access to the property for all lawful purposes, so long as the operations be not unreasonably hampered thereby.

Section 8.

PERFORMANCE OF ASSESSMENT WORK

Until such time as all of the payments due Sellers under Section 2 hereof have been paid, the Buyer agrees that it will perform all necessary annual labor or improvements on said mining claims required for the retention of possessory rights under the mining laws. Buyer shall prepare and file on or before May 15 of each year an affidavit attesting to the performance of such assessment work. Such work shall be performed and such affidavit prepared

and filed in conformity with applicable state and federal mining laws.

Section 9.

TRANSFER OF POSSESSION

Upon execution of this agreement and payment of the Thirty-nine Thousand Dollar ($39,000) initial payment, there shall be delivered unto Buyer the deed conveying title to said premises, and possession of all of the property described in Schedule "A" shall be delivered unto the Buyer and Buyer may commence thereupon operations upon the property, subject to the limitations and conditions of this agreement and to the right of supervision of Sellers specified in Section 7.

Section 10.

ESCROW INSTRUCTIONS

Upon execution of these presents, the quit claim deed and bill of sale releasing the interest of Buyer unto Sellers, as specified in Section 4 above, together with the original copy of this contract, shall be placed in escrow with the First National Bank of Denver, Colorado, which is hereby designated to act as escrow agent under the terms and conditions hereof and instructed to act according to the following instructions:

(a) Escrow agent shall retain the instruments delivered unto it until Buyer shall present adequate evidence that all payments due under paragraphs A B and C of Section 2 hereof have been made unto the Sellers. At such time as such proof is made, the escrow agent shall deliver the instruments held by it unto the Buyer.

(b) In the event default should occur under the terms hereof, and Sellers should elect to declare a forfeiture of this agreement, then the escrow agent is authorized, upon presentation of adequate proof of the declaration of such forfeiture, to deliver all of the instruments held by it unto the Sellers.

Section 11.

FORFEITURE

In the event the Buyer should fail to make any payments due unto the Sellers under the terms hereof at the times and in the manner as herein required, or shall fail to perform any of the duties required of it hereunder,

then Sellers shall have the privilege of serving notice upon the Buyer, specifying such default and the substantial facts constituting the same. Such notice shall further state that unless such default in performance is corrected within a period of thirty (30) days of service of such notice, Sellers shall have the privilege of declaring a forfeiture of all of the rights and interest of Buyer in and to said mining claims. In the event that Buyer should fail within said thirty (30) day period to cure or correct its default of performance, then the Sellers, at their election, may declare this contract and all the right, title and interest of Buyer in the property, described on Schedule "A", forfeited and may require that the quit claim deed held by the escrow agent as aforesaid be returned unto them. In the event of such forfeiture, the Sellers shall be entitled to retain all payments theretofore made unto them as their liquidated damages. It is understood and agreed between the parties, however, that the privilege of forfeiture as herein specified shall be in addition to any other remedies, whether the same be for damages or specific performance or other relief, to which Sellers would be entitled in law or in equity in case of default.

Section 12.

NOTICES

Any written notice required under the terms of this agreement shall be deemed validly served and such service complete when the same has been deposited in the United States mail for transmittal by registered mail in a properly stamped and addressed envelope. Such notice directed to Sellers shall bear the following address:

Boyd Oliver
Norwood, Colorado

Such notice directed to the Buyer shall bear the following address:

Twin Arrow Petroleum Corporation
622 First National Bank Building
Denver, Colorado

Either party shall have the privilege of changing its address for service of notice hereunder by supplying written notice unto the other, specifying such new address.

Section 13.

ASSIGNMENT

Until the payments required to be made unto Sellers hereunder have been paid in full, the Buyer shall not transfer or assign its interest in said mining claims or personal property described in Schedule "A" without first obtaining from Sellers their written consent thereto.

Section 14.

BENEFIT

Subject to the limitations of Section 13 hereof, this agreement shall be binding upon and shall inure to the benefit of the parties hereto, their respective successors, legal representatives and assigns.

IN WITNESS WHEREOF, The parties hereto have executed this agreement at Montrose, Colorado, the day and year first above written.

_____ (SEAL)
Boyd Oliver

_____ (SEAL)
Gale Oliver

SELLERS

TWIN ARROW PETROLEUM CORPORATION

ATTEST:

_____
Secretary

By _____ (SEAL)
President

BUYER

STATE OF COLORADO)
) ss.
COUNTY OF ~~MONTROSE~~)

The foregoing instrument was acknowledged before me this ~~10th~~ 24 day of December, 1954, by Boyd Oliver and Gale Oliver.

Witness my hand and official seal.

My commission expires ~~January 16, 1956~~.

_____
Notary Public

STATE OF COLORADO)
COUNTY OF Denver) ss.

The foregoing instrument was acknowledged before me this 20th day of December, 1954, by Ralph L. Hayes, Pres., and Albert Hayden, Secy, of Hayden Petroleum Corporation.

Witness my hand and official seal.

My commission expires:

My Commission expires [illegible]

Albert P. Dillman
Notary Public

SCHEDULE "A"

1. The following described unpatented lode mining claims located in the unorganized Little Gyp Mining District in the County of Montrose and State of Colorado, to-wit:

Claim Name	* Book	* Page
American Eagle	296	469
American Eagle No. 0	343	50
American Eagle No. 1	296	470
American Eagle No. 2	296	471
American Eagle No. 3	296	472
American Eagle No. 4	296	473
American Eagle No. 5	296	474
American Eagle No. 6	296	475
American Eagle No. 7	296	476
American Eagle No. 8	296	477
Cabin	296 & 343	457 & 374
Cabin Claim No. 1	296 & 343	478 & 375
Cabin Claim No. 2	343	375
Cabin Claim No. 3	343	376
Cabin Claim No. 4	343	376
Cabin Claim No. 5	343	377
Cabin Claim No. 6	343	377
Cabin Claim No. 7	343	378
Judy No. 1	349	340

* The Book and Page set opposite the above claims refer respectively to the recordation of the Location Certificates of such claims in the office of the Recorder of the County and State aforesaid.

2. All of the following described mining equipment and machinery located on the above claims:

1 Ingersoll-Rand Compressor (gasoline) 105 cub. ft.
1 Ingersoll-Rand 45# Jackhammer
1 Chicago Pneumatic 55# Jackhammer & Jackleg (air & water hoses)
2 Two ton ore cars
1 Skagit double drum hoist, Wisconsin air-cooled motor
1 Ingersoll-Rand Air Tugger
1 Gardner-Denver Tugger
1 Joy double drum slusher and scraper
1 35 ton steel bin
1 10' x 36" air receiver and misc. small tools
1 Underground steel loading ramp
1 6" blower
misc. timber, pipe, rail, ties, etc.

Surname copy 700

Ching
Ellis
Johnson

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

APR 4 1956

Mr. A. M. Biderman
Secretary-Treasurer
Twin Arrow Petroleum Corporation
Suite 109, 901 Sherman Street
Denver 3, Colorado

Re: Docket No. DMEA-3950 (Uranium)
American Eagle Group
Montrose County, Colorado

Dear Mr. Biderman:

Reference is made to your letter of March 29, 1956, advising that the Agreement of Merger between the Twin Arrow Petroleum Corporation and Little Star Uranium Co., Inc., has been approved by the stockholders of both companies, and that you wish to withdraw the subject application for Government aid in an exploration project.

Accordingly, we have removed your application from our active file and closed the docket.

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

Sincerely yours,

C. O. Mittendorf

Administrator

MChing/gla
4-3-56
cc to: Admr.'s Reading File
Docket
Messrs. JECrawford, Rm. 3641
THKiilsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA
Code 700, Mr. Ching
DMEA Field Team, Region III (2), w/2 cc of Mr. Biderman's letter

R.C.S.

4/2/56 gla

TWIN ARROW CORPORATION

RECEIVED
APR 2 - 1956

622 FIRST NATIONAL BANK BUILDING ○ TELEPHONE TAbor 8191 ○ DENVER 2, COLORADO
FIELD OFFICE: RANGELY, COLORADO ○ TELEPHONES: 291 292

Suite 109, 901 Sherman Street, Denver 3, Colorado

March 29, 1956

RE: Docket No. DMEA-3950 (Uranium)
American Eagle Group
Montrose County, Colorado

U. S. Department of Interior
Defense Minerals Exploration Admin.
Washington 25, D. C.

Gentlemen:

This is to advise you that the Agreement of Merger between Twin Arrow Petroleum Corporation and Little Star Uranium Co., Inc. has been approved by the stockholders of both companies.

It appears that Little Star does not plan on pursuing the loan application further at this time. If it is possible, I would like to withdraw the application at this time.

Very truly yours,

A M Biderman
A. M. Biderman
Secretary-Treasurer

AMB:jal

3/14/56

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

RECEIVED
MAR 14 1956

March 12, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Docket DMEA 3950 (Uranium), Twin Arrow Petroleum Corporation, American Eagle Mine, Montrose County, Colorado

Enclosed are nine extra copies of Figure 2 and Figure 3 for possible use in the contract.

The Joint Report of Examination on this property was transmitted to your office March 5, 1956.

DMEA Field Team, Region III

W.M. Traver

By W.M. Traver
Executive Officer

Enclosures

see maps in jacket

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

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DMEA Field Team, Region III

W. M. TRAVER,

By W.M. Traver
Executive Officer

Enclosures

3/27/56 gla

IN REPLY REFER TO:

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

March 26, 1956

Memorandum

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

From: W. P. Williams, U. S. Geological Survey

Subject: Review of field examination report, DMEA 3950, Twin Arrow Petroleum Corporation, American Eagle Mine, Little Gypsum Valley, Montrose County, Colorado.

The examining team shows in their report of field examination that the subject property has produced somewhat more than 10,000 tons of ore with an average grade of 0.22 percent U_3O_8 and 2.43 percent V_2O_5. Exposures and previous drilling show the south part of the American Eagle No. 0 claim to be favorable for the deposition of more roll-type Salt Wash sandstone ore bodies. The examining team proposes an exploration drilling project consisting of a line of 13 close-spaced holes placed across the strike of the ore bodies. The recommended drill hole spacing of 25 feet is justified because the ore deposits may be only 25 feet wide but several hundred feet wide. I concur with the examining team's recommendation for DMEA approval of the application. I also agree with the Field Team that it might be well to move holes Nos. 12 and 13 to the north end of the line in order to intersect a possible extension of the known ore body.

At least a couple of legal aspects of the application should be given serious consideration by DMEA in order that the Government's interest may be protected. A corner of the Mary Jane No. 1 claim, which is not controlled by the applicant, extends toward, and possibly across, the expected ore trend. It would be better if the applicant could include that fraction in the application. It seems undesirable, however, to request the applicant to undertake what would probably be costly proceedings to obtain the property.

The applicant wishes to exclude from the application the American Eagle No. 0 claim upon which is located the mine workings. Since the proposed exploration work is on that claim it might be desirable to exclude at least the south mine workings by interposing a vertical plane that would extend from the southeast extremity and along the southwest side of the south workings. The intent of such an arrangement would, of course, be to excuse the Operator from paying royalties to the Government from ore mined from presently known ore deposits.

W. P. Williams
per N.F.N.

W. P. Williams

IN REPLY REFER TO:

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

RECEIVED
MAR 26 1956

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W. P. Williams.
per N.E.H.
W. P. Williams

WPWilliams:iml
G-3/26/56
cc: Director's reading, 4212; Branch reading, 4212
DMEA (3); Docket file; J. E. Crawford, 3641;
J. O. Hosted, 3210

3-16-56 Lgm

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

RECEIVED
MAR 16 1956

March 15, 1956

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee, Room 4445

From: John E. Crawford, Bureau of Mines Member
Uranium Commodity Committee

Subject: Report of Examination, DMEA Docket 3950, Twin Arrow Petroleum Corporation, American Eagle Mine, Montrose County, Colorado

I have reviewed the report of examination, Twin Arrow Petroleum Corporation, DMEA Docket 3950, dated March 5 and received in this office March 12. I have also discussed it with Joseph O. Hosted, Washington representative of the Atomic Energy Commission.

The applicant requested Government assistance to explore for uranium on the American Eagle property by drilling two areas on 200-foot centers, one area on 500-foot centers, and some offset drilling. The total cost of the project was estimated to be $50,000.

The DMEA examining team concluded that there is a favorable unexplored area on the American Eagle No. 0 claim and recommends a modified exploration program containing two stages. Stage I would consist of 13 plug-bit and core holes drilled on 25-foot centers in a fence normal to the long axis of the known ore bodies. This would require an estimated maximum of 1,225 feet of plug-bit and 975 feet of core drilling. Stage II would provide for a maximum of eight offset holes on 50-foot centers from favorable Stage I holes, with a maximum of four holes around any Stage I hole. Offset holes would be northwest and southeast from favorable Stage I holes, which is the direction of the long axis of the known ore bodies on the subject claim. The total estimated cost of the modified exploration project is $10,495.00.

The drilling of primary holes on 25-foot centers and offset holes on 50-foot centers appears to be leaning toward development, and it is suggested that care be exercised that the applicant does not receive development assistance.

We concur in the recommendation of the field examiners.

The report is being forwarded to the Chief, Division of Minerals, in accordance with the routing slip attached thereto.

John E. Crawford

John E. Crawford

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

RECEIVED
MAR 16 1956

March 15, 1956

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee, Room 4445

From: John E. Crawford, Bureau of Mines Member
Uranium Commodity Committee

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We concur in the recommendation of the field examiners.

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John H. Crawford

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

700
FILE COPY
Surname:

MAR 15 1958

Mr. A. N. Biderman, Secretary-Treasurer
Twin Arrow Petroleum Corporation
901 Sherman Street
Denver 3, Colorado

Re: Docket No. DMEA-3950 (Uranium)
American Eagle group
Montrose County, Colorado

Dear Mr. Biderman:

Reference is made to Mr. J. William Hasler's letter of November 25, 1955 to your corporation, your reply of December 3, and Mr. Hasler's letter of December 21 to Mr. Boyd Oliver, regarding the land that should be included in a proposed DMEA exploration contract.

Since no decisions were arrived at in the aforementioned correspondence and a Report of Examination on your property has now been received in this office, we wish to come to a clear understanding with you regarding the land to be covered in the event an exploration project contract is drawn up.

Our field examiners have concluded that a small amount of exploration drilling is warranted, but that it should be confined to an area south of your present workings on the American Eagle No. 6 claim. However, because of advancing operations on your part and the probable use of a common inclined shaft, it would be extremely difficult to exclude a part of the claim from the DMEA project and later attempt to differentiate between production from the two areas.

Accordingly, we have concluded that all parts of the American Eagle No. 6 and the American Eagle No. 8 claims that are not in conflict with surrounding claims must be subordinated and included in the proposed DMEA project. This means that, in the event a contract is signed, production from any part of these two claims during the term within which the Government may certify a discovery, would be subject to royalty payments and, if a discovery is certified by the Government, such royalty payments would be due for a period of 10 years from the date of the contract or until the Government's contribution is repaid, whichever occurs first. This rule would apply even though you are already producing from the claims; that is, royalty payments to the Government would begin from the date of the contract, on all production, regardless of when the discovery was made.

R.L.G.

If this requirement of the Government meets with your approval, please so advise and we shall continue to process your application. On the other hand if you believe that Government aid under these circumstances is not worthwhile, please so indicate by making a formal withdrawal of your application under the subject docket number.

We note from an article in the Denver Post, dated March 4, 1956, that officials of the Little Star Uranium Company reported that the firm had entered into a merger agreement with the Twin Arrow Petroleum Corporation for the acquisition of producing properties, including the American Eagle group. Please advise this office if such a merger has or will take place, and whether or not it will affect your application in any way.

Sincerely yours,

A. O. Mittendorf

Administrator

MChing/izm 3-14-56
cc to: Docket
Code 700
Mr. Ching
Admr.'s Reading File
DMEA Field Team, Region III (2)
Messrs. JECrawford, Rm. 3641
THKiilsgaard, Rm. 5224
JOHosted, Rm.3210, GSA

3/8/56 Lgm

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

RECEIVED
MAR - 8 1956

March 5, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Chairman, Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket DMEA 3950 (Uranium), Twin Arrow Petroleum Corporation, American Eagle Mine, Montrose County, Colorado

Enclosed are two copies of a clipping from yesterday's Denver Post which may be of interest in your processing the subject application.

W. M. Traver

W. M. Traver

Enclosures

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

RECEIVED
MAR - 8 1956

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224 New Customhouse
Denver 2, Colorado

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W. M. TRAVER

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Enclosures

Re: DMEA 395

THE DENVER POST Sunday, March 4, 1956

• • •

Certain happenings this past week indicated that the uranium industry could still react favorably to good issues when they were presented to persons interested in speculation.

One issue acted like others in times past as it came out in open trading and then proceeded to appreciate to more than twice its original offering price.

Little Star Uranium Co. closed out and began active trading last week. Almost at the same time, company officials reported that the firm had entered into a merger agreement with the Twin Arrow Petroleum Corp. for the acquisition of producing properties and other valuable oil and gas leases throughout the Rocky Mountains and the southwest.

One of the most favorable acquisitions in the Twin Arrow merger was the 19 claims in Gypsum Valley in Montrose county, Colo., known as the American Eagle group. This mining operation has a producing record of more than $800,000 to this time and is grossing more than $14,000 per month on the labors of four men working an eight hour shift daily. Company officials report that they expect to increase the crew and the tonnage mined on this operation. Four faces of ore are available for mining.

Little Star was a full disclosure registration that came out during the summer of 1955. Stock was halted on sale while exploration was done on the firm's numerous acres of claims in Wyoming. Firm holds lands in the Pumpkin Buttes and others in the Powder River Basin and along the eastern counties in Wyoming.

Company is headed by A. Lloyd Powers of Casper, Wyo., successful head of Powers Elevation Service and associated with the oil industry in the Empire.

* * *

RECEIVED
MAR - 8 1956

Re: DMEA-3950

THE DENVER POST Sunday, March 4, 1956

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* * *

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MAR - 8 1956

3/13/56 lgm

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

RECEIVED
MAR - 8 1956

March 5, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Joint Report of Examination, Docket DMEA 3950 (Uranium), Twin Arrow Petroleum Corporation, American Eagle Mine, Montrose County, Colorado

Enclosed are the original and three copies of a joint Report of Examination on the subject property. Also included is a joint supplemental memorandum requested by the Field Team to clarify the original Report of Examination. Copies of correspondence between the applicant and the Grand Junction office were forwarded you with our letter of March 2, 1956.

The field examiners recommend a two-stage drilling program at a total estimated cost of $10,495.00, Government's participation $7,871.25. We concur in this recommendation. However, it appears to be controversial whether or not the northeast corner of the Mary Jane No. 1 claim should be included. It would definitely be to the advantage of the Government to have it included, and it is quite possible that the applicant might make a further effort to obtain a lease on the Mary Jane No. 1 should you decide this fraction should be included.

We have not asked for Owner's Consent to Lien on any claims pending your decision concerning the inclusion of the northeast corner of the Mary Jane No. 1 claim.

Nine extra copies of Figure 3 have been ordered for possible use in the contract and will be forwarded to you in a short time.

DMEA Field Team, Region III

Reviewed by
DMEA OPERATING COMMITTEE
3-12-56
(date)

By W. M. Traver
W. M. Traver
Executive Officer

Enclosures

RECEIVED MINERAL DEPOSITS
MAR 8 1956

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

RECEIVED
FEB 29 1956
GEOLOGICAL SURVEY
DENVER, COLORADO

DMEA
Date Rec'd.
MAR 2 1956
BUREAU OF MINES
Denver, Colorado

P. O. Box 360
Grand Junction, Colorado

February 27, 1956

TRANSMITTED
MAR 5 1956

Memorandum

To: DMEA Field Team, Region III

Through: J. F. Shaw
E. N. Harshman

From: J. William Hasler
M. H. Salsbury

Subject: DMEA 3950 (Uranium) Twin Arrow Petroleum Company, American Eagle Mine, Montrose County, Colorado

This memorandum is in reply to the DMEA Field Team's request for clarification of apparently conflicting statements in the joint report of examination on the subject docket.

The proposed DMEA exploration drilling, while it is laid out on ground controlled by the applicant, approaches within about 50 feet of the southwest boundary of the applicant's property (see figure 3 with the joint report).

The known habit of ore bodies on the property indicates that ore found in DMEA exploration might extend into the northeast corner of the Mary Jane No. 1 claim which is not owned or controlled by the applicant. While the proposed project is believed to be worthwhile without control of the designated corner of the Mary Jane, it would certainly be to the advantage of the Government to have it included.

The same is true of the fraction of ground just south of proposed DMEA hole No. 13 on figure 3. The applicants have located the American Eagle No. 9 claim, the outline of which is not shown on figure 3, to cover this fraction. Inasmuch as it is not valid, and the ground has been withdrawn from entry, it is immaterial whether the American Eagle No. 9 claim is added to the project or not.

Our position is that the project is worthwhile without the American Eagle No. 9 fraction, or the northeast corner of the Mary Jane No. 1, but it is recognized that there is room for a difference of opinion on this.

It is quite possible that the applicant might make a further effort to obtain a lease on the Mary Jane No. 1 if the matter was put to them strongly enough.

Reviewed by
DMEA OPERATING COMMITTEE
3-12-56
(date)

As suggested in the fourth paragraph of the Field Team's letter of February 15, 1956, the statement referred to at the bottom of page 7 of the joint report of examination should be changed to read "is not valid".

Attached are copies of the following correspondence with the applicant's representative:

(1) Letter from J. William Hasler to Twin Arrow Corporation, dated November 25, 1956.

(2) Letter from A. M. Biderman, Twin Arrow Corporation to J. William Hasler, dated December 3, 1955.

(3) Letter from A. M. Biderman, Twin Arrow Corporation to J. William Hasler, dated December 10, 1955.

(4) Letter from J. William Hasler to Boyd Oliver, Norwood, Colorado, dated December 21, 1955.

(5) Letter from A. M. Biderman, Twin Arrow Corporation to J. William Hasler, dated February 6, 1956.

In addition to the above we have two covering letters from Boyd Oliver which accompanied a copy of the original location certificate on American Eagle No. 9 claim, and an amended location certificate on the same. There is no information in either letter. You should have a copy of item No. 4 in your files, but we are sending another copy anyway.

M. H. Salsbury,
U. S. Bureau of Mines

J. William Hasler,
U. S. Geological Survey

MHS/mlr

Enclosures

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MAR - 8 1956

Date Rec'd

FEB 9 1956

BUREAU OF MINES
Denver, Colorado

Region III

Building 20
Denver Federal Center
Denver 2, Colorado
February 8, 1956

TRANSMITTED

MAR 5 1956

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: John F. Shaw
E. N. Harshman

Subject: DMEA Docket 3950 (Uranium) American Eagle Mine, Twin Arrow Petroleum Corporation, Montrose County, Colorado

Enclosed are the original and 9 copies of a Joint Examination report by D. D. Haynes, Geological Survey and M. H. Salsbury, Bureau of Mines covering examination of subject property.

The applicant requested Government assistance to explore for uranium on their American Eagle property by drilling two areas on 200 foot centers and one area on 500 foot centers. A second stage of offset drilling was also proposed. Although the applicant did not submit definite information on hole locations, drilling footages, and itemized costs, the exploration program was estimated to cost $50,000.00 and the Government's share at 75 percent would have been $37,500.00.

Part of the property has previously been drilled by the Geological Survey and the examining team concludes that the applicant's proposal includes exploration of areas which are outside of the limits of favorable ground as indicated by the results of the Geological Survey drilling.

The known ore deposits on the property and on adjacent claims are excellent examples of the so-called cigar-shaped ore bodies. They are very small in cross section and several hundred feet in length. The ore is found in rolls with sharply defined walls and apparently have no thin seams of mineralization extending out laterally from the roll. Very close spacing of drill holes is required to encounter this type of ore body.

The Examining Team concludes that there is a favorable, unexplored area on the American Eagle No. 9 claim and recommends a modified two-stage drilling program consisting of 1,905 feet of plug-bit and 1,575 feet of core drilling costing $10,495.00 with Government participation at 75 percent equal to $7,871.25. The proposed drill holes are spaced at 25 feet intervals and this is much closer than the spacing usually acceptable. In this instance, the close spacing is justifiable

Reviewed by
DMEA OPERATING COMMITTEE

3-12-56
(date)

due to the nature of the ore bodies found on the property. It is noted on figure 3, which shows the proposed drill hole locations, that there is a possibility of missing a split in the ore bodies unless at least one and possibly two drill holes are included along the fence line northeast of hole No. 1. It is recommended that hole No. 13 and possibly hole No. 12 be moved to positions 25 feet and 50 feet respectively, along the fence line and northeast of hole No. 1.

It is recommended that the exploration program proposed by the examining team, subject to the modification of relocating drill holes 13 and 12, be approved and a contract be prepared.

for Scott W. Hagen
John F. Shaw
Supervising Mining Engineer

E N Harshman

E. N. Harshman
Member Field Team

cc 9
EHarshman
DMEA 3950
Chron.

JFS/eh

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MAR - 8 1956

MINERAL DEPOSITS
DMEA
RECEIVED
JAN 26 1956
U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
P. O. BOX 360
GRAND JUNCTION, COLORADO

Reviewed by
DMEA OPERATING COMMITTEE
3-12-56
(date)

January 20, 1956

TRANSMITTED
MAR 5 1956

Memorandum

To: E. N. Harshman, DMEA Field Team, Region III

From: J. William Hasler

Subject: Transmittal of a report of field examination, DEMA docket 3950, (uranium) American Eagle group, Montrose County, Colorado.

Enclosed is a joint engineering and geologic report by D. D. Haynes, geologist, U. S. Geological Survey, and M. H. Salsbury, mining engineer, U. S. Bureau of Mines.

The Twin Arrow Petroleum Corporation, 901 Sherman Street, Denver 3, Colorado, applied for assistance to explore for uranium on the American Eagle property in Little Gypsum Valley, Montrose County, Colo. The application was referred to the field and an examination was made October 27.

The claims lie in the northwest end of Gypsum Valley, a collapsed salt anticline. The rocks exposed on the claims are those of the Salt Wash member of the Jurassic Morrison formation. The Salt Wash member on the American Eagle No. 0 claim dips about 15° to the southwest and the ore-bearing horizon ranges in thickness from 10 to 35 feet. The known mineralized material on and in the immediate vicinity of the claims lie almost entirely in two northwest trending roll-type deposits. These deposits are 1500 and 750 feet in length and range from 5 to 45 feet in width and have an average thickness of 4 feet. Almost all of the northern deposit on the American Eagle No. 0 claims has been mined out, having

RECEIVED
MAR - 8 1956

produced 10,974 tons, averaging 0.22 percent U_3O_8 and 2.4 percent V_2O_5. The Twin Arrow Petroleum Company is currently producing from one of these structures and it is concluded that the chances of finding ore of commercial grade and quantity southwesterly along the roll are good. Since the rolls are long and narrow, the spacing of diamond-drill holes to test the structure will, of necessity, have to be very close spaced; consequently, it is proposed to drill 13 holes along a fence normal to the trend of the roll, at intervals of 25 feet, as proposed in the accompanying report.

It is recommended that the application be approved and that a contract to do the work herein outlined be executed. I concur with the conclusions and recommendations of the examining team.

The Atomic Energy Commission has been consulted, although the working area was done by the Geological Survey, as well as by private industry.

Enclosed are the required number of maps, as well as the applicant's brochure.

J. William Hasler
J. William Hasler,
Geologist

JWH/mlr

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

RECEIVED
MAR - 8 1956

DEFENSE MINERALS EXPLORATION ADMINISTRATION

JOINT REPORT OF EXAMINATION BY EXAMINING TEAM
REGION III

TRANSMITTED
MAR 5 1956

DMEA 3950

AMERICAN EAGLE MINE

Twin Arrow Petroleum Corporation

Montrose County, Colorado

Uranium

Reviewed by
DMEA OPERATING COMMITTEE
3-12-56
(date)

Joint Engineering and Geologic Report

By

D. D. Haynes, Geologist
Geological Survey

M. H. Salsbury, Mining Engineer
Bureau of Mines

January 30, 1956

DMEA 3950

AMERICAN EAGLE MINE
TWIN ARROW PETROLEUM CORPORATION
MONTROSE COUNTY, COLORADO

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MAR 8 1958

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ILLUSTRATIONS

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1. Location Map, American Eagle Mine, Twin Arrow Petroleum Corporation, Montrose County, Colorado 4

2. Sketch Map showing area proposed for exploration by applicant and claims which are in apparent conflict with Judy No. 1 and parts of American Eagle claims, Twin Arrow Petroleum Corp., Montrose County, Colorado... 4

3. Sketch Map of American Eagle No. 0 and No. 8 and adjoining claims, showing U.S. Geological Survey drilling and proposed DMEA drill hole locations, Twin Arrow Petroleum Corporation, Montrose County, Colorado 2

DMEA 3950
American Eagle Mine
Twin Arrow Petroleum Corporation
Montrose County, Colorado

RECEIVED
MAR - 8 1956

INTRODUCTION AND SUMMARY

On August 17, 1955, the Twin Arrow Petroleum Corporation, 901 Sherman St., Denver 3, Colorado, applied for Defense Minerals Exploration Administration assistance in a plug-bit and core-drilling project to explore for uranium on portions of their American Eagle property in Little Gyp Valley, Montrose County, Colorado. Definite hole locations, drilling footages, and itemized costs were not presented. The applicant proposed to drill two areas on 200 foot centers and one area on 500 foot centers, to be followed by a second stage of offset holes on 50 foot centers around mineralized holes. The estimated cost was $50,000.00, in which Government participation at 75 percent would be $37,500.00.

A field examination was made on October 27, 1955 by a DMEA team, consiting of M. H. Salsbury, U. S. Bureau of Mines, D. D. Haynes, H. Olsen, U. S. Geological Survey, accompanied by Boyd Oliver, one of the owners of the property, who represented the applicant.

The American Eagle is one of the larger mines in the immediate area. Production through June 1955 has totaled over 10,000 tons of ore with an average content of 0.22 percent U_3O_8 and 2.43 percent V_2O_5. Indicated and inferred reserves total half of this amount. About 3,000 tons more have been mined from the property of the Vanadium Corporation of America which adjoins on the south. Another substantial deposit has been mined at the Raven Mine, one mile north.

The rocks exposed on the American Eagle claims are light gray and light brown sandstones interbedded with red and gray-green mudstones, all of which are units of the Salt Wash member of the Jurassic Morrison formation. The ore-bearing sandstone ranged from 10- to- 35-feet thick. The beds have a steep dip to the southwest, up to 16 degrees, and have been faulted downward in the same direction.

Ore found to date consists of two northwest-trending roll type deposits, 1500 and 750 feet long and from 5- to- 45-feet in width. The longer roll traverses the length of the American Eagle No. 0 and Gyp claims and has provided the major part of production to date.

The Geological Survey had a drilling project in this area which, supplemented by private drilling, resulted in discovery of a substantial portion of the ore now being mined on the property.

The applicant has proposed a drilling program which covers most of the claim area, apparently without taking into account the limits of favorable sandstone, or the probable long narrow shape of the targets.

It is concluded that, considering the probable limits of favorable ground, the only unexplored area which is likely to contain worthwhile ore deposits is in the south half of the American Eagle No. 0 claim, southwest of the long ore body. Wide spaced drilling is therefore not required. A drilling place to insure maximum exploration coverage must take into account the probable narrow width of the ore bodies and the sharply defined contact between ore and waste at the edges of ore bodies. A drilling pattern to fit these requirements appears to be a southwest-northeast fence of holes on 25-foot centers normal to the long axis of known ore bodies, to be followed by offset holes southeast and northwest of any mineralized holes (figure 3). This hole spacing is much less

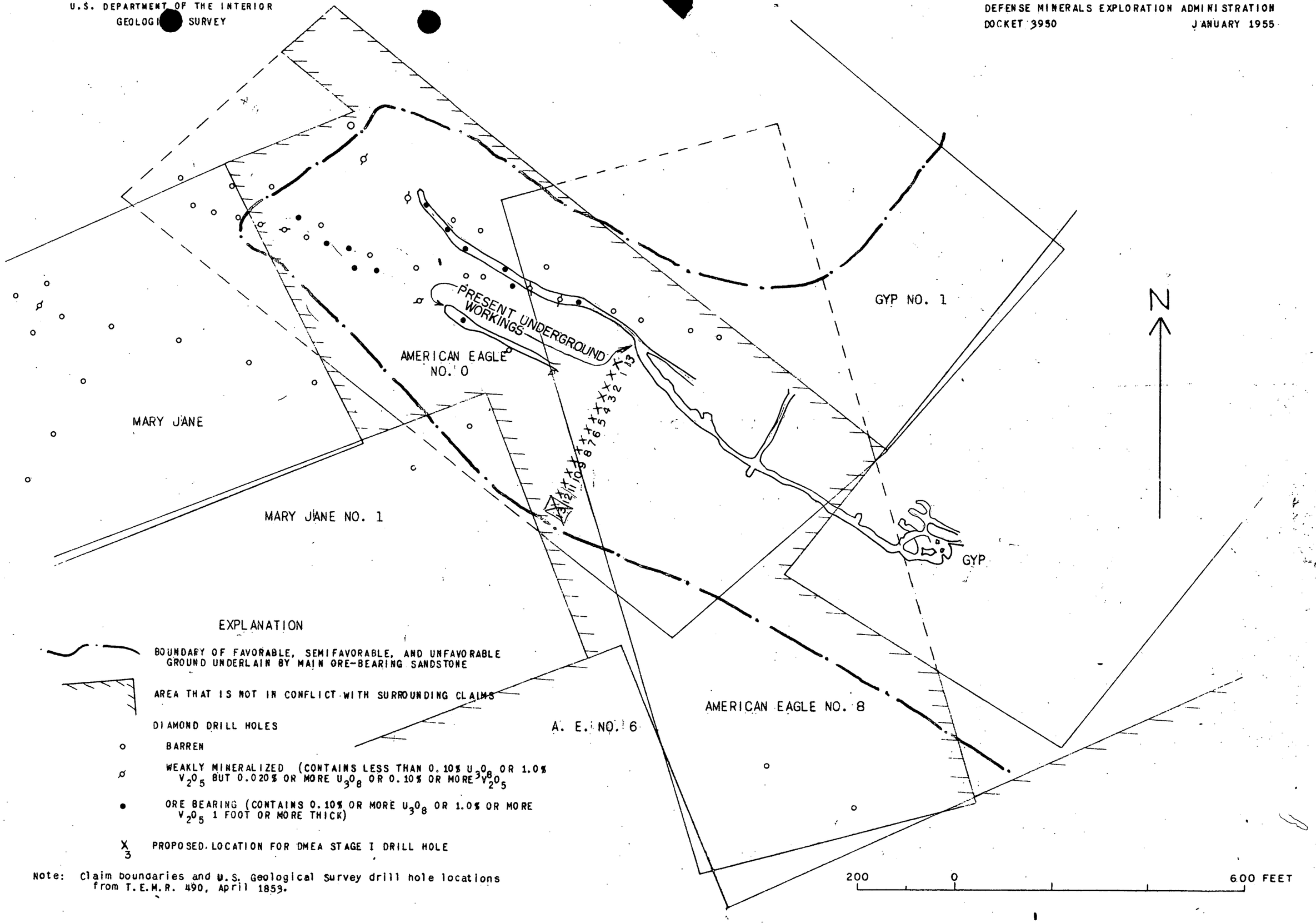


FIGURE 3. SKETCH MAP OF AMERICAN EAGLE NO. 0 AND NO. 8 AND ADJOINING CLAIMS, SHOWING U.S. GEOLOGICAL SURVEY DRILLING AND PROPOSED D.M.E.A. DRILL HOLE LOCATIONS, TWIN ARROW PETROLEUM CORPORATION, MONTROSE COUNTY, COLO.

than the normal minimum for DMEA projects, but it is dictated by the geologic conditions. Holes on wider spacing might easily pass within a few feet of a substantial ore body and yet gives no indication of it.

It is believed that the chances of finding a significant ore body within a rather limited area are good and a modified program, consisting of a fence of 13 holes on 25 foot centers in the first stage and 8 holes offsetting Stage I holes on 50 foot centers to the northwest and southeast, is recommended for approval. The estimated cost is $10,495.00 in which Government participation at 75 percent would be $7,871.25.

ACKNOWLEDGMENTS

The applicant furnished an engineering report on the property together with maps, drill logs, and other pertinent information. Mr. Boyd Oliver, a part owner of the American Eagle Mine, was present at the applicant's request but was not authorized to act for them at that time. He was later authorized as the applicant's representative insofar as the DMEA project is concerned.

The Atomic Energy Commission was consulted, but did not furnish direct information because Government exploration in the area was done by the Geological Survey.

The results of this work were incorporated in a report[1] which was available to the examining team.

1/ Brew, D. A., "Development Drilling on the American Eagle Group, Gypsum Valley District, Montrose County, Colorado". Trace Elements Memorandum Report 490, April 1953.

LOCATION, TOPOGRAPHY AND CLIMATE

The American Eagle mine is on a group of 11 located claims in secs. 3 and 10, T. 45 N., R. 19 W., New Mexico Principal Meridian, Sylvia Mining District, Montrose County, Colorado (Figures 1 and 2). It is in Little Gyp Valley, 20 miles northwest of the junction of the Gypsum Valley access road and Colorado State Highway 80, 46 miles from Naturita,Colorado, the nearest town, and 193 miles from Grand Junction, Colorado, the nearest major supply center. There are uranium ore buying stations at Naturita and at Uravan, Colorado.

The claims are located at an altitude of about 5,700 feet in an area of moderate relief overlooking the valley floor. The property is easily accessible.

The climate is arid with hot summers and moderately severe winters with occasional heavy storms in any season. Year around surface operations are feasible, and access is easy except for short periods in the spring or after storms.

Timber cover is sparse, and mining timber must be hauled from Naturita, or Norwood, Colorado. Drilling water can be obtained from the Dolores river, five miles from the mine, or, from nearby springs or surface flows. Power needs for exploration must be furnished by the operator.

A small camp has been established at the mine for the lessees who operate it. Additional quarters would be required for drilling personnel, probably in the form of house trailers furnished by a drilling contractor, who would also supply labor and equipment.

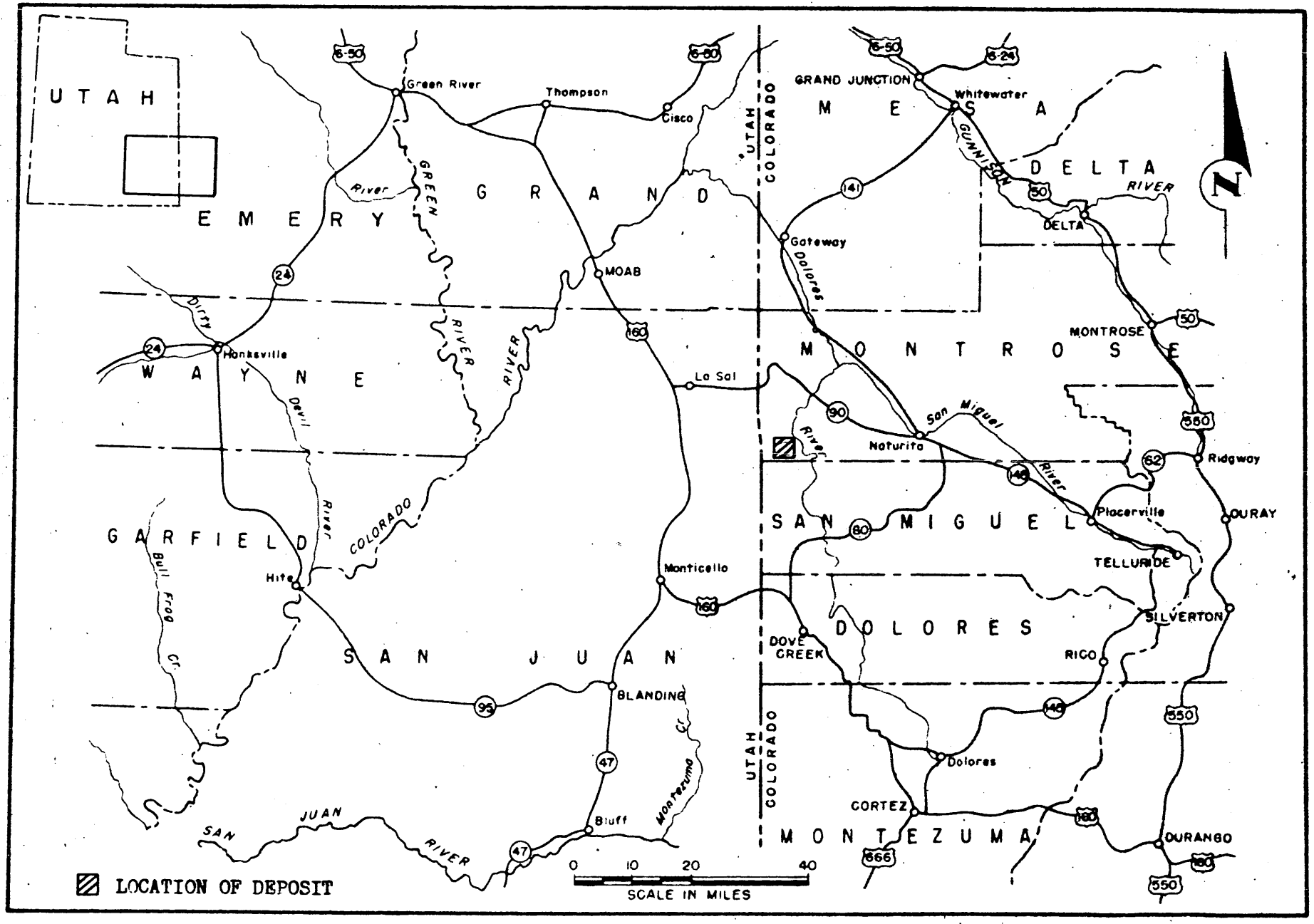
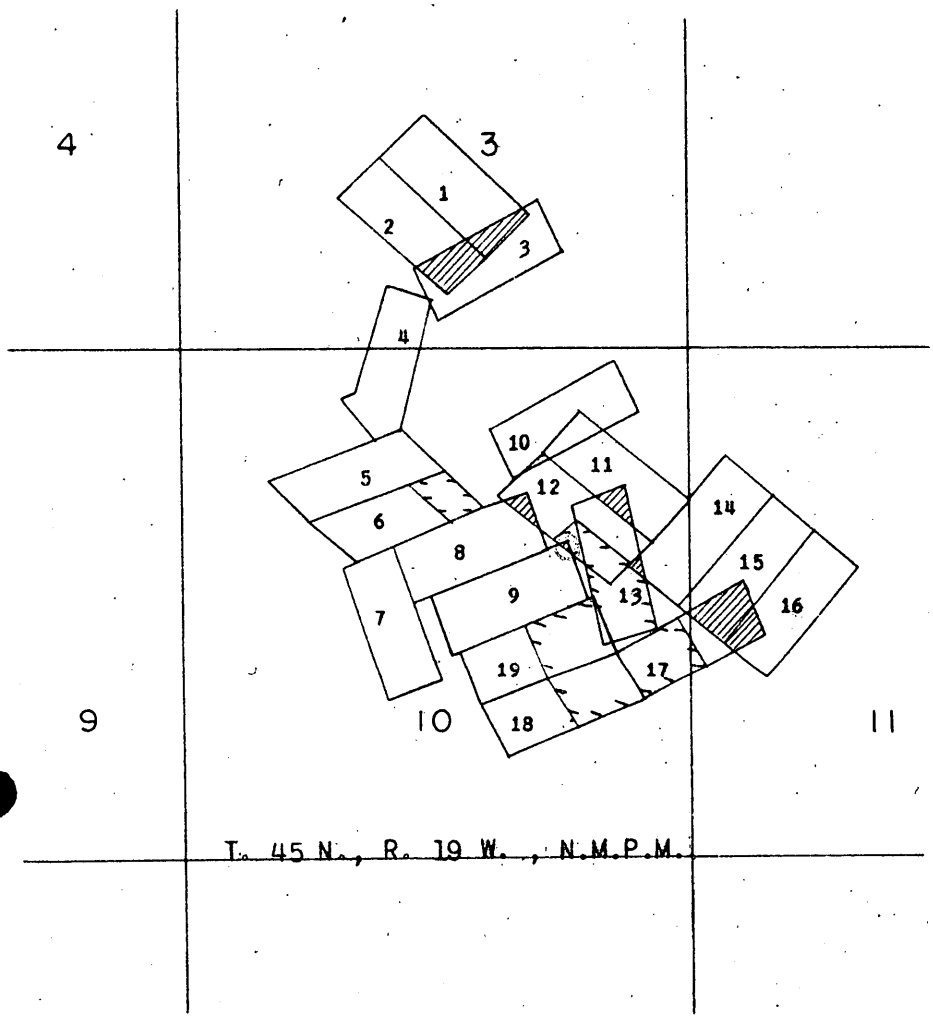


FIGURE 1 - LOCATION MAP, AMERICAN EAGLE MINE, TWINARROW PETROLEUM CORPORATION, MONTROSE COUNTY, COLO. DMEA 3950



CLAIM INDEX

1 AMERICAN EAGLE NO 4
2 AMERICAN EAGLE NO. 3
3 BROOKE NO. 2
4 AMERICAN EAGLE NO. 2
5 AMERICAN EAGLE NO. 1
6 AMERICAN EAGLE
7 AMERICAN EAGLE NO. 5
8 MARY JANE
9 MARY JANE NO. 1
10 GYP NO. 2
11 GYP NO. 1
12 AMERICAN EAGLE NO. 0
13 AMERICAN EAGLE NO. 8
14 GYP
15 MIRACLE NO. 1
16 MIRACLE NO. 2
17 JUDY NO. 1
18 AMERICAN EAGLE NO. 7
19 AMERICAN EAGLE NO. 6

N

EXPLANATION

AREA PROPOSED FOR EXPLORATION BY APPLICANT

AREA IN APPARENT CONFLICT WITH APPLICANTS CLAIMS

Note: LAND LINES FROM U.S. GEOLOGICAL SURVEY ANDERSON MESA QUADRANGLE, COLORADO.
CLAIM BOUNDARIES FROM U.S. GEOLOGICAL SURVEY DATA.

2000 0 6000 FEET

FIGURE 2. SKETCH MAP SHOWING AREA PROPOSED FOR EXPLORATION BY APPLICANT AND CLAIMS WHICH ARE IN APPARENT CONFLICT WITH JUDY NO. 1 AND PARTS OF AMERICAN EAGLE CLAIMS, TWIN ARROW PETROLEUM CORPORATION, MONTROSE COUNTY, COLORADO.

HISTORY, PRODUCTION AND OWNERSHIP

Operations have been carried on in Little Gyp Valley since 1939 on the vanadium-uranium occurrences of the area, and the history of exploration dates back to the 1920's. The major oreshoot in the American Eagle mine is a continuation of ore discovered in 1939 on the Gyp claim of the Vanadium Corporation of America which lies south of the American Eagle No. 0. It was thought at that time that the main ore bodies were in ground south of the Gyp claim and the area of the present American Eagles claims was relinquished by the Corporation.

The American Eagle, and American Eagle Nos. 1 to 5 (fig. 2) were located on February 2, 1949 by Woodrow E. Gripe and Boyd Oliver of Norwood, Colorado and filed on March 1, 1949 in book 296, pages 469-475. Filings on other claims of the Group were made in May 1950. Following are the recording data:

Filed in Montrose County Courthouse

Claim	Book	Page
American Eagle	296	469
American Eagle No. 0	213	299
American Eagle No. 6	296	475
American Eagle No. 7	296	476
American Eagle No. 8	213	290
Judy No. 1	349	340
American Eagle No. 1	296	470
American Eagle No. 2	296	471
American Eagle No. 3	296	472
American Eagle No. 4	296	473
American Eagle No. 5	296	474

The locations appear to be valid, and conflicts with surrounding claims well defined. The locations were made prior to the withdrawal of the area by the Atomic Energy Commission. The claim map submitted by the applicant agrees with the position of various claims shown on maps in Geological Survey files, with one exception. According to Geological Survey data, the conflict between the northeast corner of the Mary Jane No. 1 and the American Eagle No. 0 is of greater extent than indicated on the applicant's map. The Mary Jane No. 1 is a prior location, having been filed in April 1944 in Book 296, page 305. However, the modified DMEA drilling has been laid out to avoid the ground in conflict as shown by Geological Survey data (fig. 2).

Other possible conflicts, namely, that of the Brooks No. 2 claim with the American Eagle Nos. 3 and 4, of the Miracle claim with the Judy No. 1, and of the Gyp No. 2 claim with the extreme northeast corner of the American Eagle No. 0 claim, are of no importance as far as the proposed DMEA project is concerned.

There is a small area of open ground shown on figure 2 between the American Eagle No. 0 and Mary Jane No. 1 claims which Mr. Oliver stated has been covered by a later location and is included in the group acquired by the applicant. It would have been advantageous to have this ground included in the proposed DMEA project for the Government's protection, and it was suggested to Mr. Oliver. A copy of the location notice for the American Eagle No. 9 claim which covers this fraction was furnished the examining team. Investigation shows that the original date of location August 10, 1954 is subsequent to the date of withdrawal of the area by the Atomic Energy Commission, June 15, 1953, and the location is not valid.

The American Eagle group was sold by Boyd Oliver and Gale Oliver, the latter presumably successor to Woodrow E. Gripe, to Twin Arrow Petroleum Corporation for a cash consideration of $39,000.00, 200,000 shares of the Corporations, Class A Common Stock and an additional $111,000.00 to be paid out of ore returns. Inasmuch as the claims revert to the sellers in the event that the buyer defaults on contract terms, a subordination agreement will probably be required from Boyd and Gale Oliver if an exploration contract is executed.

See a letter to the Grand Junction DMEA office dated December 3, 1955. The applicant mentioned the possibility of excluding all or part of the American Eagle No. O claim from the proposed project because it covers the current mining operation, production from which would be subject to DMEA royalty. The drilling sites in the modified program are all on the south end of the American Eagle No. O claim, so it will certainly be necessary to include the south half of the claim. It would be difficult to define a boundary which would exclude ground now being mined and still protect the Government's interest because operations from the No. 3 incline are advancing southward toward the proposed DMEA project area. Therefore, the American Eagle No. O claim is considered to be essential to the project. While that part of the American Eagle No. 8 not overlapping the American Eagle No. O claim will not be drilled, it would be advisable to have it included in a DMEA contract. The applicant does not control any other ground which could be considered essential to the project, inasmuch as the title to the American Eagle No. 9 claim ~~does~~ is not ~~appear to be~~ valid. There would be an advantage to the Government in having the northeast corner of the

Mary Jane No. 1 claim, which is in conflict with the American Eagle No. O, included, because the extension of any ore found near the southwest sideline of the American Eagle No. O might cross into the corner of the Mary Jane No. 1. It was suggested to the applicant that a lease on the Mary Jane No. 1 might be of benefit to the proposed project, but no action has been taken so far as is known.

PRESENT STATUS

Exploration and Development

The American Eagle No. O claim has been extensively explored, both by the Geological Survey and by private work. The location of 38 Survey drill holes is shown on figure 3. Of these, 12 were ore holes and 9 were mineralized. The Survey drilled 12 additional holes on the adjoining Mary Jane claim with negative results. Most of the private drilling was done in the immediate vicinity of the known ore bodies mainly to block out ore. A list of 91 wagon drill holes was furnished in the application. Data included depth and thickness of mineralization in ore holes but no radiometric or chemical determinations to indicate grade of ore. In addition, two northeast-southwest fences of privately drilled holes northeast of the main oreshoot on the American Eagle No. O claim are indicated on a map in Trace Elements Memorandum Report 490 referred to under acknowledgments. No specific mention of these holes was made by the applicant. It can be assumed that they are barren. The area in which the modified DMEA project is located has not been drilled so far as could be seen on the grounds or indicated in reports.

The main or northeast ore body has been developed by two access inclines from the surface and more than 1,000 feet of flat incline drifts following the ore. A third incline has been sunk to the southwest ore body and production is being made. Mining operations are also being continued on the original ore body with production coming from ore left along the walls and the northwest continuation of the roll.

Mining and Milling Equipment and Other Facilities

Equipment on the property includes 3 cabins, with living quarters for 6 persons, 2 gasoline powered hoists at the inclines, 2 gasoline powered portable compressors, drilling equipment, miscellaneous air hoists, ore cars and steel ore bins.

GEOLOGY

Regional geology

The subject claims lie at the northwest end of Gypsum Valley, a collapsed salt anticline. The structure, stratigraphy, and geologic history of Gypsum Valley are discussed and shown in detail on the U. S. Geological Survey Preliminary Oil and Gas Map No. 93.

Local geology

The rocks exposed on the subject claims are those of the Salt Wash member of the Jurassic Morrison formation. The Slat Wash consists of light-gray to light-brown sandstone lenses interbedded with red and gray-green mudstones.2/ The sandstone lenses range in thickness from 10 to 60 feet. The mudstone beds range in thickness from thin splits less than a foot thick to more than 60 feet.

2/ U. S. Geol. Survey Trace Elements Mem. Rept. 490.

The Salt Wash member, on the American Eagle No. O claim, dips approximately 16 degrees to the southwest. The ore-bearing horizon ranges in thickness from 10 to 35 feet. Holes should be drilled through the ore-bearing horizon and bottomed in the underlying mudstone lens. Hole depths would range from 115 to 220 feet.

Ore deposits

The known mineralized material on and in the immediate vicinity of the subject claims lies almost entirely in two northwest trending roll-type deposits in the American Eagle No. O claim and the Gyp claim, owned by the Vanadium Corporation of America. These deposits are 1,500 and 750 feet in length, range from 5- to- 45-feet in width, and have an average thickness of 4 feet. Almost all the northern deposit on the American Eagle No. O claim has been mined out, having produced, through June 1955, 10,974 tons averaging 0.22 percent U_3O_8 and 2.43 percent V_2O_5. The reserves on the northern deposit on American Eagle No. O claim consist of 5,445 tons of indicated and inferred ore averaging 0.25 percent U_3O_8 and 2.42 percent V_2O_5. The production from the Gyp and the Gyp 1, 2, and 3 claims, owned by VCA, totals 3,000 tons averaging 0.14 percent U_3O_8 and 1.24 percent V_2O_5.

The ore deposits have an approximate N. 50 degrees W. trend and appear to have an en echelon pattern. Any exploration program that is outlined should be drilled on close enough spacing, at approximately right angles to the trend, so as not to miss any ore deposits that may be present on the American Eagle No. O claim.

Outlined on figure 3 is the ground delineated, by U. S. Geological Survey drilling, as favorable for the occurrence of uranium deposits.

Within this favorable area the ore-bearing sandstone has a thickness of more than 20 feet, is fine- to- coarse-grained, contains interstitial gray-green mudstone and is underlain by gray-green mudstone.

ORE RESERVES

Current reserve figures for the American Eagle mine, obtained from the Atomic Energy Commission, total 5,445 tons of indicated and inferred ore averaging 0.25 percent U_3O_8 and 2.42 percent V_2O_5. Ore reserves calculated by the applicant's consultant as of August 1, 1954 totaled 8,457 tons of ore. Subtracting 3500 tons of ore shipped between August 1954 and June 1955, the difference, about 5000 tons, checks reasonably well with current AEC figures. It will be noted that the uranium content of the reserves as calculated by the AEC is .03 percent more than the average content of actual shipments. The maximum initial production bonus on the American Eagle Group has already been paid.

In section 3b, page 3, of the contract of sale included with the application, reference is made to an ore deposit delimited by 3 wagon drill holes on the American Eagle No. 8 claim not shown on the consultant's map. No data has been furnished on such an ore deposit.

PROPOSED EXPLORATION

The applicant proposed a drilling program covering portions of the American Eagle, American Eagle Nos. 0, 6, 7, and 8, and the Judy No. 1 claims at an estimated cost of $50,000.00. Certain areas were to be drilled on 200 foot centers to be followed by offsets around mineralized holes on 50 foot centers or as close as the Government would permit.

It was also proposed that any unexpended funds be used to drill the balance of the claim area on 500-foot centers. No drill sites were indicated and the drilling proposal does not appear to have been planned with reference to the limits of favorable ground as determined by the Geological Survey, known geology, and the habit of ore deposition.

A modified program of drilling which covers a limited unexplored portion of the American Eagle No. O claim within the favorable area as shown on figure 3, has been agreed upon in conference with the applicant's representative. This program would be set up in two stages. In the first stage, 13 plug-bit and core holes would be drilled on 25-foot centers in a fence normal to the long axis of the known ore bodies, extending southwesterly from a point about 300 feet southeast of U.S.G.S. drill hole GV 213, to within 70 feet of the property boundary. This would require an estimated maximum of 1,225 feet of plug-bit and 975 feet of core drilling. Stage II would provide for a maximum of 8 offset holes on 50-foot centers northwest and southeast of any Stage I holes which cut significant mineralization. A maximum of 4 holes would be permitted around any Stage I hole.

A table of estimated drilling depths based on data from Geological Survey drilling follows:

Estimated drilling distances

Hole No.	Plug-Bit 0-100 ft.	Plug-Bit 100-200 ft.	Core 0-100 ft.	Core 100-200 ft.	Core 200-300 ft.	Total
1	40		60	15		115
2	45		55	20		120
3	50		50	25		125
4	60		40	35		135
5	70		30	45		145
6	85		15	60		160
7	100			75		175
8	100	10		75		185
9	100	20		75		195
10	100	25		75		200
11	100	33		67	8	208
12	100	40		60	15	215
13	100	47		53	22	222
Totals	1,050	175	250	680	45	2,200

The estimated coring interval of 75 feet would permit taking core from a point 10 feet above the ore-bearing sandstone, and bottoming holes 5 feet into the underlying mudstone. Holes should be drilled consecutively from northeast to southwest. After one or two holes are completed and evaluated, it may be possible to cut down on the coring depth, depending on the thickness of the ore-bearing sandstone, and the presence or absence of a mudstone split, which was cut further northwest. If the split is present it is probably not necessary to drill below it. The 25-foot hole spacing in Stage I is much less than normally permitted in a DMEA project, but the unique ore occurrence makes it necessary to insure that a probable long narrow ore-body would not be missed by wider spaced drill holes.

Stage II drilling is proposed with 4 fifty-foot offsets northwest and southeast of each Stage I hole with significant mineralization, because the long axis of known ore bodies has this bearing. A maximum

of 8 Stage II holes requiring an estimated 760 feet of plug-bit and 600 feet of core drilling is proposed. If one or both of the first pair of holes northwest and southeast of a mineralized Stage I hole penetrates ore, perhaps the third and fourth holes in the group need not be drilled.

The completion time for Stage I is estimated at 5 weeks allowing for operation of one rig at the rate of 2,000 feet per month with a few days allowed for evaluation of drilling results in the first holes completed. Stage II is estimated to require a maximum of four weeks, including one week for evaluation of Stage I results, and action by the DMEA Field Team on Stage II proposals.

The applicant submitted two bids from independent contractors. The bids were for a minimum of 16,000 feet of plug-bit drilling and 4,000 feet of core drilling and were nearly identical, as shown in the following table:

	Bid price per foot							
	Plug-Bit				Core			
Contractor	0-100	100-200	200-300	300-400	0-100	100-200	200-300	300-400
Pacific Western Exploration Co.	1.58	1.83	2.25	2.85	2.90	3.15	3.60	4.40
Southern Geophysical Co.	1.60	1.85	2.25	2.85	2.95	3.20	3.60	4.40

Both of the above contractors offered to undertake supervision, including direction planning, preparation and planning of the program, with a full time geological field assistant for sampling and hole probing, for an additional fee of $0.50 per foot.

The applicant was requested by the examining team to submit three bids based on the reduced footages in the modified program, but to date these have not been received. However, the prices quoted in the original

bids would not be out of line for the smaller footages estimated in the modified program. The lower of the bids has been used in the following estimate even though the usual three bids required were not submitted. The average unit prices for plug and core drilling for contract purposes were arrived at as follows:

STAGE I

Plug drilling Depth			
0-100 feet	1,050 feet at $1.58 per foot	or	$ 1,659.00
100-200 feet	175 feet at $1.83 per foot	or	320.25
Average	1,225 feet at $1.61 per foot	or	1,972.25

Core drilling Depth			
0-100 feet	250 feet at $2.90 per foot	or	$ 725.00
100-200 feet	680 feet at $3.15 per foot	or	2,142.00
200-300 feet	45 feet at $3.60 per foot	or	162.00
Average	975 feet at $3.11 per foot	or	3,032.25

COST ESTIMATE

Stage I
(Estimated time for completion-5 weeks)

1. Independent contracts

Bulldozing for access roads and drill sites
16 hours at $12.00 per hour..... $192.00
1 move in and move out for
bulldozer..... 50.00

Total for access roads and drill sites..$242.00

Drilling
1,225 feet of plug-bit drilling
at $1.61 per foot.....$1972.25
975 feet of core drilling at
$3.11 per foot..... 3032.25
Total drilling contract $5004.50
Total independent contracts $5246.50

2. Labor and Supervision

Labor	None	
1 geologist-supervisor, full-time 1-1/4 mos. at $600.00 per month	$ 750.00	
Total labor and supervision		$750.00

3. Operating Materials and Supplies

Gasoline, oil and repairs on jeep or pickup for Supervisor-geologist 1-1/4 mos. at $50.00 per month	62.50	
32 wooden core boxes, or equivalent to box 975 feet of BX core at $3.50 ea.	112.00	
Total Operating Supplies		$174.50

4. Operating Equipment

Rental	None	
Purchase	None	
Depreciation		
1 jeep or pickup valued at	1800.00	
1 Babbel counter and probe valued at	800.00	
	$2600.00	
Depreciation on 60 month basis $\frac{2600}{60}$ = $43.33 per month		
Depreciation for 1-1/4 months	54.16	
Total Operating Equipment		$ 54.16

5. and 6. - No initial rehabilitation repairs, new buildings or equipment.

7. Miscellaneous

Accounting 1-1/4 months	$ 25.00	
Sampling and analyses, 25 samples analyzed for U_3O_8 and V_2O_5 at $5.00 each	125.00	
Compensation insurance, payroll taxes, etc. on geologist-supervisor's salary at 6 percent of $750.00	45.00	
Total Miscellaneous		$195.00

Breakdown of Costs

	Total	Plug-Bit	Core
Independent Contracts			
Bulldozing access roads & drill sites	$ 242.00	$130.00	$ 112.00
Drilling			
1225 feet of plug-bit at $1.61	1972.25	1972.25	
975 feet of core drilling at $3.11	3032.25		3032.25
Labor and Supervision	750.00	250.00	500.00
Operating Materials & Supplies	174.50	30.00	144.50
Operating Equipment	54.16	17.50	36.66
Misc. (less assaying)	25.00	10.00	15.00
Compensation Insurance	45.00	15.00	30.00
Total (less assaying)	6295.16	2424.75	3870.41
Cost per foot		1.98	3.97
25 samples at $5.00	125.00		

Summary of Costs

Stage I

1225 feet of plug-bit drilling at	$ 2.00	$ 2450.00
975 feet of core drilling at	4.00	3900.00
25 samples at $5.00	5.00	125.00
Total Stage I		$ 6475.00
Government participation		4856.25

Stage II

760 feet of plug-bit drilling at	$ 2.00	$ 1520.00
600 feet of core drilling at	4.00	2400.00
20 chemical assays at	5.00	100.00
Total Stage II		$ 4020.00
Government participation		3015.00
Total estimated cost of contract		$ 10495.00
Total amount of Government Participation		$ 7871.25

PROPOSED FINANCING

The applicant proposed to furnish the corporation's share of the cost in money.

CONCLUSIONS AND RECOMMENDATIONS

It is concluded that the applicant's proposal includes exploration of areas which are outside of the limits of favorable ground as indicated by the results of Geological Survey drilling on the claims. The full amount of drilling requested is therefore not justified. There is, however, an unexplored area at the south end of the American Eagle No. 0 claim, lying southwest of the long ore body already developed, which appears to be favorable for the occurrence of uranium ore deposits.

Ore of the average grade shipped so far from the American Eagle mine operation, 0.22 percent U_3O_8 and 2.43 percent V_2O_5, while not high in Uranium content, has enough vanadium in it to make a profitable product even though the initial production bonus for uranium has been exhausted. The value of such ore is calculated as $31.54 per ton including development allowance, but without haulage allowance and initial production bonus. Ore of this grade, and in tonnages which can reasonably be expected in the exploration area, would be profitable and would contribute a significant amount to the nation's stockpile.

Exploration by drilling in two stages consisting of 1225 feet of plug-bit and 975 feet of core-drilling in the first stage and 760 feet of plug-bit and 600 feet of core-drilling in the second stage at an estimated cost of $10,495.00, is recommended for approval. Government participation at 75 percent would be $7,871.25.

An allowance under depreciation is made for use of a Babbel counter and probe. It is assumed that this service will be done by the geologist-supervisor as part of his work. This would be in addition to any gamma ray logging by a DMEA logging unit.

3/8/56 Lym

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

RECEIVED MAR - 6 1956

March 5, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Joint Report of Examination, Docket DMEA 3950 (Uranium), Twin Arrow Petroleum Corporation, American Eagle Mine, Montrose County, Colorado

Enclosed are the original and three copies of a joint Report of Examination on the subject property. Also included is a joint supplemental memorandum requested by the Field Team to clarify the original Report of Examination. Copies of correspondence between the applicant and the Grand Junction office were forwarded you with our letter of March 2, 1956.

The field examiners recommend a two-stage drilling program at a total estimated cost of $10,495.00, Government's participation $7,871.25. We concur in this recommendation. However, it appears to be controversial whether or not the northeast corner of the Mary Jane No. 1 claim should be included. It would definitely be to the advantage of the Government to have it included, and it is quite possible that the applicant might make a further effort to obtain a lease on the Mary Jane No. 1 should you decide this fraction should be included.

We have not asked for Owner's Consent to Lien on any claims pending your decision concerning the inclusion of the northeast corner of the Mary Jane No. 1 claim.

Nine extra copies of Figure 3 have been ordered for possible use in the contract and will be forwarded to you in a short time.

DMEA Field Team, Region III

Reviewed by
DMEA OPERATING COMMITTEE
3-12-56
(date)

By W. M. Traver
W. M. Traver
Executive Officer

Enclosures

IN REPLY REFER TO:

RECEIVED

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

MAR 8 1956

FEB 29 1956

DMEA
Date Rec'd.
MAR 2 1956

P. O. Box 360
Grand Junction, Colorado

U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO

February 27, 1956

BUREAU OF MINES
Denver, Colorado

Memorandum

TRANSMITTED
MAR 5 1956

To: DMEA Field Team, Region III

Through: J. F. Shaw
E. N. Harshman

From: J. William Hasler
M. H. Salsbury

Subject: DMEA 3950 (Uranium) Twin Arrow Petroleum Company, American Eagle Mine, Montrose County, Colorado

This memorandum is in reply to the DMEA Field Team's request for clarification of apparently conflicting statements in the joint report of examination on the subject docket.

The proposed DMEA exploration drilling, while it is laid out on ground controlled by the applicant, approaches within about 50 feet of the southwest boundary of the applicant's property (see figure 3 with the joint report).

The known habit of ore bodies on the property indicates that ore found in DMEA exploration might extend into the northeast corner of the Mary Jane No. 1 claim which is not owned or controlled by the applicant. While the proposed project is believed to be worthwhile without control of the designated corner of the Mary Jane, it would certainly be to the advantage of the Government to have it included.

The same is true of the fraction of ground just south of proposed DMEA hole No. 13 on figure 3. The applicants have located the American Eagle No. 9 claim, the outline of which is not shown on figure 3, to cover this fraction. Inasmuch as it is not valid, and the ground has been withdrawn from entry, it is immaterial whether the American Eagle No. 9 claim is added to the project or not.

Our position is that the project is worthwhile without the American Eagle No. 9 fraction, or the northeast corner of the Mary Jane No. 1, but it is recognized that there is room for a difference of opinion on this.

It is quite possible that the applicant might make a further effort to obtain a lease on the Mary Jane No. 1 if the matter was put to them strongly enough.

Reviewed by
DMEA OPERATING COMMITTEE

3-12-56
(date)

As suggested in the fourth paragraph of the Field Team's letter of February 15, 1956, the statement referred to at the bottom of page 7 of the joint report of examination should be changed to read "is not valid".

Attached are copies of the following correspondence with the applicant's representative:

(1) Letter from J. William Hasler to Twin Arrow Corporation, dated November 25, 1956.

(2) Letter from A. M. Biderman, Twin Arrow Corporation to J. William Hasler, dated December 3, 1955.

(3) Letter from A. M. Biderman, Twin Arrow Corporation to J. William Hasler, dated December 10, 1955.

(4) Letter from J. William Hasler to Boyd Oliver, Norwood, Colorado, dated December 21, 1955.

(5) Letter from A. M. Biderman, Twin Arrow Corporation to J. William Hasler, dated February 6, 1956.

In addition to the above we have two covering letters from Boyd Oliver which accompanied a copy of the original location certificate on American Eagle No. 9 claim, and an amended location certificate on the same. There is no information in either letter. You should have a copy of item No. 4 in your files, but we are sending another copy anyway.

M. H. Salisbury
M. H. Salisbury,
U. S. Bureau of Mines

J. William Hasler
J. William Hasler,
U. S. Geological Survey

MHS/mlr

Enclosures

DMEA
Date Rec'd.

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BUREAU OF MINES
Denver, Colorado

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MAR - 8 1956

Region III

Building
Denver Feder
Denver 2, Colo
February 8, 1956

Memorandum

To: Executive Officer, DMEA Field Team, Region III

TRANSMITTED
MAR 5 1956

From: John F. Shaw
E. M. Harshman

Subject: DMEA Docket 3950 (Uranium) American Eagle Mine, Twin Arrow Petroleum Corporation, Montrose County, Colorado

Enclosed are the original and 9 copies of a Joint Examination report by D. D. Hayman, Geological Survey and M. H. Salsbury, Bureau of Mines covering examination of subject property.

The applicant requested Government assistance to explore for uranium on their American Eagle property by drilling two areas on 200 foot centers and one area on 500 foot centers. A second stage of offset drilling was also proposed. Although the applicant did not submit definite information on hole locations, drilling footages, and itemized costs, the exploration program was estimated to cost $50,000.00 and the Government's share at 75 percent would have been $37,500.00.

Part of the property has previously been drilled by the Geological Survey and the examining team concludes that the applicant's proposal includes exploration of areas which are outside of the limits of favorable ground as indicated by the results of the Geological Survey drilling.

The known ore deposits on the property and on adjacent claims are excellent examples of the so-called cigar-shaped ore bodies. They are very small in cross section and several hundred feet in length. The ore is found in rolls with sharply defined walls and apparently have no thin seams of mineralization extending out laterally from the roll. Very close spacing of drill holes is required to encounter this type of ore body.

The Examining Team concludes that there is a favorable, unexplored area on the American Eagle No. 0 claim and recommends a modified two-stage drilling program consisting of 1,985 feet of plug-bit and 1,575 feet of core drilling costing $10,495.00 with Government participation at 75 percent equal to $7,871.25. The proposed drill holes are spaced at 25 feet intervals and this is much closer than the spacing usually acceptable. In this instance, the close spacing is justifiable

Reviewed by
DMEA OPERATING COMMITTEE

due to the nature of the ore bodies found on the property. It is noted on figure 3, which shows the proposed drill hole locations, that there is a possibility of missing a split in the ore bodies unless at least one and possibly two drill holes are included along the fence line northeast of hole No. 1. It is recommended that hole No. 13 and possibly hole No. 12 be moved to positions 25 feet and 50 feet respectively, along the fence line and northeast of hole No. 1.

It is recommended that the exploration program proposed by the examining team, subject to the modification of relocating drill holes 13 and 12, be approved and a contract be prepared.

Scott W. Hazeltz
for John F. Shea
Supervising Mining Engineer

E. N. Harshman

E. N. Harshman
Member Field Team

cc 9
EHHarshman
DMMA 3950
Chron.

JFS/ch

RECEIVED MINERAL DEPOSITS DMEA RECEIVED
MAR - 8 1956 JAN 26 1956

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
P. O. BOX 360
GRAND JUNCTION, COLORADO

U. S. GEOLOGICAL SURVEY DENVER, COLORADO

Reviewed by
DMEA OPERATING COMMITTEE
3-12-56
(date)

January 20, 1956

TRANSMITTED
MAR 5 1956

Memorandum

To: E. N. Harshman, DMEA Field Team, Region III

From: J. William Hasler

Subject: Transmittal of a report of field examination, DEMA docket 3950, (uranium) American Eagle group, Montrose County, Colorado.

Enclosed is a joint engineering and geologic report by D. D. Haynes, geologist, U. S. Geological Survey, and M. H. Salsbury, mining engineer, U. S. Bureau of Mines.

The Twin Arrow Petroleum Corporation, 901 Sherman Street, Denver 3, Colorado, applied for assistance to explore for uranium on the American Eagle property in Little Gypsum Valley, Montrose County, Colo. The application was referred to the field and an examination was made October 27.

The claims lie in the northwest end of Gypsum Valley, a collapsed salt anticline. The rocks exposed on the claims are those of the Salt Wash member of the Jurassic Morrison formation. The Salt Wash member on the American Eagle No. 0 claim dips about 15° to the southwest and the ore-bearing horizon ranges in thickness from 10 to 35 feet. The known mineralized material on and in the immediate vicinity of the claims lie almost entirely in two northwest trending roll-type deposits. These deposits are 1500 and 750 feet in length and range from 5 to 45 feet in width and have an average thickness of 4 feet. Almost all of the northern deposit on the American Eagle No. 0 claims has been mined out, having

(date)

produced 10,974 tons, averaging 0.22 percent U_3O_8 and 2.4 percent V_2O_5. The Twin Arrow Petroleum Company is currently producing from one of these structures and it is concluded that the chances of finding ore of commercial grade and quantity southwesterly along the roll are good. Since the rolls are long and narrow, the spacing of diamond-drill holes to test the structure will, of necessity, have to be very close spaced; consequently, it is proposed to drill 13 holes along a fence normal to the trend of the roll, at intervals of 25 feet, as proposed in the accompanying report.

It is recommended that the application be approved and that a contract to do the work herein outlined be executed. I concur with the conclusions and recommendations of the examining team.

The Atomic Energy Commission has been consulted, although the working area was done by the Geological Survey, as well as by private industry.

Enclosed are the required number of maps, as well as the applicant's brochure.

J. William Hasler

J. William Hasler,
Geologist

JWH/mlr

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

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MAR - 8 1956

DEFENSE MINERALS EXPLORATION ADMINISTRATION

JOINT REPORT OF EXAMINATION BY EXAMINING TEAM
REGION III

TRANSMITTED
MAR 5 1956

DMEA 3950

AMERICAN EAGLE MINE

Twin Arrow Petroleum Corporation

Montrose County, Colorado

Uranium

Joint Engineering and Geologic Report

By

D. D. Haynes, Geologist
Geological Survey

M. H. Salsbury, Mining Engineer
Bureau of Mines

January 30, 1956

Reviewed by
DMEA OPERATING COMMITTEE
3-12-56
(date)

DMRA 3950

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MAR - 8 1956

AMERICAN EAGLE MINE
TWIN ARROW PETROLEUM CORPORATION
MONTROSE COUNTY, COLORADO

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1. Location Map, American Eagle Mine, Twin Arrow Petroleum Corporation, Montrose County, Colorado 4

2. Sketch Map showing area proposed for exploration by applicant and claims which are in apparent conflict with Judy No. 1 and parts of American Eagle claims, Twin Arrow Petroleum Corp., Montrose County, Colorado... 4

3. Sketch Map of American Eagle No. 6 and No. 8 and adjoining claims, showing U.S. Geological Survey drilling and proposed DMRA drill hole locations, Twin Arrow Petroleum Corporation, Montrose County, Colorado 2

DMEA 3950
American Eagle Mine
Twin Arrow Petroleum Corporation
Montrose County, Colorado

INTRODUCTION AND SUMMARY

On August 17, 1955, the Twin Arrow Petroleum Corporation, 901 Sherman St., Denver 3, Colorado, applied for Defense Minerals Exploration Administration assistance in a plug-hit and core-drilling project to explore for uranium on portions of their American Eagle property in Little Gypsum Valley, Montrose County, Colorado. Definite hole locations, drilling footages, and itemized costs were not presented. The applicant proposed to drill two areas on 200 foot centers and one area on 500 foot centers, to be followed by a second stage of offset holes on 50 foot centers around mineralized holes. The estimated cost was $50,000.00, in which Government participation at 75 percent would be $37,500.00.

A field examination was made on October 27, 1955 by a DMEA team, consisting of M. N. Salsbury, U. S. Bureau of Mines, D. D. Haynes, H. Olsen, U. S. Geological Survey, accompanied by Boyd Oliver, one of the owners of the property, who represented the applicant.

The American Eagle is one of the larger mines in the immediate area. Production through June 1955 has totaled over 10,000 tons of ore with an average content of 0.22 percent U_3O_8 and 2.43 percent V_2O_5. Indicated and inferred reserves total half of this amount. About 3,000 tons more have been mined from the property of the Vanadium Corporation of America which adjoins on the south. Another substantial deposit has been mined at the Raven Mine, one mile north.

The rocks exposed on the American Eagle claims are light gray and light brown sandstones interbedded with red and gray-green sandstones, all of which are units of the Salt Wash member of the Jurassic Morrison formation. The ore-bearing sandstone ranged from 10- to- 35-feet thick. The beds have a steep dip to the southeast, up to 16 degrees, and have been faulted downward in the same direction.

Ore found to date consists of two northeast-trending roll type deposits, 1500 and 750 feet long and from 5- to- 45-feet in width. The longer roll traverses the length of the American Eagle No. 6 and 6y claims and has provided the major part of production to date.

The Geological Survey had a drilling project in this area which, supplemented by private drilling, resulted in discovery of a substantial portion of the ore now being mined on the property.

The applicant has proposed a drilling program which covers most of the claim area, apparently without taking into account the limits of favorable sandstone, or the probable long narrow shape of the targets.

It is concluded that, considering the probable limits of favorable ground, the only unexplored area which is likely to contain worthwhile ore deposits is in the south half of the American Eagle No. 6 claim, southwest of the long ore body. Wide spaced drilling is therefore not required. A drilling place to insure maximum exploration coverage must take into account the probable narrow width of the ore bodies and the sharply defined contact between ore and waste at the edges of ore bodies. A drilling pattern to fit these requirements appears to be a southwest-northeast fence of holes on 25-feet centers normal to the long axis of known ore bodies, to be followed by offset holes southeast and northwest of any mineralized holes (figure 3). This hole spacing is much less

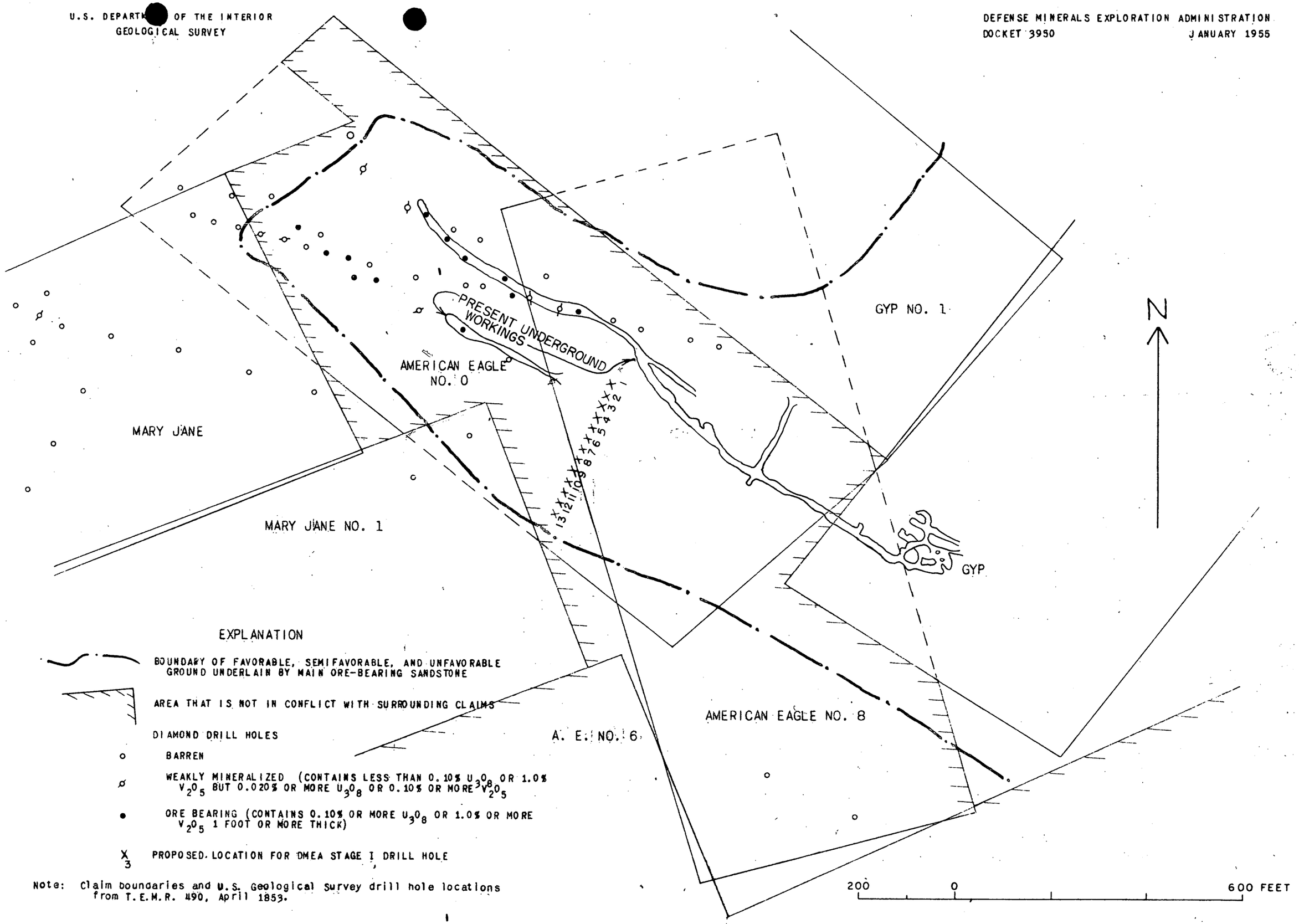


FIGURE 3. SKETCH MAP OF AMERICAN EAGLE NO. 0 AND NO. 8 AND ADJOINING CLAIMS, SHOWING U.S. GEOLOGICAL SURVEY DRILLING AND PROPOSED D.M.E.A. DRILL HOLE LOCATIONS, TWIN ARROW PETROLEUM CORPORATION, MONTROSE COUNTY, COLO.

than the normal minimum for DMEA projects, but it is dictated by the geologic conditions. Holes on wider spacing might easily pass within a few feet of a substantial ore body and yet gives no indication of it.

It is believed that the chances of finding a significant ore body within a rather limited area are good and a modified program, consisting of a fence of 13 holes on 25 feet centers in the first stage and 8 holes offsetting Stage I holes on 50 feet centers to the northwest and southeast, is recommended for approval. The estimated cost is $10,495.00 in which Government participation at 75 percent would be $7,871.25.

ACKNOWLEDGMENTS

The applicant furnished an engineering report on the property together with maps, drill logs, and other pertinent information. Mr. Boyd Oliver, a part owner of the American Eagle Mine, was present at the applicant's request but was not authorized to act for them at that time. He was later authorized as the applicant's representative insofar as the DMEA project is concerned.

The Atomic Energy Commission was consulted, but did not furnish direct information because Government exploration in the area was done by the Geological Survey.

The results of this work were incorporated in a report1/ which was available to the examining team.

1/ Brew, D. A., "Development Drilling on the American Eagle Group, Gypsum Valley District, Montrose County, Colorado". Trace Elements Memorandum Report 490, April 1953.

LOCATION, TOPOGRAPHY AND CLIMATE

The American Eagle mine is on a group of 11 located claims in secs. 3 and 10, T. 45 N., R. 19 W., New Mexico Principal Meridian, Sylvia Mining District, Montrose County, Colorado (Figures 1 and 2). It is in Little Gyp Valley, 20 miles northwest of the junction of the Gypsum Valley access road and Colorado State Highway 90, 46 miles from Naturita, Colorado, the nearest town, and 193 miles from Grand Junction, Colorado, the nearest major supply center. There are uranium ore buying stations at Naturita and at Uravan, Colorado.

The claims are located at an altitude of about 5,700 feet in an area of moderate relief overlooking the valley floor. The property is easily accessible.

The climate is arid with hot summers and moderately severe winters with occasional heavy storms in any season. Year around surface operations are feasible, and access is easy except for short periods in the spring or after storms.

Timber cover is sparse, and mining timber must be hauled from Naturita, or Norwood, Colorado. Drilling water can be obtained from the Dolores river, five miles from the mine, or, from nearby springs or surface flows. Power needs for exploration must be furnished by the operator.

A small camp has been established at the mine for the lessees who operate it. Additional quarters would be required for drilling personnel, probably in the form of house trailers furnished by a drilling contractor, who would also supply labor and equipment.

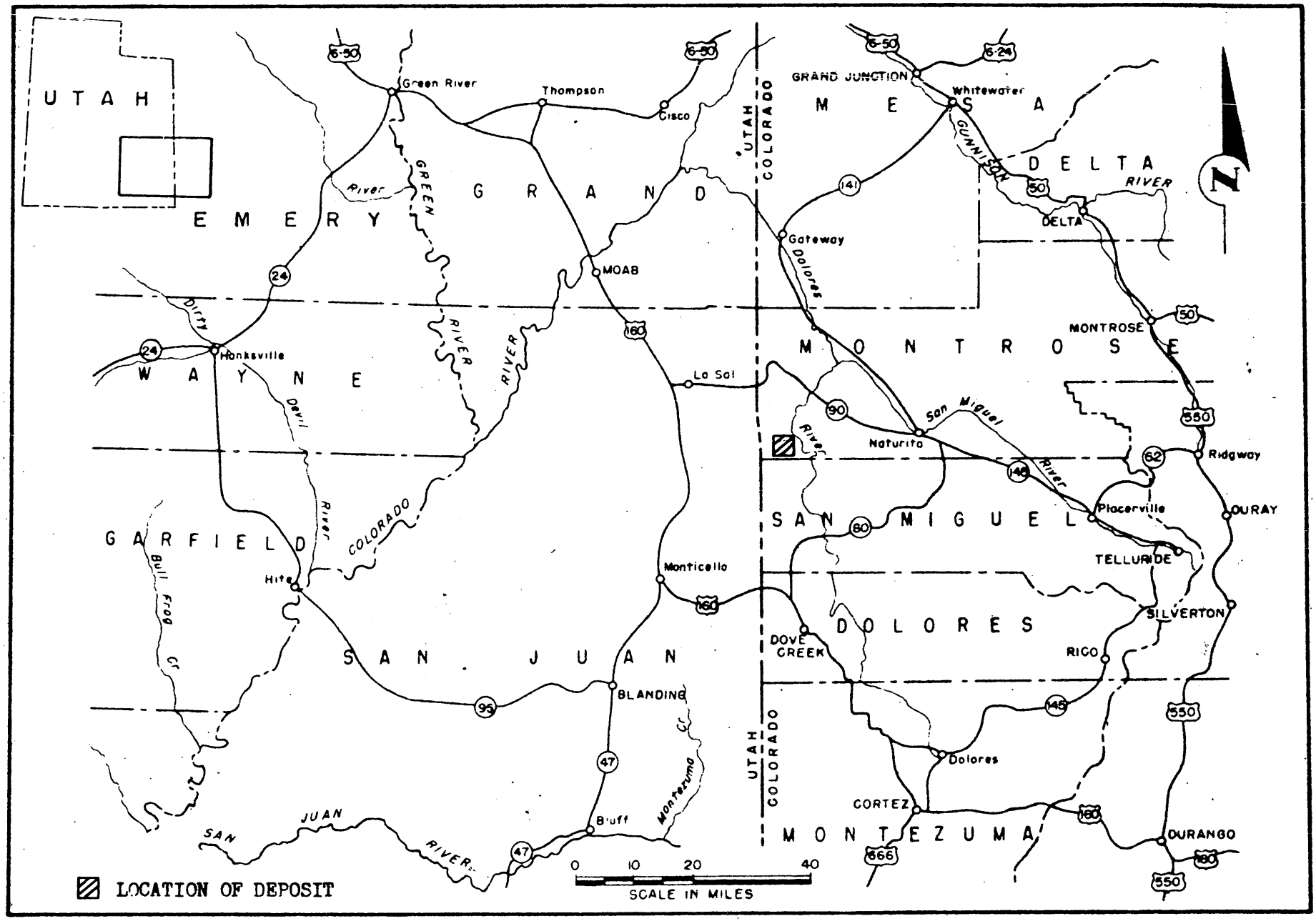
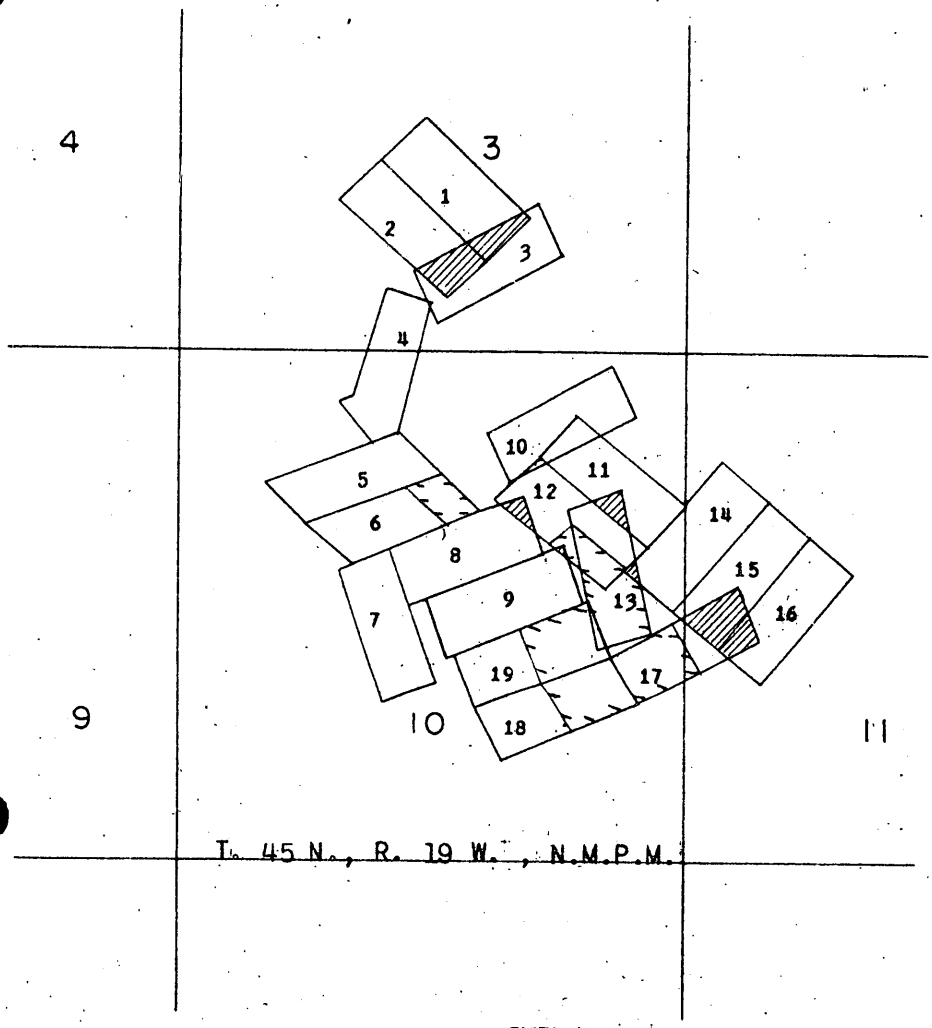


FIGURE 1 - LOCATION MAP, AMERICAN EAGLE MINE, TWINARROW PETROLEUM CORPORATION, MONTROSE COUNTY, COLO. DMEA 3950



CLAIM INDEX

1 AMERICAN EAGLE NO 4
2 AMERICAN EAGLE NO. 3
3 BROOKE NO. 2
4 AMERICAN EAGLE NO. 2
5 AMERICAN EAGLE NO. 1
6 AMERICAN EAGLE
7 AMERICAN EAGLE NO. 5
8 MARY JANE
9 MARY JANE NO. 1
10 GYP NO. 2
11 GYP NO. 1
12 AMERICAN EAGLE NO. 0
13 AMERICAN EAGLE NO. 8
14 GYP
15 MIRACLE NO. 1
16 MIRACLE NO. 2
17 JUDY NO. 1
18 AMERICAN EAGLE NO. 7
19 AMERICAN EAGLE NO. 6

N

EXPLANATION

AREA PROPOSED FOR EXPLORATION BY APPLICANT

AREA IN APPARENT CONFLICT WITH APPLICANTS CLAIMS

Note: LAND LINES FROM U.S. GEOLOGICAL SURVEY ANDERSON MESA QUADRANGLE, COLORADO.
CLAIM BOUNDARIES FROM U.S. GEOLOGICAL SURVEY DATA.

2000 0 6000 FEET

FIGURE 2. SKETCH MAP SHOWING AREA PROPOSED FOR EXPLORATION BY APPLICANT AND CLAIMS WHICH ARE IN APPARENT CONFLICT WITH JUDY NO. 1 AND PARTS OF AMERICAN EAGLE CLAIMS, TWIN ARROW PETROLEUM CORPORATION, MONTROSE COUNTY, COLORADO.

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HISTORY, PRODUCTION AND OWNERSHIP

Operations have been carried on in Little Gyp Valley since 1939 on the vanadium-uranium occurrences of the area, and the history of exploration dates back to the 1920's. The major oreshoot in the American Eagle mine is a continuation of ore discovered in 1939 on the Gyp claim of the Vanadium Corporation of America which lies south of the American Eagle No. 0. It was thought at that time that the main ore bodies were in ground south of the Gyp claim and the area of the present American Eagles claims was relinquished by the Corporation.

The American Eagle, and American Eagle Nos. 1 to 5 (fig. 2) were located on February 2, 1949 by Woodrow E. Gripe and Boyd Oliver of Norwood, Colorado and filed on March 1, 1949 in book 296, pages 469-475. Filings on other claims of the Group were made in May 1950. Following are the recording data:

Filed in Montrose County Courthouse

Claim	Book	Page
American Eagle	296	469
American Eagle No. 0	213	299
American Eagle No. 6	296	475
American Eagle No. 7	296	476
American Eagle No. 8	213	290
Judy No. 1	349	340
American Eagle No. 1	296	470
American Eagle No. 2	296	471
American Eagle No. 3	296	472
American Eagle No. 4	296	473
American Eagle No. 5	296	474

The locations appear to be valid, and conflicts with surrounding claims well defined. The locations were made prior to the withdrawal of the area by the Atomic Energy Commission. The claim map submitted by the applicant agrees with the position of various claims shown on maps in Geological Survey files, with one exception. According to Geological Survey data, the conflict between the northeast corner of the Mary June No. 1 and the American Eagle No. 0 is of greater extent than indicated on the applicant's map. The Mary June No. 1 is a prior location, having been filed in April 1944 in Book 296, page 305. However, the modified DMRA drilling has been laid out to avoid the ground in conflict as shown by Geological Survey data (fig. 2).

Other possible conflicts, namely, that of the Brooks No. 2 claim with the American Eagle Nos. 3 and 4, of the Miracle claim with the Judy No. 1, and of the Gyp No. 2 claim with the extreme northeast corner of the American Eagle No. 0 claim, are of no importance as far as the proposed DMRA project is concerned.

There is a small area of open ground shown on figure 2 between the American Eagle No. 0 and Mary June No. 1 claims which Mr. Oliver stated has been covered by a later location and is included in the group acquired by the applicant. It would have been advantageous to have this ground included in the proposed DMRA project for the Government's protection, and it was suggested to Mr. Oliver. A copy of the location notice for the American Eagle No. 9 claim which covers this fraction was furnished the examining team. Investigation shows that the original date of location August 10, 1954 is subsequent to the date of withdrawal of the area by the Atomic Energy Commission, June 15, 1953, and the location is not valid.

The American Eagle group was sold by Boyd Oliver and Dale Oliver, the latter presumably successor to Woodrow E. Gripe, to Twin Arrow Petroleum Corporation for a cash consideration of $39,000.00, 200,000 shares of the Corporations, Class A Common Stock and an additional $111,000.00 to be paid out of ore returns. Inasmuch as the claims revert to the sellers in the event that the buyer defaults on contract terms, a subordination agreement will probably be required from Boyd and Dale Oliver if an exploration contract is executed.

See a letter to the Grand Junction DMEA office dated December 3, 1955. The applicant mentioned the possibility of excluding all or part of the American Eagle No. 0 claim from the proposed project because it covers the current mining operation, production from which would be subject to DMEA royalty. The drilling sites in the modified program are all on the south end of the American Eagle No. 0 claim, so it will certainly be necessary to include the south half of the claim. It would be difficult to define a boundary which would exclude ground now being mined and still protect the Government's interest because operations from the No. 3 incline are advancing southward toward the proposed DMEA project area. Therefore, the American Eagle No. 0 claim is considered to be essential to the project. While that part of the American Eagle No. 8 not overlapping the American Eagle No. 0 claim will not be drilled, it would be advisable to have it included in a DMEA contract. The applicant does not control any other ground which could be considered essential to the project, inasmuch as the title to the American Eagle No. 9 claim ~~does not appear to be~~ is valid. There would be an advantage to the Government in having the northeast corner of the

Mary Jane No. 1 claim, which is in conflict with the American Eagle No. 0, included, because the extension of any ore found near the southwest sideline of the American Eagle No. 0 might cross into the corner of the Mary Jane No. 1. It was suggested to the applicant that a lease on the Mary Jane No. 1 might be of benefit to the proposed project, but no action has been taken so far as is known.

PRESENT STATUS

Exploration and Development

The American Eagle No. 0 claim has been extensively explored, both by the Geological Survey and by private work. The location of 38 Survey drill holes is shown on figure 3. Of these, 12 were ore holes and 9 were mineralized. The Survey drilled 12 additional holes on the adjoining Mary Jane claim with negative results. Most of the private drilling was done in the immediate vicinity of the known ore bodies mainly to block out ore. A list of 91 wagon drill holes was furnished in the application. Data included depth and thickness of mineralization in ore holes but no radiometric or chemical determinations to indicate grade of ore. In addition, two northeast-southwest fences of privately drilled holes northeast of the main orebeet on the American Eagle No. 0 claim are indicated on a map in Trace Elements Memorandum Report 490 referred to under acknowledgments. No specific mention of these holes was made by the applicant. It can be assumed that they are barren. The area in which the modified DMEA project is located has not been drilled so far as could be seen on the grounds or indicated in reports.

The main or northeast ore body has been developed by two access inclines from the surface and more than 1,000 feet of flat incline drifts following the ore. A third incline has been sunk to the southwest ore body and production is being made. Mining operations are also being continued on the original ore body with production coming from ore left along the walls and the northwest continuation of the roll.

Mining and Milling Equipment and Other Facilities

Equipment on the property includes 3 cabins, with living quarters for 4 persons, 2 gasoline powered hoists at the inclines, 2 gasoline powered portable compressors, drilling equipment, miscellaneous air hoists, ore cars and steel ore bins.

GEOLOGY

Regional geology

The subject claims lie at the northwest end of Gypsum Valley, a collapsed salt anticline. The structure, stratigraphy, and geologic history of Gypsum Valley are discussed and shown in detail on the U. S. Geological Survey Preliminary Oil and Gas Map No. 93.

Local geology

The rocks exposed on the subject claims are those of the Salt Wash member of the Jurassic Morrison formation. The Slat Wash consists of light-gray to light-brown sandstone lenses interbedded with red and gray-green mudstones.2/ The sandstone lenses range in thickness from 10 to 60 feet. The mudstone beds range in thickness from thin splits less than a foot thick to more than 60 feet.

2/ U. S. Geol. Survey Trace Elements Mem. Rept. 490.

The Salt Wash member, on the American Eagle No. 0 claim, dips approximately 16 degrees to the southwest. The ore-bearing horizon ranges in thickness from 10 to 35 feet. Holes should be drilled through the ore-bearing horizon and bottomed in the underlying mudstone lens. Hole depths would range from 115 to 220 feet.

Ore Deposits

The known mineralized material on and in the immediate vicinity of the subject claims lies almost entirely in two northwest trending roll-type deposits in the American Eagle No. 0 claim and the Gyp claim, owned by the Vanadium Corporation of America. These deposits are 1,500 and 750 feet in length, range from 5- to- 45-feet in width, and have an average thickness of 4 feet. Almost all the northern deposit on the American Eagle No. 0 claim has been mined out, having produced, through June 1955, 10,974 tons averaging 0.22 percent U_3O_8 and 2.43 percent V_2O_5. The reserves on the northern deposit on American Eagle No. 0 claim consist of 5,445 tons of indicated and inferred ore averaging 0.25 percent U_3O_8 and 2.42 percent V_2O_5. The production from the Gyp and the Gyp 1, 2, and 3 claims, owned by VCA, totals 3,000 tons averaging 0.14 percent U_3O_8 and 1.24 percent V_2O_5.

The ore deposits have an approximate N. 50 degrees W. trend and appear to have an en echelon pattern. Any exploration program that is outlined should be drilled on close enough spacing, at approximately right angles to the trend, so as not to miss any ore deposits that may be present on the American Eagle No. 0 claim.

Outlined on figure 3 is the ground delineated, by U. S. Geological Survey drilling, as favorable for the occurrence of uranium deposits.

Within this favorable area the ore-bearing sandstone has a thickness of more than 20 feet, is fine- to- coarse-grained, contains interstitial gray-green mudstone and is underlain by gray-green mudstone.

ORE RESERVES

Current reserve figures for the American Eagle mine, obtained from the Atomic Energy Commission, total 5,445 tons of indicated and inferred ore averaging 0.25 percent U_3O_8 and 2.42 percent V_2O_5. Ore reserves calculated by the applicant's consultant as of August 1, 1954 totaled 8,457 tons of ore. Subtracting 3500 tons of ore shipped between August 1954 and June 1955, the difference, about 5000 tons, checks reasonably well with current AEC figures. It will be noted that the uranium content of the reserves as calculated by the AEC is .03 percent more than the average content of actual shipments. The maximum initial production bonus on the American Eagle Group has already been paid.

In section 3b, page 3, of the contract of sale included with the application, reference is made to an ore deposit delimited by 3 wagon drill holes on the American Eagle No. 8 claim not shown on the consultant's map. No data has been furnished on such an ore deposit.

PROPOSED EXPLORATION

The applicant proposed a drilling program covering portions of the American Eagle, American Eagle Nos. 0, 6, 7, and 8, and the Judy No. 1 claims at an estimated cost of $50,000.00. Certain areas were to be drilled on 200 foot centers to be followed by offsets around mineralized holes on 50 foot centers or as close as the Government would permit.

It was also proposed that any unexpended funds be used to drill the balance of the claim area on 500-foot centers. No drill sites were indicated and the drilling proposal does not appear to have been planned with reference to the limits of favorable ground as determined by the Geological Survey, known geology, and the habit of ore deposition.

A modified program of drilling which covers a limited unexplored portion of the American Eagle No. 0 claim within the favorable area as shown on figure 3, has been agreed upon in conference with the applicant's representative. This program would be set up in two stages. In the first stage, 13 plug-bit and core holes would be drilled on 25-foot centers in a fence normal to the long axis of the known ore bodies, extending southwesterly from a point about 300 feet southeast of U.S.G.S. drill hole GW 213, to within 70 feet of the property boundary. This would require an estimated maximum of 1,225 feet of plug-bit and 975 feet of core drilling. Stage II would provide for a maximum of 8 offset holes on 50-foot centers northwest and southeast of any Stage I holes which cut significant mineralization. A maximum of 4 holes would be permitted around any Stage I hole.

A table of estimated drilling depths based on data from Geological Survey drilling follows:

Estimated drilling distances

Hole No.	Flush-Bit 0-100 ft.	Flush-Bit 100-200 ft.	Core 0-100 ft.	Core 100-200 ft.	Core 200-300 ft.	Total
1	40		60	15		115
2	45		55	20		120
3	50		50	25		125
4	60		40	35		135
5	70		30	45		145
6	85		15	60		160
7	100			75		175
8	100	10		75		185
9	100	20		75		195
10	100	25		75		200
11	100	33		67	8	208
12	100	40		60	15	215
13	100	47		53	22	222
Totals	1,050	175	250	680	45	2,200

The estimated coring interval of 75 feet would permit taking core from a point 10 feet above the ore-bearing sandstone, and bottoming holes 5 feet into the underlying mudstone. Holes should be drilled consecutively from northeast to southwest. After one or two holes are completed and evaluated, it may be possible to cut down on the coring depth, depending on the thickness of the ore-bearing sandstone, and the presence or absence of a mudstone split, which was cut further northwest. If the split is present it is probably not necessary to drill below it. The 25-foot hole spacing in Stage I is much less than normally permitted in a DMEA project, but the unique ore occurrence makes it necessary to insure that a probable long narrow ore-body would not be missed by wider spaced drill holes.

Stage II drilling is proposed with 4 fifty-foot offsets northwest and southeast of each Stage I hole with significant mineralization, because the long axis of known ore bodies has this bearing. A maximum

of 8 Stage II holes requiring an estimated 760 feet of plug-bit and 600 feet of core drilling is proposed. If one or both of the first pair of holes northwest and southeast of a mineralized Stage I hole penetrates ore, perhaps the third and fourth holes in the group need not be drilled.

The completion time for Stage I is estimated at 5 weeks allowing for operation of one rig at the rate of 2,000 feet per month with a few days allowed for evaluation of drilling results in the first holes completed. Stage II is estimated to require a maximum of four weeks, including one week for evaluation of Stage I results, and action by the DMEA Field Team on Stage II proposals.

The applicant submitted two bids from independent contractors. The bids were for a minimum of 16,000 feet of plug-bit drilling and 4,000 feet of core drilling and were nearly identical, as shown in the following table:

	Bid price per foot							
	Plug-Bit				Core			
Contractor	0-100	100-200	200-300	300-400	0-100	100-200	200-300	300-400
Pacific Western Exploration Co.	1.58	1.83	2.25	2.85	2.90	3.15	3.60	4.40
Southern Geophysical Co.	1.60	1.85	2.25	2.85	2.95	3.20	3.60	4.40

Both of the above contractors offered to undertake supervision, including direction planning, preparation and planning of the program, with a full time geological field assistant for sampling and hole probing, for an additional fee of $0.50 per foot.

The applicant was requested by the examining team to submit three bids based on the reduced footages in the modified program, but to date these have not been received. However, the prices quoted in the original

bids would not be out of line for the smaller footages estimated in the modified program. The lower of the bids has been used in the following estimate even though the usual three bids required were not submitted. The average unit prices for plug and core drilling for contract purposes were arrived at as follows:

STAGE I

Plug drilling

Depth			
0-100 feet	1,050 feet at $1.58 per foot	or	$ 1,659.00
100-200 feet	175 feet at $1.83 per foot	or	320.25
Average	1,225 feet at $1.61 per foot	or	1,972.25

Core drilling

Depth			
0-100 feet	250 feet at $2.90 per foot	or	$ 725.00
100-200 feet	680 feet at $3.15 per foot	or	2,142.00
200-300 feet	45 feet at $3.60 per foot	or	162.00
Average	975 feet at $3.11 per foot	or	3,032.25

COST ESTIMATE

Stage I
(Estimated time for completion-5 weeks)

1. Independent contracts

Bulldozing for access roads and drill sites
16 hours at $12.00 per hour..... $192.00
1 move in and move out for
bulldozer..... 50.00

Total for access roads and drill sites..$242.00

Drilling
1,225 feet of plug-bit drilling
at $1.61 per foot.....$1972.25
975 feet of core drilling at
$3.11 per foot..... 3032.25
Total drilling contract $5004.50
Total independent contracts $5246.50

2. Labor and Supervision

Labor	None	
1 geologist-supervisor, full-time 1-1/4 mos. at $600.00 per month	$ 750.00	
Total labor and supervision		$750.00

3. Operating Materials and Supplies

Gasoline, oil and repairs on jeep or pickup for Supervisor-geologist 1-1/4 mos. at $50.00 per month	62.50	
32 wooden core boxes, or equivalent to box 975 feet of BX core at $3.50 ea.	112.00	
Total Operating Supplies		$174.50

4. Operating Equipment

Rental	None	
Purchase	None	
Depreciation		
1 jeep or pickup valued at	1800.00	
1 Babbel counter and probe valued at	800.00	
	$2600.00	
Depreciation on 60 month basis $\frac{2600}{60}$ = $43.33 per month		
Depreciation for 1-1/4 months	54.16	
Total Operating Equipment		$ 54.16

5. and 6. - No initial rehabilitation repairs, new buildings or equipment.

7. Miscellaneous

Accounting 1-1/4 months	$ 25.00	
Sampling and analyses, 25 samples analysed for W_3O_8 and V_2O_5 at $5.00 each	125.00	
Compensation insurance, payroll taxes, etc. on geologist-supervisor's salary at 6 percent of $750.00	45.00	
Total Miscellaneous		$195.00

Breakdown of Costs

	Total	Plug-Bit	Core
Independent Contracts			
Bulldozing access roads & drill sites	$ 242.00	$130.00	$ 112.00
Drilling			
1225 feet of plug-bit at $1.61	1972.25	1972.25	
975 feet of core drilling at $3.11	3032.25		3032.25
Labor and Supervision	750.00	250.00	500.00
Operating Materials & Supplies	174.50	30.00	144.50
Operating Equipment	54.16	17.50	36.66
Misc. (less assaying)	25.00	10.00	15.00
Compensation Insurance	45.00	15.00	30.00
Total (less assaying)	6295.16	2424.75	3870.41
Cost per foot		1.98	3.97
25 samples at $5.00	125.00		

Summary of Costs

Stage I

1225 feet of plug-bit drilling at	$ 2.00	$ 2450.00
975 feet of core drilling at	4.00	3900.00
25 samples at $5.00	5.00	125.00
Total Stage I		$ 6475.00
Government participation		4856.25

Stage II

760 feet of plug-bit drilling at	$ 2.00	$ 1520.00
600 feet of core drilling at	4.00	2400.00
20 chemical assays at	5.00	100.00
Total Stage II		$ 4020.00
Government participation		3015.00
Total estimated cost of contract		$ 10495.00
Total amount of Government Participation		$ 7871.25

PROPOSED FINANCING

The applicant proposed to furnish the corporation's share of the cost in money.

CONCLUSIONS AND RECOMMENDATIONS

It is concluded that the applicant's proposal includes exploration of areas which are outside of the limits of favorable ground as indicated by the results of Geological Survey drilling on the claims. The full amount of drilling requested is therefore not justified. There is, however, an unexplored area at the south end of the American Eagle No. 0 claim, lying southwest of the long ore body already developed, which appears to be favorable for the occurrence of uranium ore deposits.

Ore of the average grade shipped so far from the American Eagle mine operation, 0.22 percent U_3O_8 and 2.43 percent V_2O_5, while not high in Uranium content, has enough vanadium in it to make a profitable product even though the initial production bonus for uranium has been exhausted. The value of such ore is calculated as $31.54 per ton including development allowance, but without haulage allowance and initial production bonus. Ore of this grade, and in tonnages which can reasonably be expected in the exploration area, would be profitable and would contribute a significant amount to the nation's stockpile.

Exploration by drilling in two stages consisting of 1225 feet of plug-bit and 975 feet of core-drilling in the first stage and 760 feet of plug-bit and 600 feet of core-drilling in the second stage at an estimated cost of $10,495.00, is recommended for approval. Government participation at 75 percent would be $7,871.25.

An allowance under depreciation is made for use of a Bubbel counter and probe. It is assumed that this service will be done by the geologist-supervisor as part of his work. This would be in addition to any gamma ray logging by a DMEA logging unit.

3/5/56 Lyn

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

RECEIVED
MAR - 5 1956

March 2, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Chairman, Operating Committee, DMEA

From: Field Team, Region III

Subject: Docket DMEA 3950 (Uranium), Twin Arrow Petroleum Corporation, American Eagle Mine, Montrose County, Colorado

Enclosed are two sets of correspondence between the Grand Junction office and the applicant on the subject docket. This correspondence was requested in our memorandum to the field dated February 15, 1956, copies of which were forwarded your office.

DMEA Field Team, Region III

W. M. Traver

By W. M. Traver
Executive Officer

Enclosures

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DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
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DMEA Field Team, Region III

W. M. TRAVER,

By W. M. Traver
Executive Officer

Enclosures

MINERAL DEPOSITS
DMEA
RECEIVED
FEB 29 1956

TWIN ARROW CORPORATION
901 Sherman, Suite 109

(C O P Y)

RECEIVED
MAR - 5 1956
U. S. GEOLOGICAL SURVEY
DENVER, COLORADO

February 6, 1956

Mr. J. William Hasler
U. S. Department of Interior
P. O. Box 360
Grand Junction, Colorado

RE: DMEA 3950

Dear Mr. Hasler:

Mr. Oliver has contacted me regarding the above loan application. He has requested that all correspondence requiring an official decision from Twin Arrow should be referred to our Denver office rather than to him.

Therefore, it is requested that any correspondence in the above category be directed to this office.

Very truly yours,

/s/ A. M. Biderman

AMB:tb

Copy: Mr. Boyd Oliver
Norwood, Colorado

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

P. O. Box 360
Grand Junction, Colorado

IN REPLY REFER TO:

RECEIVED
FEB 29 1956
GEOLOGICAL SURVEY
DENVER, COLORADO

December 21, 1955

Mr. Boyd Oliver
Norwood, Colorado

Dear Mr. Oliver:

In accordance with Mr. Biderman's letter to this office dated December 10, 1955, future questions concerning the DMEA application under Docket DMEA 3950 will be referred to you.

We have received a copy of the location certificate on American Eagle No. 9 claim. It is assumed that the discovery point is on open ground. However, it will be necessary to show this claim on the general claim map and a tie from a claim corner to some kknown point will be required, unless you already have a map showing the claims in their proper relation.

Mr. Biderman has inquired about the possibility of excluding from the DMEA application all or part of the American Eagle No. 0 claim. Inasmuch as the revised exploration project is all located on the south end of this claim, it would not be possible to exclude it entirely. It appears to be impractical to exclude all parts of the claim which are in the mine area because we understand that work now in progress through the No. 3 incline is approaching the proposed drilling area. The American Eagle claims Nos. 0, 8, and 9 would cover the proposed DMEA exploration project amply.

As you no doubt realize a lease on the area in conflict between the Mary Jane No. 1 and American Eagle No. 0 would be of considerable advantage to the DMEA project because ore might be found which would continue into the east end of the Mary Jane No. 1. An effort to obtain this ground would appear to be worthwhile..

It was suggested in our letter of November 25, 1955 to your Denver office that you might want to get three new bids on drilling inasmuch as the estimated amounts were reduced to 2000 feet of plug bit and 1675 feet of core drilling.

We note that your Denver letterhead is "Twin Arrow Corporation", instead of "Twin Arrow Petroleum Corporation" as listed in the DMEA application. If the name of the corporation has been changed, please advise us of that fact.

Yours truly,

/s/ J. William Hasler,
Geologist

JWH/vll

cc: W. M. Traver
J. F. Shaw
B. Oliver (2)
M. H. Salsbury

MINERAL DEPOSITS
DMEA
RECEIVED
FEB 29 1956
U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO

(C o p y)

November 25, 1955

Twin Arrow Petroleum Corporation
901 Sherman Street
Denver 3, Colorado

RE: DMEA 3950

Gentlemen:

In considering your application for Government assistance under docket DMEA 3950, several questions have arisen.

There is an open fractions of ground between the southwest side line of the American Eagle No. 0 claim and the east end of the Mary Jane No. 1 claim, which Mr. Boyd Oliver states has been covered by a claim location, and which is part of the ground sold to your company. However, no mention of it is made in the contract of sale. This fraction should be included in the proposed DMEA exploration because the area might become involved should a DMEA contract be prepared.

Please forward to this office the name of this claim, recording data, and the date of filing, and also state if you are willing to include it in the list of claims in the application.

A study of your property, including information available from the results of Geological Survey drilling, indicates the only area which would qualify for a DMEA exploration program is the south end of the American Eagle No. 0 claim. A modified drilling program calling for a fence of 13 closely spaced holes normal to the long axis of the known ore bodies is suggested in this area, followed by offset holes around significantly mineralized holes. Your concurrence in this possible revision of the proposed exploration is required before we can proceed further.

We would like to call to your attention the fact that all property which is included in a DMEA project is subject to a royalty, payable to the Government, on any ore production, whether it was found as a result of Government-assisted exploration or not. You may, therefore, wish to revise the list of claims in your application. It appears at this time that the American Eagle No. 0, and the fraction mentioned in the second paragraph of this letter are the only areas essential to the modified project which is suggested.

In section 36 on page 3 of the contract of sale between your corporation and Boyd and Gale Oliver, mention is made of an ore deposit delimited by three wagon drill holes on American Eagle No. 8 claim, but not shown on the map by Engineer Associates, Inc. We would like to know the location of these drill holes, because they may affect proposed DMEA drilling.

The suggested modification of the drilling proposed tentatively calls for about 2,000 feet of plug bit drilling and 1,675 feet of core drilling. Inasmuch as this is considerably less than amount of drilling on which you submitted bids from contractors, it is suggested that a set of three bids on the new basis would be advisable.

If you have a representative near Grand Junction who is authorized to act for your corporation, we would be glad to discuss the project at any time. Otherwise, the matter can probably be handled by correspondence.

Sincerely yours,

J. William Hasler,
Geologist

MHS/mlr

cc: DMEA file

MINERAL DEPOSITS
DMEA
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FEB 29 1956

U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO

TWIN ARROW CORPORATION
901 Sherman, Suite 109
Denver 2, Colorado

December 3, 1955

Mr. William J. Hasler
U. S. Dept. of Interior
P. O. Box 360
Grand Junction, Colorado

Re: DMEA 3950

Dear Mr. Hasler:

The fraction of ground referred to in your letter of November 25, 1955, is American Eagle No. 9. I suggest you contact Mr. Boyd Oliver, Norwood, Colorado, for pertinent filing and a location data. I contacted Mr. Oliver on the telephone after receiving your letter and he stated he would forward Twin Arrow a quit claim covering this parcel at our request. We would also like to include this parcel in the application if it falls within the area which qualifies for a DMEA exploration program.

You mentioned the fact that all property which is included in a DMEA project is subject to a royalty whether or not ore is located with government assistance funds. Could that portion of American Eago No. 0 which now contains a known ore body be excluded from the project or will all proceeds from this claim be subject to the royalty payment? If so, we might possibly wish to exclude American Eagle No. 0 from the project in its entirety.

Mr. Oliver can supply you with additional information regarding drilling completed on American Eagle No. 8. He indicated that more than three holes had been drilled and that possibly No. 8 could be included in the project. Therefore, we may wish to amend our application to cover American Eagle No. 8 and No. 9 if we do not receive a favorable reply to the question raised in the preceeding paragraph and that your reaction toward including No. 8 would be favorable.

We appreciate your cooperative letter and will supply you with information requested as rapidly as possible.

Very truly yours,

/s/ A. M. Biderman

AMB:tb
Copy: Boyd Oliver
Norwood, Colorado

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U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO

(C O P Y)

TWIN ARROW CORPORATION
901 Sherman, Suite 109
Denver 2, Colorado

December 10, 1955

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U. S. G. S.
P. O. Box 360
Grand Junction, Colorado

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Mr. Oliver is very familiar with the American Eagle and related claims and has an excellent knowledge of the geology of the immediate vicinity.

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/s/ A. M. Biderman
Secretary Treasurer

AMB:tb

CC: Boyd Oliver
Norwood, Colorado

MINERALS
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FEB 29 1956
GEOLOGICAL SURVEY
DENVER, COLORADO

(C O P Y)

TWIN ARROW CORPORATION
901 Sherman, Suite 109

February 6, 1956

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U. S. Department of Interior
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AMB:tb

Copy: Mr. Boyd Oliver
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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

P. O. Box 360
Grand Junction, Colorado

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U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO

December 21, 1955

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/s/ J. William Hasler,
Geologist

JWH/vll

cc: W. M. Traver
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M. H. Salsbury

MINERAL DEPOSITS
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(C o p y)

November 25, 1955

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RE: DMEA 3950

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Geologist

MHS/mlr

cc: DMEA file

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GEOLOGICAL SURVEY
DENVER, COLORADO

TWIN ARROW CORPORATION
901 Sherman, Suite 109
Denver 2, Colorado

December 3, 1955

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P. O. Box 360
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Copy: Boyd Oliver
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GEOLOGICAL SURVEY
DENVER, COLORADO

(C O P Y)

TWIN ARROW CORPORATION
901 Sherman, Suite 109
Denver 2, Colorado

December 10, 1955

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/s/ A. M. Biderman
Secretary Treasurer

AMB:tb

CC: Boyd Oliver
Norwood, Colorado

2-23-56 dgm

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

RECEIVED
FEB 20 1956

February 15, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: J. F. Shaw (2)
J. W. Healer

From: DMEA Field Team, Region III

Subject: Docket DMEA 3950 (Uranium), American Eagle Mine, Twin Arrow Petroleum Corporation, Montrose County, Colorado

Reference is made to the Joint Report of Examination on the subject docket.

The first paragraph on page 6 states: "The Mary Jane No. 1 is a prior location, having been filed in April, 1944 in book 296, page 305." "However, the modified DMEA drilling has been laid out to avoid the ground in conflict as shown by Geological Survey data (fig. 2)."

The bottom of page 7 and top of page 8 states: "There would be an advantage to the Government in having the northeast corner of the Mary Jane No. 1 Claim, which is in conflict with the American Eagle No. 9, included, because the extension of any ore found near the southeast side line of the American Eagle No. 9 might cross into the corner of the Mary Jane No. 1." "It was suggested to the applicant that a lease on the Mary Jane No. 1 might be of benefit to the proposed project, but no action has been taken so far as is known." In view of these conflicting statements is a lease on the Mary Jane No. 1 necessary?

At the bottom of page 6 it is stated that the American Eagle No. 9 Claim "is not valid," while at the bottom of page 7 this statement is made: "Inasmuch as the title of the American Eagle No. 9 Claim does not appear to be valid." We assume this latter statement should be changed to read, "is not valid."

Apparently there has been much correspondence between the applicant and the Grand Junction office, but only two copies of letters have reached this office. These two letters were signed by J. William Healer and sent to the applicant on November 25, 1955 and December 21, 1955. Page 7 of the

report states as follows: "See a letter to the Grand Junction BMEA office dated December 3, 1955. The applicant mentioned the possibility of excluding all or part of the American Eagle No. 6 Claim from the proposed project, because it covers the current mining operation, production from which would be subject to BMEA royalty." Please furnish this office with one copy of all correspondence from and to the applicant, which has been handled by members of the Grand Junction office. A review of this correspondence by us may give some clue as to the amount of ground the applicant is willing to subordinate. Please also give us your recommendations as to the ground you believe should be subordinated, so that this office may contact the applicant and ask his willingness to subordinate the ground which will benefit from the proposed exploration. This will avoid possible future misunderstanding on the part of the Operator in the event a contract is signed.

BMEA Field Team, Region III

W. M. TRAVER,

W. M. Traver

E. N. Harshman

E. N. Harshman

HMC:ab

cc: Chair. Op. Comm. (2)
Harshman
Docket 3950
Chron.

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

February 15, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: J. F. Shaw (2)
J. W. Mealer

From: DMEA Field Team, Region III

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Reference is made to the Joint Report of Examination on the subject docket.

The first paragraph on page 6 states: "The Mary Jane No. 1 is a prior location, having been filed in April, 1944 in book 296, page 305." "However, the modified DMEA drilling has been laid out to avoid the ground in conflict as shown by Geological Survey data (fig. 2)."

The bottom of page 7 and top of page 8 states: "There would be an advantage to the Government in having the northeast corner of the Mary Jane No. 1 Claim, which is in conflict with the American Eagle No. 9, included, because the extension of any ore found near the southwest side line of the American Eagle No. 9 might cross into the corner of the Mary Jane No. 1. It was suggested to the applicant that a lease on the Mary Jane No. 1 might be of benefit to the proposed project, but no action has been taken so far as is known." In view of these conflicting statements is a lease on the Mary Jane No. 1 necessary?

At the bottom of page 6 it is stated that the American Eagle No. 9 Claim "is not valid," while at the bottom of page 7 this statement is made: "Inasmuch as the title of the American Eagle No. 9 Claim does not appear to be valid." We assume this latter statement should be changed to read, "is not valid."

Apparently there has been much correspondence between the applicant and the Grand Junction office, but only two copies of letters have reached this office. These two letters were signed by J. William Mealer and sent to the applicant on November 25, 1955 and December 21, 1955. Page 7 of the

report states as follows: "See a letter to the Grand Junction DMEA office dated December 3, 1955. The applicant mentioned the possibility of excluding all or part of the American Eagle No. 9 Claim from the proposed project, because it covers the current mining operation, production from which would be subject to DMEA royalty." Please furnish this office with one copy of all correspondence from and to the applicant, which has been handled by members of the Grand Junction office. A review of this correspondence by us may give some clue as to the amount of ground the applicant is willing to subordinate. Please also give us your recommendations as to the ground you believe should be subordinated, so that this office may contact the applicant and ask his willingness to subordinate the ground which will benefit from the proposed exploration. This will avoid possible future misunderstanding on the part of the Operator in the event a contract is signed.

DMEA Field Team, Region III

W. M. TRAVER,

W. M. Traver

E. N. Harshman

E. N. Harshman

HMC:ab

cc: Chair. Op. Comm. (2)
Harshman
Docket 3950
Chron.

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

RECEIVED
SEP - 6 1955

September 1, 1955

224 New Customhouse
Denver 2, Colorado

Memorandum

To: W. H. King
J. W. Hasler

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket DMEA 3950 (Uranium), Twin Arrow Petroleum Corporation, American Eagle Group, Montrose County, Colorado

Enclosed is one copy of the subject application. The brochure consists of:

1. Form MF-103 and accompanying answer sheets
2. Copies of two bids for drilling
3. Report on the American Eagle Mine by Charles W. Yetter of Engineers Associates
4. Drill logs of 1952-1953-1954 drilling
5. Claim map
6. Agreement of Sale dated December 10, 1954

A field examination and suitable report are requested.

W. M. Traver

Enclosure

HMC:ab
cc: Sec. Opr. Comm. (2)
Harshman
Docket 3950
Chron.

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

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W. M. Traver

W. M. Traver

Enclosure

HMC:ab
cc: Sec. Opr. Comm. (2)
Harshman
Docket 3950
Chron.

Surname 700

Ching
Ellis
Yopes
Kilgoard
Selfridge

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

AUG 29 1955

Mr. Melvin Schroeder, President
Twin Arrow Petroleum Corporation
901 Sherman Street
Denver 3, Colorado

Re: Docket No. DMEA-3950 (Uranium)
American Eagle Group
Montrose County, Colorado

Dear Mr. Schroeder:

The application for assistance in exploring the subject property in Montrose County, Colorado, under the captioned docket number, has been reviewed by the Rare and Miscellaneous Metals Division of the Defense Minerals Exploration Administration. It has been referred to the Executive Officer of Region III at the following address:

Mr. W. M. Traver
Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

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

Sincerely yours,

C. O. Mittendorf

Administrator

MChing:am
8-25-55
cc to: Admr. Reading File
Docket
Code 700
Mr. Ching
DMEA Field Team, Region III(2)

R.C.S.

Surname 700

Ching
Ellis
Selfridge

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

AUG 29 1955

Mr. W. M. Traver
Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

re: Docket No. DMEA-3950 (Uranium)
Twin Arrow Petroleum Corporation
American Eagle Group
Montrose County, Colorado

Dear Mr. Traver:

The subject application is being referred to you for investigation, a field examination if warranted, and recommendation. A copy of the application was forwarded to you on August 17.

Enclosed are two copies each of comments and recommendations dated August 23, 1955, by John E. Crawford and W. P. Williams of the Uranium Commodity Committee.

In the event a contract is indicated please secure a Consent to Mon executed by Boyd Oliver and Gale Oliver.

To avoid possible future misunderstanding in the event a contract is signed, the Operator should be advised that any production from land covered by a contract is subject to royalty payments. Therefore, if he wishes to exclude land from which production is now being made, the boundaries of such land should be clearly defined.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GCS)

Enclosures

APPROVED:

P. F. Yopes (GCS)
Member, Bureau of Mines

Thor H. Kiilsgaard (GCS)
Member, Geological Survey

MChing:am
8-25-55
cc to: Admr. Reading File
Operating Committee
Docket
Messrs. J. E. Crawford, Rm. 3641
T. H. Kiilsgaard, Rm. 5222
J. O. Hosted, Rm. 3210, GSA
Code 700
Mr. Ching

R.C.S.

8/24/55 gla

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

August 23, 1955

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee, Room 4445

RECEIVED
AUG 2 1955

From: John E. Crawford, Bureau of Mines Member
Uranium Commodity Committee

Subject: Application for assistance, DMEA Docket 3950, Twin Arrow Petroleum Corporation, American Eagle Mine, Montrose County, Colorado

I have reviewed the attached application, Twin Arrow Petroleum Corporation, DMEA Docket 3950; and I have discussed it with Joseph O. Hosted, Washington representative of the Atomic Energy Commission.

Mining operations for uranium have been conducted on the American Eagle No. 0 and No. 8 claims. From December 1952 through June 1955 the Twin Arrow Petroleum Corporation produced 3,653.28 tons of uranium ore, assaying 0.22 percent U_3O_8 and 2.81 percent V_2O_5. The attached engineer's report indicates that some 8,457 tons of indicated and inferred reserves exist on the American Eagle No. 0 claim. The applicant states, however, that his "reason for wishing to explore the property is to find new and additional bodies of commercial uranium ore, but not to develop present ore bodies."

The organization is desirous of drilling the American Eagle No. 0 and No. 8 claims on "as close centers as the Defense Minerals Exploration Administration will allow." It suggests initial drilling on 200-foot centers and follow-up drilling on 50-foot centers, at depths of from 130 to 350 feet. Similar drilling is proposed for parts of the American Eagle No. 6 and No. 7, and Judy No. 1 claims.

Care should be taken that the applicant does not receive development assistance. Drilling on the American Eagle No. 0 and No. 8 claims may not be warranted. It is doubtful that drilling on 50-foot centers on these claims could be defined as exploratory. The property does appear to be located in an area favorable for

the deposition of ore-grade uranium; and owing to the successful operations of the mine on the American Eagle No. O and No. 8 claims, the adjacent claims should probably be explored thoroughly. We therefore suggest the application be referred to the Field Team for examination and report, and that they consult with Mr. E. R. Gordon, Atomic Energy Commission, Grand Junction, Colorado, for any information he may have about the property and the surrounding area.

John E Crawford

John E. Crawford

Attachment

8/24/55 gla

IN REPLY REFER TO:

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

August 23, 1955

RECEIVED
AUG 23 1955

Memorandum

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

From: W. P. Williams, U. S. Geological Survey

Subject: Review of DMEA application, Docket No. 3950, Twin Arrow Petroleum Corporation, American Eagle claims, Montrose County, Colorado.

The property involved consists of the American Eagle claims, Gypsum Valley, Colorado. In 1952 and 1953 the U. S. Geological Survey drilled 59 holes on the claims. Results of the drilling are in U.S.G.S. Trace Elements Memorandum Report 490. On the basis of the Government drilling a favorable zone has been delineated on American Eagle No. 0 and American Eagle No. 8 claims. The applicant states the American Eagle mine on the property has produced about 7,000 tons of uranium ore.

Because of the favorable results achieved in Government drilling on the property and because commercial grade ore is present it seems that further exploration on the property is warranted. A disadvantage to the property is the fact that the initial production bonus has been paid off by the AEC. That means that for 0.23% U_3O_8 ore (average past grade of American Eagle mine) the value per ton with initial production bonus is $34.95, before haulage allowance, while the same ore without bonus is valued at $18.85, before haulage allowance. The effect of the price differential on mining economics may be readily appreciated.

The applicant's exploration proposals are not specific. He proposes initial drilling on 200-foot centers and that favorable ground be drilled on 50-foot centers. Hole locations are not shown on maps.

I recommend that the Field Team be asked to discuss with the applicant a more concrete exploration plan. I believe that proposed drilling sites should be kept within the limits of American Eagle No. 0, American Eagle No. 8, and Gyp claims which includes the favorable ground established by Government drilling.

WPWilliams

W. P. Williams

IN REPLY REFER TO:

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

August 23, 1955

RECEIVED
AUG 23 1955

Memorandum

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

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WPWilliams:iml
G-8/23/55
cc: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
J. E. Crawford, 3641; J. O. Hosted, 3210

WPW

W. P. Williams

August 17, 1955
Subject: DMEA-3950
Re: Exploration Assistance
American Eagle Mine

Twin Arrow Petroleum Corp.
901 Sherman St.
Denver 3, Colorado

Gentlemen:

The receipt of your application dated August 12, 1955 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-3950 and referred to the Rare and Miscellaneous Metals Division.

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

Sincerely yours,

Robert E. Adams, Chief
Operations Control and
Statistics Division

cc: A.V. Witham

ALBERT V. WITHAM
ATTORNEY AT LAW
420 First National Bank Bldg.
DENVER 2, COLORADO
TELEPHONE:

August 12, 1955

The Defense Minerals Exploration Administration
Department of the Interior
Washington 25, D.C.

RECEIVED
AUG 17 1955

Gentlemen:

Enclosed herewith is an application on Form MF-103 for a DMEA loan by the Applicant, Twin Arrow Petroleum Corporation, 901 Sherman Street, Denver 3, Colorado. The application is accompanied by 1) an engineer's report prepared by Engineers Associates, Inc., of Grand Junction, Colorado, in the summer of 1954; 2) a copy of an agreement; 3) and a copy of a supplemental sheet to the application; each of which documents are submitted in quadruplicate.

The Applicant desires to apply for a loan in the amount of $50,000.00.

I would appreciate your forwarding me a copy of all your correspondence to the Applicant, since I shall be their attorney for matters concerning the application.

Very truly yours,

Albert V. Witham

Albert V. Witham

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

RECEIVED
AUG 17 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. 3950
Metal or Mineral Uranium
Date Received 8-17-55
Estimated Cost No Amount #50,000.00
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: TWIN ARROW PETROLEUM CORPORATION, a Delaware corporation
901 Sherman Street
Denver 3, Colorado (See separate sheet for officers names and addresses)

(*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.

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

(*d*) If a partnership, add to the above statement the names and addresses of all partners.

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

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

(See separate sheet)

(*b*) State any mine name by which the property is known. (See separate sheet)

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

(See separate sheet)

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

(*e*) If you own the land, describe any liens or encumbrances on it

(See separate sheet)

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. (See separate sheet)

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.

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

(*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.

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

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

16—66551-1

(See separate sheet for information required by 4.)

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

(*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 accompanying engineer's report and maps). Also separate sheet.

(*c*) The work will start within 60 days and be completed within 6 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 separate sheet).

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:

(*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 August 12, 1955.

TWIN ARROW PETROLEUM CORPORATION
(Applicant)

By Robert R. Hines
Melvin H. Schroeder, Pres

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

TWIN ARROW PETROLEUM CORPORATION
901 SHERMAN; DENVER 3 COLORADO

SEPARATE SHEET SUPPLEMENTAL TO APPLICATION

1. Name of Applicant.

Officers names and addresses of applicant:

Melvin Schroeder, President, 3246 Niagara; Denver, Colorado
S. T. Rabourn, Vice-President, Rangely, Colorado
A. M. Biderman, Secretary-Treasurer, 901 Sherman, Denver 3, Colo.

3. Applicant's property rights.

(a) Legal description of lands upon which exploration drilling is desired and proposed:

The following unpatented lode mining claims located in the Sylvia Mining District, Montrose County, Colorado, T. 45 N., R. 19W., NMPM, Sections 3 and 10:

Name of Claim	Recording Data of Location Notices	
	Book	Page
East ¼ of American Eagle	296	469
SW½ of American Eagle #0	213	299
East ½ of American Eagle #6	296	475
East ½ of American Eagle #7	296	476
South ½ of American Eagle #8	213	290
West ½ of Judy #1	349	340

Legal description of lands upon which exploration drilling as desired and proposed will benefit:

The following unpatented lode mining claims are located in the Sylvia Mining District, Montrose County, Colorado, T. 45 N., R. 19 W., NMPM, Sections 3 and 10:

Name of Claim	Recording Data of Location Notices	
	Book	Page
Remainder of American Eagle	296	469
Remainder of American Eagle #0	213	299
Remainder of American Eagle #6	296	475
Remainder of American Eagle #7	296	476
Remainder of American Eagle #8	213	290
Remainder of Judy #1	349	340
American Eagle #1	296	470
American Eagle #2	296	471
American Eagle #3	296	472
American Eagle #4	296	473
American Eagle #5	296	474

(Part of American Eagle #2 and all of #3 and #4 are located in Section 3; Judy #1 is mostly in the SE¼ of Section 10 and the SW¼ of Section 11; the remaining claims are in Section 10).

3. (continued)

(b) Mine name: American Eagle Mine (Located on American Eagle Nos. 0 and 8, which overlap; see map attached to engineer report).

(c) Twin Arrow Petroleum Corporation is the owner of the above properties. Refer to the "AGREEMENT" which is attached.

(e) Encumbrances on the properties:

The properties are subject to an ore payment of $111,000, payable to Boyd and Gale Oliver of Norwood, Colorado. The balance unpaid as of June 30, 1955, was $76,207.84. The owner, applicant, is also obligated to issue 200,000 shares of its Class A stock to the Olivers pursuant to the "AGREEMENT", which accompanies this application.

(f) See (a), above, for recording data of location notices.

4. (a) Mining operations have been conducted on the American Eagle mine since 1951 and are presently being conducted. The mine is presently owned and operated by Twin Arrow Petroleum Corporation and is mined under a split-check lease arrangement, the miners receiving 50% and the corporation 50%, of the gross proceeds. (Refer to the "AGREEMENT"). The mine workings are accessable for examination purposes. The mine shaft is located on American Eagle #0 and #8 and is an underground operation. (Refer to Page 8 of the accompanying Engineer Report for condition of the mine and the mining equipment which is at the property and is being used, as well as the living accomodations.)

(b) Production and Reserves. The total production to July 12, 1954, according to AEC records was 7,399 tons, which averaged 0.23% U308 and 2.42% V205. From December of 1954 through June, 1955, the period which the properties have been owned and operated by the Applicant, 3,653.28 tons have been shipped and sold averaging 0.22% U308 and 2.81% V205.

Reserves: According to the accompanying engineer's report, as of August 1, 1954, a total of not less than 8,457 tons of indicated and inferred ore still remained in the immediate vicinity of the workings on the American Eagle No. 0 claim. (See "Conclusions" on Page 1 and "Ore Reserves" on page 5 of the Engineer's Reports.)

(c) For geological features of the property, including mineralization, type of deposit, etc., refer to the accompanying engineer's report, "Geology and Ore Occurences" on page 3.)

The Applicant's reason for wishing to explore the properties is to find new and additional bodies of commercial uranium ore, but not to develop present ore bodies.

(d) For information as to access roads and distance to the mill, see "Aceess Roads" on Page 3 of the accompanying engineer's report.

(e) Manpower, materials, supplies, equipment, water and power are all available and are supplied by the split-check miners-lessees.

5. (d) Operating Experience. Since the Applicant intends to contract the exploration out on a footage basis (see accompanying bids), the contractee will perform all the exploration work and will provide the supervision. The split-check lessees of the property have mined the American Eagle Mine since the inception of the Olivers' ownership. In reference to their abilities and past performance see page 8, "Evaluation of Property", in the accompanying engineer's report.

SEPARATE SHEET SUPPLEMENTAL TO APPLICATION

5 (b). The Proposed Work. Refer to the Map attached to the Engineer's Report showing the American Eagle Group of claims. Witha particularity, refer to American Eagle Nos. 0, 8, and American Eagle. American Eggle Nos. 0 and 8 are located mainly in the NE$\frac{1}{4}$ of Section 10 and American Eagle is located mostly in the NW$\frac{1}{4}$ of Section 10. They have been outlined in red pencil for reference purposes, as have the other main claims referred to below.

The Company intends to perform exploratory drilling on American Eagle #0 and #8 south of the present workings. This drilling is intended to be perfomed on as close centers as the Defense Minerals Exploration Administration will allow. The Company and the engineering advise it has received suggests that the initial drilling be done on two hundred foot centers and that any favorable ground then be drilled on fifty foot centers. This drilling will probably be from one hundred-thirty to three hundred-fifty feet deep.

The Company then intends to drill the East end of the American Eagle claim on two hundred foot centers. The estimated depth of these holes is from one hundred-eighty to two hundred-fifty feet. Any favorable ground thus encountered would be drilled on fifty feet centers. Further, this same plan should be carried out on American Eagle No. 6, the east half of American Eagle No. 7, and the West half of Judy No. 1.

If there is any further drilling expenditures to be made out of unused funds, the remaining claims should be drilled on five hundred foot centers to determine the depth and favorability of the ore horizon. Favorable areas would then be drilled on spacings similar to those above.

Wagon drilling is intended wherever the wide spaced drillings reveal that the horizon can be reached and where water is not encountered.

A total amount of $50,000 of exploratory drilling is desired to be performed, on a contract basis, including supervision.

Twin Arrow Petroleum Corporation
901 Sherman; Denver, Colorado

SEPARATE SHEET SUPPLEMENTAL TO APPLICATION

6. Estimate of Costs. Attached hereto are two bids for the exploration work.

TWIN ARROW PETROLEUM CORPORATION
901 S[illegible]RMAN
DENVER 3, COLORADO

SIDON HARRIS, PRESID[illegible]

Southern GEOPHYSICAL COMPANY

PRECISION SEISMIC SURVEYS ▾ DATA REANALYSIS

P. O. Box 1398
Grand Junction, Colorado
June 11, 1955

Mr. A. V. Whitam, Attorney
Twin Arrow Corporation
420 First National Bank Bldg.
Denver 2, Colorado

Dear Mr. Whitam,

Pursuant to our past correspondence we take pleasure in submitting the following bid for exploratory drilling on the American Eagle Group of claims located in Gypsum Valley, Montrose County, Colorado. It is understood that this bid applies only to work done on the claims American Eagle #0 through American Eagle #8.

20,000 feet minimum contract (estimated at 14,000 feet of plug bit drilling and 6,000 feet of core drilling)

	0 - 100	100 - 200	200 - 300	300 - 400
Plug	$1.60	$1.85	$2.25	$2.85
Core	$2.95	$3.20	$3.60	$4.40

Supervision: $.50 foot added to the above figures. (Supervision to include direction and planning of program, preparation of maps and reports and services of one full time geological field assistant for sampling)

50,000 feet minimum contract

Reduce above plug and core prices by $.05 per foot.
No change in supervision prices.

100,000 feet minimum contract

Reduce above plug and core prices by $.08 per foot.
No change in supervision prices.

SIDON HARRIS, PRESIDE

Southern GEOPHYSICAL COMPANY

PRECISION SEISMIC SURVEYS ▾ DATA REANALYSIS

It is our recommendation that all of the drill holes contemplated under this program be probed and this can be easily accomplished by the geological field assistant.

If we are favored with this assignment the planning and supervision of the program will be under the direction of Mr. Howard Dutro, Geologist. Mr. Dutro will spend as much time on the property as is necessary to assure a complete and accurate job of evaluation and exploration.

Very truly yours,

SOUTHERN GEOPHYSICAL COMPANY

John N. Botkin

John N. Botkin
Supervisor

JNB/db

Twin Arrow Petroleum Corporation
901 Sherman; Denver 3, Colo.

PACIFIC WESTERN EXPLORATION COMPANY
1944 Broadway
Denver, Colorado MA 3 - 7136

August 4, 1955

Twin Arrow Petroleum Company
901 Sherman Street
Denver, Colorado

Gentlemen:

With reference to our drilling your American Eagle Claims 0 - 8, Gypsum Valley Mining District, Montrose County, Colorado, we wish to bid as follows:

Minimum total footage: 20,000 feet, estimated at 16,000 feet of plug drilling and 4,000 feet of core drilling, at the following rates:

	0 - 100 feet	100 - 200 feet	200 - 300 feet	300-400 ft.
Plug:	$ 1.58	$ 1.83	$ 2.25	$ 2.85
Core:	$ 2.90	$ 3.15	$ 3.60	$ 4.40

(per foot)

For a minimum total footage of 50,000 feet, reduce the above rates by $ 0.06 per foot. For a minimum total footage of 100,000 feet, reduce the above rates by $ 0.09 per foot.

Supervision will be included in the above work for $ 0.50 per foot.

Very truly yours,

PACIFIC WESTERN EXPLORATION CO.

R. W. Greene

R. W. Greene, Vice-President

RWG/gjm

ENGINEERS ASSOCIATES, Incorporated
Post Office Box 118 411½ Main Street
Telephone 2499
GRAND JUNCTION, COLORADO

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ENGINEERS ASSOCIATES, Incorporated
Post Office Box 118 411½ Main Street
Telephone 2499
GRAND JUNCTION, COLORADO

Following is a report on the American Eagle Mine in Gypsum Valley, Montrose County, Colorado

SUMMARY

Engineers Associates, Inc. was commissioned by Mr. Wayne Gray of Dolores, Colorado, and Mr. Boyd Oliver of Norwood, Colorado, to make an examination of this property for the purpose of calculating reserves of uranium ore. All the workings are confined to a single claim, therefore no data has been compiled on the other claims in this group. This examination was made July 28th and 31st, August 1st and 2nd, and 15th, 1954.

CONCLUSIONS

According to the records of the Atomic Energy Commission, a total of 7,399 tons has been produced to July 12, 1954. Based upon field examination and mapping of underground workings, together with drill logs of the U.S.G.S. diamond drill holes, a total of not less than 8,457 tons of indicated and inferred ore still remains (August 1, 1954) in the immediate vicinity of the workings on the American Eagle No. 0 claim. There are certain portions of this particular claim that still require additional drilling (these areas will be discussed later in this report). It is quite probable that such drilling will increase the ore reserves indicated above.

LOCATION AND TITLES

A total of nineteen claims is included in this group. These have been recorded in the County Court House at Montrose, Colorado, as follows:

American Eagle	Book 296	Page 469
American Eagle No. 0 (amended)	Book 213	Page 299
American Eagle No. 1	Book 296	Page 470
American Eagle No. 2	Book 296	Page 471
American Eagle No. 3	Book 296	Page 472
American Eagle No. 4	Book 296	Page 473
American Eagle No. 5	Book 296	Page 474
American Eagle No. 6	Book 296	Page 475
American Eagle No. 7	Book 296	Page 476

American Eagle No. 8 (amended)	Book 213	Page 290
Judy No. 1	Book 349	Page 340
Cabin	Book 343	Page 374
Cabin No. 1	Book 343	Page 375
Cabin No. 2	Book 343	Page 375
Cabin No. 3	Book 343	Page 376
Cabin No. 4	Book 343	Page 376
Cabin No. 5	Book 343	Page 377
Cabin No. 6	Book 343	Page 377
Cabin No. 7	Book 343	Page 378

The claims are held by possessory right in the names of Boyd Oliver and Gale Oliver, Norwood, Colorado. Eleven of the claims are located in Sections 3 and 10, Township 45 North, Range 19 West, N.M.P.M. Data concerning the location of the eight Cabin claims was not available. However, they were pointed out as being located less than one mile from the American Eagle Group in a generally southeasterly direction.

HISTORY

When the American Eagle group of claims was certified for Atomic Energy Commission bonus payment in October 1951, the records indicated that 5280 pounds of U_3O_8 had been produced prior to March 1, 1951. The total production according to the Atomic Energy Commission records to July 12, 1954, is 7,399 tons, which averaged 0.23% U_3O_8 and 2.42% V_2O_5. This tonnage contained 34,035.4 pounds of U_3O_8 and 358,112 pounds of V_2O_5. The property is in operation at the present time.

MAPS

Attached to this report is a claim map copied from a survey plat made by H. L. Owens, Civil Engineer, March 1952, together with a Brunton tape map of the underground workings on the American Eagle No. O claim, as prepared by Engineers Associates, Inc. The tracing from the Owens's map also indicates the approximate location of the Cabin group of claims These particular claims have not as yet (August, 1954) been surveyed and are only approximately located.

ACCESS ROADS

The access roads to these claims are in excellent condition. A good gravel road beginning at Colorado State Highway 80 traverses Gypsum Valley a distance of approximately nineteen miles. The road from this gravel to the workings on the American Eagle mine is less than one mile. This road is the usual dirt road that will occasionally require some maintenance after heavy rains or snow fall. The total distance from the mine to V. C. A.'s mill at Naturita is approximately 52 miles.

GEOLOGY AND ORE OCCURRENCES

Very little time was devoted to a study of the ore occurrences on this property since calculation of ore reserves was the paramount issue. However, the ore occurs in a down faulted block of the Salt Wash member of the Morrison sandstone of Upper Jurassic Age. This mine is located practically in the center of the Uranian Ore Belt as indicated by Dr. R. P. Fisher in his strategic minerals investigation report "Vanadium Deposits of Southwestern Colorado and Southeastern Utah." From observations made by the writer on the adjoining V. C. A. Gyp No. 1 claim and the American Eagle No. O claim, the uranium ore occurs in long, narrow, lenticular lenses, one of which exceeds 1600 feet in length. These lenses have a general strike of between N 50-62 W. The lenses, disclosed to date, appear to occur in an eschelon manner in a general northwesterly direction. Drilling by two adjoining operators on the Mary Jane and Hummingbird claims has indicated that the mineralization is scant in the Hummingbird claim but appears to cross the northeastern corner of the Mary Jane claim. Further exploration drilling on the American Eagle and American Eagle No. 1 would have excellent possibilities of disclosing additional ore lenses. The ore occurs within the mineralized lenses as laminations of uranium-vanadium streaks between barren sandstone. These ore streaks range from a few inches to five or more feet in thickness,

with a total mineralization in the thickest part of the lense ranging from one foot to as much as eleven feet. Except where the barren sandstone is massive, this mineralization does not lend itself to selective mining. The past operators have mined the entire thickness of mineralized matter, picking out the obviously barren sandstone, either underground or prior to dumping into the ore bin. Examination of the property showed that the waste dumps are very small in comparison to the total tonnage of ore shipped. Considering the fact that this total tonnage has averaged 0.23% U_3O_8 and 2.42% V_2O_5, the presence of the barren sandstone within the mineralized lenses is not of serious consequence.

SAMPLING

Because of the long past production from this property detailed sampling was not indicated, however the writer cut a few samples simply as checks. These assayed as follows:

Sample No.	% of U_3O_8	% of V_2O_5
1	0.25%	2.77%
2	0.14%	3.30%
3	0.30%	3.15%
4	0.22%	2.80%

Where taken, these samples included both waste and mineral, and are therefore indicative of the probable grade of ore that could be produced. Examination of the settlement sheets of ore produced from this property shows that the uranium content ranged from 0.15% to 0.43%, and vanadium from 1.29% to 5.50%. It is reported that a recent shipment from the bottom of the No. 3 incline, made since the examination, averaged better than 1% U_3O_8. Examination by the writer of this face on August 15th, showed five solid feet of extremely high grade ore that would assay at least 1% U_3O_8 or better. This ore is located in the vicinity of diamond drill hole G V 193 shown on the accompanying map.

ORE RESERVES (August 1, 1954)

Following is a tabulation of "indicated" and "inferred" ore in certain blocks designated by letters A, B, C, etc. The "indicated" ore is that ore now visible on the ribs and/or breasts of the present underground workings, together with blocks around diamond drill holes. The "inferred" ore is an additional block of ore beyond the limits of the "indicated" ore blocks. The widths of these blocks is predicated on the observations made of the underground workings. The tonnages cannot of course be guaranteed, but considering the extensiveness of the present underground workings together with the thicknesses of mineralization reported by the U.S.G.S. drilling, such calculated tonnages appear to be reasonable. The underground workings were carefully drawn to scale from measurements made in the field. The areas of various blocks were determined by planimeter measurement. The cubic contents of the blocks were calculated by the planimetric measurements, multiplied by arithmetical averages of mineralized thicknesses. Thirteen cubic feet of rock in place was used to compute tonnages.

Block	"Indicated" Tons Ore	"Inferred" Tons Ore
A	249 Tons Ore	---
B	---	132 Tons Ore
C	911 Tons Ore	---
D	---	480 Tons Ore
E	1021 Tons Ore	---
F	---	523 Tons Ore
G	1108 Tons Ore	---
H	---	465 Tons Ore
I	801 Tons Ore	---
J	---	325 Tons Ore
K	358 Tons Ore	---
L	---	290 Tons Ore
M	349 Tons Ore	---
N	---	99 Tons Ore
	4797 Tons Ore	2314 Tons Ore
Incline # 1 (USGS data)	837	509
	5634 Tons Ore	2823 Tons Ore

Total Both Types 8457 Tons Ore

The average grade of the ore remaining in the No. 1 Incline by U.S.G.S. data is 0.24% U_3O_8 and 3.00% V_2O_5. The writer's check sample assayed 0.22% U_3O_8 and 2.80% V_2O_5.

In addition to the blocks in incline No. 2 and No. 3 and around the ore holes G V 190 to G V 142, remaining blocks of ore were calculated by the Atomic Energy Commission in incline No. 1 and have been included. A total tonnage of 8,457 tons compares favorably with ore reserves computed by the Atomic Energy Commission as of April 1953 after deducting production since that date. At that time the U.S.G.S. data computed 6,900 tons of "indicated" ore averaging 0.20% U_3O_8 and 2.85% V_2O_5 and 6,800 tons of "inferred" ore averaging 0.18% U_3O_8 and 2.76% V_2O_5, making a total of 13,700 tons. Since May 15, 1953 the owners have shipped (data from settlement sheets) 3,928.53 tons. Assuming that 2,200 tons of this was produced from areas that they had considered as "indicated" ore, there would be a remainder of 4,700 tons of "indicated" ore. Assuming that 1,728 tons was produced from areas that had contained "inferred" ore there would be approximately 5,072 tons of this type remaining. However, the ore reserves calculated by the U.S.G.S. include all ore in excess of 0.10% U_3O_8, therefore the actual reserves of commercial grade ore would be less than the 13,700 tons estimated by the U.S.G.S. Since all the initial production bonus on this property has been paid out, 0.10% ore cannot be classified as commercial grade unless there is higher grade ore to be blended. The writer's calculations of 5,634 tons of "indicated" ore is somewhat higher than the U.S.G.S. balances and the 2,823 tons of "inferred" ore is somewhat lower. However, the total of 8,457 tons (by the writer) compares quite closely with the 9,772 tons by the U.S.G.S. calculations, if allowances for omission of a certain percentage of 0.10% ore is made.

On the mapping of the underground workings it will be noted that the drilling, both by the U.S.G.S. and by the owners to the northwest did not disclose appreciable ore, therefore it was necessary to terminate the ore block approximately 40 feet in a northwesterly direction from drill hole G V 114.

It will be further noted that a very excellent body of ore is indicated by drill hole G V 193, at the No. 3 incline. However, the drill hole G V 192, approximately 97 feet in the northwesterly direction, contains scant mineralization. There has been no additional drilling either by the U.S.G.S. or by the owners in this area, therefore it was necessary to terminate the ore block approximately 70 feet northwest of said good drill hole. Continuing further in the northwesterly direction to the drill holes G V190 to G V 142, respectively, the lack of drilling in this area makes it impossible to indicate anything except a long, narrow channel of mineralization containing rather weak values of uranium. It will be noted however, that the vanadium content in this area remains quite high, therefore it might be possible that the drill records do not accurately represent the grade of uranium ore that actuallyexists. It may be possible also that drilling on a more closely speced pattern, on both sides of this channel, may greatly enlarge the ore reserves. There is the further possibility that mining of the ore block at incline No. 3 may continue through the blank space in a northwesterly direction towards drill hole G V 190 and further increase the ore reserves.

In addition to the drilling by the U.S.G.S., the owners of this property have wagon drilled a large area of the American Eagle No. O claim. The writer did not attempt to probe all of these holes, simply those that would have some bearing on the determination of potential ore reserves. In each case, where holes were probed by the writer, the drill records by the owners were found to be very accurate. Attached to this report is a tabulation of said drill logs as furnished by the owners. It will be noted that to the south of incline No. 3 the owners have drilled a considerable number of holes. Certain ones of these were shown to contain ore, when these holes were probed by the writer, some were found to be caved. However two of them (54-35 and 53-24) contained sufficient radioactivity to indicate that there might

be an "off-shoot" trend of ore from G V 193 in a southeasterly direction. These two holes could also indicate the presence of a parallel lense of ore. Further drilling in this area is indicated.

Since detailed sampling was not done, the best estimation of the possible grade of future production would be to use the averageof 7,400 tons produced in the past, namely, 0.23% U_3O_8 and 2.42% V_2O_5. This average is lower than the average of the samples taken by the writer, compares favorably with the estimated grade of U.S.G.S. tabulations and allows for dilution during mining operations. Therefore, mining conditions being comparable, it is not unreasonable to expect that further production should be of a grade similar to that produced in the past.

EVALUATION OF PROPERTY

This mine can be classified as an excellent uranium property both from past production and future potential. The property has been worked in an exceptionally clean workman-like manner. The inclines and underground workings are clear and all waste material has been removed to the surface. The roof is adequately supported by timbers and where necessary roof bolting has been used. The track in the workings is in good shape but the transportation problem could have been better engineered in order that there be less handling of the ore cars and more useage of gravity for the loaded cars.

The property contains sufficient operating equipment to continue present production. Following is a tabulation of the mining equipment now present at the property:

1 Ingersoll-Rand Compressor (gasoline) 105 cu, ft.
1 Ingersoll-Rand 45# Jackhammer
1 Chicago Pneumatic 55# Jackhammer & Jackleg (air and water hoses)
2 Two ton ore cars
1 Skagit double drum hoist, Wisconsin air-cooled motor
1 Ingersoll-Rand Air Tugger
1 Gardner-Denver Tugger
1 Joy double drum Slusher and Scraper
1 35 Ton steel bin
1 10' x 36' air receiver and misc. small tools

1 Underground steel loading ramp
1 6" blower
misc. timber, pipe, rail, ties etc.

There are adequate living accomodations for a small crew of approximately six people. There are three cabins on the premises.

1 12 x 14 to accommodate two men
1 12 x 16 to accommodate two men
1 14 x 26 a combination mess hall and living accommodations for two

The mess hall is equipped with a butane refrigerator and cook stove; beds, tables, chairs etc. The other two cabins are equipped with coal heating stoves and beds.

The total production from this mine has been obtained from a single claim. The brief geological reconnaissance made by the writer indicates that an intelligently directed drilling campaign should produce additional ore lenses on other claims of this group. There is also the possibility that drilling exploration on the Cabin Group of claims might disclose further uranium mineralization. No attempt was made at this time to examine this particular group from a geological standpoint. The ore bearing formations are present in this group and could produce further uranium tonnages.

In summation, it is the writer's considered opinion that this property is one of the few on the Colorado Plateau that is available for purchase that can continue to ship commercial ore immediately. There is no delay or preparation work involved. The property has had a successful past production history and still contains significant reserves of commercial Uranium ore.

Respectfully submitted,

Charles W. Yetter

Charles W. Yetter
Registered Professional Engineer No. 1972

CWY/ch

DRILL LOG FOR 1952

HOLE NO.	
52-1	5½ ft. of ore @ 58-63½ total depth 72 ft. V205 1.54 mill assays .35 U308 probe showed .25-.64
52-2	72 feet deep 3½-4 feet of ore at 58-62 ft. V205 1.58 U308 .39 mill assay no probe
52-3	90 ft. deep 9 ft. of ore @ 56-65 ft. sample no. 1 7 ft. v205 U308 .21 sample no. 2 2 ft. v205 .82 U308 .05
(New Roll) 52-4	108 ft. 5½ ft. of ore 81-87 V205 U308 .16 mill assay U308 .20-.78 probe
52-5	108 ft. 6 ft. of ore at 78-84 U308 .14 mill assay
52-6	108 ft. 4 ft. of ore at 79-83 ft. V205 U308 .18 mill assay probe .20-.48
52-7	90 ft. no ore
8	126 ft. no ore
9	108 ft. no ore
52-10	90 ft. no ore
52-11	72 ft. no ore
52-12	72 ft. no ore
52-13	72 ft. no ore
52-14	72 ft. no ore
52-15	72 ft. no ore

DRILL LOGS FOR 1953

53-1	90 ft. 9 ft. of ore at 72 to 81 ft. probe
53-2	90 ft. 2-3 ft. at 76-78 ft. in foot wall
53-3	90 ft. 2 ft. at 72-74 ft. hanging wall
53-4	90 ft. blank too far in hanging wall
53-5	90 ft. 9 ft. of ore at 72-81 ft. no peg in road
53-6	90 ft. 9 ft. of ore at 72-81 ft. no peg in road
53-7	90 ft. 9 ft. of ore at 72-81 ft. no peg in road
53-8	90 ft. 9 ft. of ore at 72-81 ft. no peg in road
53-9	90 ft. 9 ft. of ore at 78-87 ft.

HOLE NO.	
53-10	90 ft. blank too far in hanging wall
53-11	108 ft. 6 in.-1 ft. at about 100 ft. no peg across wash from intersection
53-12	108 ft. 6 in. -1ft. at about 100 ft. no peg 7 ft. south of 53-11 no peg
53-13	108 ft. 2 ft. at 100-102 7 ft. south of 53-12 no peg
53-14	108 ft. blank in foot wall close to main road across wash no peg
53-15	126 ft. 2 ft. at 116 ft. in edge of 3rd road trend toward Mayfields no peg
53-16	126 ft. blank
53-17	126 ft. blank no peg 9 ft. on foot wall side of 53-16
53-18	90 ft. lost steel before we reached ore horizon in line with No. 53-17 Third roll east end in draw
53-19	lost at 85 ft. probe shows ore in bottom of hole
53-20	108 ft. streak and carbon at 90 ft.
53-21	100 ft. carbon at 90 to 100 ft.
53-22	108 ft. carbon at 90 to 100 ft.
53-23	108 ft. carbon at 90 to 100 ft.
53-24	2 ft. ore at 104 hole 108
53-25	126 ft. 1½-2 ft. of ore at 112 ft.
53-26	lost at 100 ft.
53-27	126 ft. ore horizon at 107-118 ft. passibly low grade V205 no U308
53-28	126 ft. 2 inch streak of good ore at 108 ft.
53-29	90 ft. no ore southeast end of 2nd row
53-30	90 ft. no ore southwest end of 2nd row
53-31	140 ft. no ore, ore horizon 122-132 ft. east end of 3rd row
53-32	missing

DRILL LOGS OF 1954

HOLE NO.	
54-1	135 ft. at end of 1st roll no ore
54-2	125 ft. at end of 1st roll streak of .06 by probe at 100 ft.
54-3	125 ft. at end of 1st roll 1 ft. of .10 at 100 ft. 10 ft. from clay
54-4 see below	
54-5	120 ft. at end of 1st roll streak at 108 ft. top of ore sand.
54-6	100 ft. at end of 1st roll no ore
54-7	125 ft. no ore ore sand at 113 ft.
54-8	135 ft. 1 ft. ore ore that shows .14% on counter and streak in cuttings
54-9	105 ft. .20 streak at 80 ft.
54-10	135 ft. east end of 3 rd roll lost hole before we reached ore sand water
54-11	165 ft. lost end of 3rd roll water at 140 before we reached ore sand. Probable ore sand at 160 ft.
54-12	next four holes at top of portal 48 ft. ore at 40 ft. in top of 4 ft. of ore sand cuttings on counter ran 1 ft. .60/6" .20
54-13	70 ft. ore at 39 ft. in top of 9 ft. ore sand cuttings ran 1 ft. 1% 6 inch. .30 on counter
54-14	48 ft. ore at 38 ft. 1 ft. of 1% and 6 in. of .10
54-15	48 ft. streak at 38 ft. in top of 9 ft. of ore sand.
54-16	48 ft. about 20 ft. north of track at portal no ore ore sand at 38-48 ft.
54-17	48 ft. ore sandat 38 ft. streak at 38
54-18	48 ft. close to ore bin no ore ore sand at 32-40 ft.
54-19	48 ft. probe shows .08 at 32 ft.
54-20	45 ft. of ore O.S. at 27 ft. hole is in road, 7 ft. north of peg near ore bin
54-4	120 ft. at end of 1st roll. 6 inch of .08 at 100 ft. 8 ft. from clay

HOLE NO.	
54-21	48 ft. no ore o.s. at 26 ft. hole is in road 10 ft. south of peg
54-22	40 ft. ore sand broken up into streaks from 20-30 ft. count of .08 probe at 23 ft and 28 ft.
54-23	105 ft. NE of Cabin streak probes .20 at 85 ft. 6 ft. ore ore sand then 3 ft of clay and ore sand in streaks
54-24	75 ft. probe shows streak of 1% at 62 ft. cuttings show streak good ore sand streak in top of o.s.
54-25	90 ft. probe shows streak at 76 ft. cuttings did not show ore sand broken up into streaks
54-26	20 ft. from cook shack 94 ft. lost hole caved
54-30	93 ft. o.s. 77-82 ft. no ore
54-31	90 ft. o.s. 77-84 ft. no ore
54-32	90 ft. no ore
54-33	100 ft. 1½ ft. of 1% on 3rd range of probe ore in middle of sand
54-34	115 ft. o.s. at about 98 ft. driller Gale
54-35	105 ft. o.s. at 88-100 ft. 12 ft. ore sand 1 ft. of ore at 94-95 ft. probe shows .60
54-36	100 ft. wet did not reach horizon
54-37	64 ft. o.s. at 42-54 ft. pluged could not probe no ore
54-38	64 ft. o.s. at 41-53 ft. no ore probe hole plugged
54-39	48 ft. ore sand 35-48 ft. no ore
54-40	48 ft. ore sand 33-48 ft. no count
54-41	106 ft. o.s. 90-103 no ore red clay under o.s.
54-42	109 ft. o.s. at 94-108 ft. barren
54-43	109 ft. o.s. at 92-104 ft. barren
54-44	109 ft. o.s. at 97-105 barren
54-45	125 ft. o.s. at 113-121 ft. barren
54-46	NE end of 3rd roll. 166 ft. o.s. 150-153 ft. red and blue clay underneath 3 ft ore sand barren

RECEIVED
AUG 17 1955

A G R E E M E N T

THIS AGREEMENT, Made and entered into this 10th day of December, 1954, by and between BOYD OLIVER and GALE OLIVER, both of Norwood, Colorado, (hereinafter sometimes referred to as the "Sellers") and TWIN ARROW PETROLEUM CORPORATION, a corporation duly authorized to do business in the State of Colorado, with its principal office at 622 First National Building, Denver, Colorado, (hereinafter sometimes referred to as the "Buyer")

W I T N E S S E T H :

WHEREAS, The Sellers are the owners of certain unpatented lode mining claims located in the County of Montrose and State of Colorado in the unorganized Little Gyp Mining District, and certain personal property thereon located, specifically described in Schedule "A" attached hereto and incorporated herein by reference, and

WHEREAS, The parties hereto are mutually desirous of entering into a contract for the sale of all of such unpatented mining claims and personal property according to terms and conditions hereinafter specified,

NOW, THEREFORE, THESE PRESENTS:

Section 1.

SALE

For and in consideration of the payments, covenants and agreements hereinafter specified to be paid, kept and performed by the Buyer, the Sellers have agreed, and by these presents do hereby agree, to sell, convey and deliver unto the Buyer, its successors and assigns, all of the right, title and interest of the Sellers in and to all of the unpatented lode mining claims and personal property specifically described in Schedule "A" attached hereto.

Section 2.

PURCHASE PRICE PAYMENT

In consideration of the premises herein contained, the Buyer has agreed to make the following payments unto the Sellers:

(a) Thirty-nine Thousand Dollars ($39,000) to be paid upon execution of this agreement, receipt whereof is hereby acknowledged by the Sellers.

(b) One Hundred Eleven Thousand Dollars ($111,000) to be paid from, but only from, production obtained from the above described claims as follows:

(1) Five Thousand Dollars ($5,000) to be paid Sellers from the first Fourteen Thousand Dollars ($14,000) of gross proceeds received from monthly production, to be paid on the 10th day of each month following the month in which such production was obtained, such payments to begin January 10, 1955. In the event said gross proceeds should be less than Fourteen Thousand Dollars ($14,000) for any month then the amounts to be received by the parties shall be reduced proportionately.

(2) In addition, one-sixth (1/6) of any excess of any gross proceeds received from said monthly production over and above said Fourteen Thousand Dollars ($14,000) but less than Twenty Thousand Dollars ($20,000) shall be paid unto Sellers at the times the payments provided in (1), immediately above, are paid.

(3) The term "gross proceeds" as used in sub-paragraphs (1) and (2) above shall mean all amounts received from or for the sale of ores mined and removed from said mining claims, including all bonuses and premiums, but excluding amounts received as transportation and development allowances.

(4) The buyer shall have the option, should it so desire, at any time to pay all or any part of said One Hundred Eleven Thousand Dollars ($111,000) specified in sub-paragraph B above and thereby discharge any further obligation upon it to make the payments of percentages of production as set forth in sub-paragraphs 1 and 2 above.

(c) Two Hundred Thousand (200,000) shares of the Class A common capital stock shall be issued unto Sellers as soon in the year 1955 as such stock can be registered and qualified for resale to the public within the State of New York. The Buyer agrees to institute appropriate action and diligently take all steps necessary to register and qualify said shares in compliance with applicable federal securities laws and blue sky laws of the State of New York. It is agreed that in any event such stock shall be registered, qualified and issued unto Sellers no later than September 15, 1955. If, however, said stock can be resold to the public thru authorized securities dealers without the necessity of such stock being registered or qualified as above provided then such stock may be issued unto Sellers without such registration or qualification and the buyer agrees that it will promptly obtain a determination of whether such stock can be resold to the public without such registration or qualification and in the event that such determination determines that such stock can be so resold then, and in that event, said stock shall be issued unto the Sellers as soon in the year 1955 as possible.

(d) In the event of the discovery or development of additional ore as defined in Section 3 hereof, but only in such event, Sellers shall be issued an additional two hundred thousand (200,000) shares of the capital stock of Twin Arrow Petroleum Corporation, which stock shall be Class B common stock, if such stock be then in existence, otherwise to be Class A common stock. Such stock shall be issued to Sellers at such time as they shall demand the same after January 1, 1956. Sellers agree to take and hold said stock for benefit investment purposes and not for distribution. In the event that Seller should later decide to offer to sell and/or sell such stock publicly and in the event that Sellers should so request, the Buyer shall cause such stock to be registered for resale, the expense of such registration to be advanced and paid by the Sellers.

paragraph (c), immediately above, so that such shares may be eligible for immediate resale to the public through qualified securities dealers without further registration thereof being required, or in the event that such shares should require further registration, then Buyer shall register the same. The Buyer shall have the privilege, at its sole option, to register said additional shares at the same time as the registration of the initial two hundred thousand (200,000) shares is made and issue such shares unto the Sellers at such time if such stock is due Sellers pursuant to Section 3.

Section 3.

DISCOVERY OF DEVELOPMENT OF ADDITIONAL ORE

(a) The Sellers shall be entitled to receive the additional issuance of two hundred thousand (200,000) shares of stock as specified in Section 2(d) above in any of the following events:

(1) A deposit of ore, economically capable of being mined, is discovered or developed on any of the mining claims described in Schedule "A" other than the two presently being mined, namely, American Eagle No. 0 and American Eagle No. 8.

(2) A deposit of ore, separate from present known ore bodies, economically capable of being mined, is developed or discovered upon the American Eagle No. 0 or the American Eagle No. 8.

(3) An extension of known ore bodies, economically capable of being mined, is discovered or developed.

(4) Sellers convey unto the Buyer a mining claim or claims other than those listed in Schedule "A" and upon which there exists a deposit of ore economically capable of being mined.

(b) The term "known ore deposits" as used in this Section 3 refers to those ore deposits presently known to exist on American Eagle No. 0 and American Eagle No. 8 claims which are shown and delimited on the "Brunton-Tape map of underground workings and diamond drill holes of of American Eagle Mine," the same being an exhibit to the report on the American Eagle property prepared by Engineers Associates, Inc., Grand Junction, Colorado, in the summer of 1954, and, in addition, shall include the ore deposit delimited by three (3) wagon drill holes on American Eagle No. 8 claim, but not shown on said

RIDER

Section 3.5

ARBITRATION

In the event the parties hereto should fail to agree as to whether discovery or development of additional ore is made in the manner and of the type defined in Section 3 above, then the parties agree that such dispute shall be referred to arbitration. Each party shall nominate one arbitrator and the arbitrators so appointed shall nominate the third arbitrator. Said arbitrators as so appointed shall be authorized to make such investigations as they deem necessary to resolve the dispute and thereafter shall make their determination as to whether there has been a discovery or development of additional ore as defined in said Paragraph 3 which determination shall be reduced to writing and shall be binding upon the parties hereto for all purposes of this contract. The cost of such arbitration shall be borne equally by the parties hereto. The arbitrators so appointed shall be disinterested persons experienced in the mining of uranium ore deposits.

exhibit to such report. The term "economically capable of being mined" shall mean such a deposit as a reasonably prudent miner would consider as being economically feasible of being mined, without reference, however, to any capital payment required for acquisition of/such deposit.is located.

Section 4.

INSTRUMENTS OF CONVEYANCE

Upon the execution of these presents, the Sellers shall prepare and execute a proper mining deed unto the Buyer in quit claim form, covering all of the real property listed in Schedule "A" and a bill of sale transferring title to all personal property therein described. At such time the Buyer shall execute a quit claim deed releasing and quit claiming unto Sellers any interest of the Buyer in and to said mining claims and a bill of sale retransferring title to said personal property. Such deed and bill of sale shall be utilized for the purpose of releasing any record interests which Buyer may have acquired hereunder in the event of default in the terms and conditions hereof, and in the event that Sellers should elect to declare a forfeiture as hereinafter more fully specified.

Section 5.

TITLE

It is expressly understood by and between the parties that no warranty of title to said mining claims is made by the Sellers and Sellers represent only that they have in good faith staked the mining claims described in Schedule "A" and have asserted ownership over the respective claims since the same were staked. The Buyer has had a survey conducted to determine the position of the claims on the ground and the possible existence of any overlapping or conflicting claims. The Sellers have no knowledge of any overlapping or conflicting claims except as indicated on the said map prepared for Buyer with the exception of the possible overlap of a portion of the Brook claim, and of the Miracle and Gyp No. 2 claims.

Section 6.

SELLERS' REPRESENTATIONS

It is expressly understood by the parties that no warranty or representations of quality of any of the mining claims covered hereby, or of

the quantities of ore which may be thereon, have been made by the Sellers unto the Buyer and that Sellers have not and do not warrant or guarantee the accuracy or reliability of any drill logs, radiometric probing reports, maps, surveys or other geologic or other information which has been furnished unto the Buyer. Any of such information or data furnished by the Sellers has been furnished in good faith to enable the Buyer to conduct its own independent investigation of the property, and the Buyer for its part has relied solely upon its independent investigation in consummating this agreement.

Section 7.

SUPERVISION OF OPERATIONS

Until the One Hundred Eleven Thousand Dollar ($111,000) payment, specified in Section 2(b) above, has been paid unto the Sellers from production obtained from the mine, the Sellers shall reserve the right, if they desire to exercise the same, to have supervisory control over the mining, exploration and development operations conducted upon the property. Said supervisory control shall be directed to the end of insuring that the property is operated and developed in a good and sound mine-like fashion and that mining operations are conducted so as to remove the greatest amount of ore possible with due regard to the preservation and maintenance of the property as a workable mine. The Sellers, however, shall not be entitled to receive additional compensation for their services in connection with such supervision and control. Not withstanding the rights invested in the Sellers by this Section 7, the Buyer shall have full and free access to the property for all lawful purposes, so long as the operations be not unreasonably hampered thereby.

Section 8.

PERFORMANCE OF ASSESSMENT WORK

Until such time as all of the payments due Sellers under Section 2 hereof have been paid, the Buyer agrees that it will perform all necessary annual labor or improvements on said mining claims required for the retention of possessory rights under the mining laws. Buyer shall prepare and file on or before May 15 of each year an affidavit attesting to the performance of such assessment work. Such work shall be performed and such affidavit prepared

and filed in conformity with applicable state and federal mining laws.

Section 9.

TRANSFER OF POSSESSION

Upon execution of this agreement and payment of the Thirty-nine Thousand Dollar ($39,000) initial payment, there shall be delivered unto Buyer the deed conveying title to said premises, and possession of all of the property described in Schedule "A" shall be delivered unto the Buyer and Buyer may commence thereupon operations upon the property, subject to the limitations and conditions of this agreement and to the right of supervision of Sellers specified in Section 7.

Section 10.

ESCROW INSTRUCTIONS

Upon execution of these presents, the quit claim deed and bill of sale releasing the interest of Buyer unto Sellers, as specified in Section 4 above, together with the original copy of this contract, shall be placed in escrow with the First National Bank of Denver, Colorado, which is hereby designated to act as escrow agent under the terms and conditions hereof and instructed to act according to the following instructions:

(a) Escrow agent shall retain the instruments delivered unto it until Buyer shall present adequate evidence that all payments due under Section 2 hereof have been made unto the Sellers. At such time as such proof is made, the escrow agent shall deliver the instruments held by it unto the Buyer.

(b) In the event default should occur under the terms hereof, and Sellers should elect to declare a forfeiture of this agreement, then the escrow agent is authorized, upon presentation of adequate proof of the declaration of such forfeiture, to deliver all of the instruments held by it unto the Sellers.

Section 11.

FORFEITURE

In the event the Buyer should fail to make any payments due unto the Sellers under the terms hereof at the times and in the manner as herein required, or shall fail to perform any of the duties required of it hereunder,

then Sellers shall have the privilege of serving notice upon the Buyer specifying such default and the substantial facts constituting the same. Such notice shall further state that unless such default in performance is corrected within a period of thirty (30) days of service of such notice, Sellers shall have the privilege of declaring a forfeiture of all of the rights and interest of Buyer in and to said mining claims. In the event that Buyer should fail within said thirty (30) day period to cure or correct its default of performance, then the Sellers, at their election, may declare this contract and all the right, title and interest of Buyer in the property, described on Schedule "A", forfeited and may require that the quit claim deed held by the escrow agent as aforesaid be returned unto them. In the event of such forfeiture, the Sellers shall be entitled to retain all payments theretofore made unto them as their liquidated damages. It is understood and agreed between the parties, however, that the privilege of forfeiture as herein specified shall be in addition to any other remedies, whether the same be for damages or specific performance or other relief, to which Sellers would be entitled in law or in equity in case of default.

Section 17.

NOTICE

Any written notice required under the terms of this agreement shall be deemed validly served and such service complete when the same has been deposited in the United States mail for transmittal by registered mail in a properly stamped and addressed envelope. Such notice directed to Sellers shall bear the following address:

Floyd Oliver
Norwood, Colorado

Such notice directed to the Buyer shall bear the following address:

Twin Arrow Petroleum Corporation
622 First National Bank Building
Denver, Colorado

Either party shall have the privilege of changing its address for service of notice hereunder by supplying written notice unto the other, specifying such new address.

Section 13.

ASSIGNMENT

Until the payments required to be made unto Sellers hereunder have been paid in full, the Buyer shall not transfer or assign its interest in said mining claims or personal property described in Schedule "A" without first obtaining from Sellers their written consent thereto.

Section 14.

BENEFIT

Subject to the limitations of Section 13 hereof, this agreement shall be binding upon and shall inure to the benefit of the parties hereto, their respective successors, legal representatives and assigns.

IN WITNESS WHEREOF, The parties hereto have executed this agreement at Montrose, Colorado, the day and year first above written.

_____ (SEAL)
Boyd Oliver

_____ (SEAL)
Gale Oliver

SELLERS

TWIN ARROW PETROLEUM CORPORATION

ATTEST:

_____
Secretary

By _____ (SEAL)
President

BUYER

STATE OF COLORADO)
) ss.
COUNTY OF ~~MONTROSE~~)

The foregoing instrument was acknowledged before me this 10th day of December, 1954, by Boyd Oliver and Gale Oliver.

Witness my hand and official seal.

My commission expires ~~January 16, 1956~~.

_____
Notary Public

STATE OF COLORADO)
) ss.
COUNTY OF [illegible])

The foregoing instrument was acknowledged before me this 10th day of December, 1954, by [illegible] Hagen, [illegible], and [illegible] Hagen, Sec., [illegible] Corporation.

Witness my hand and official seal.

My commission expires:

[illegible]

Notary Public

SCHEDULE "A"

1. The following described unpatented lode mining claims located in the unorganized Little Gyp Mining District in the County of Montrose and State of Colorado, to-wit:

Claim Name	* Book	* Page
American Eagle	296	469
American Eagle No. 0	343	50
American Eagle No. 1	296	470
American Eagle No. 2	296	471
American Eagle No. 3	296	472
American Eagle No. 4	296	473
American Eagle No. 5	296	474
American Eagle No. 6	296	475
American Eagle No. 7	296	476
American Eagle No. 8	296	477
Cabin	296 & 343	457 & 374
Cabin Claim No. 1	296 & 343	478 & 375
Cabin Claim No. 2	343	375
Cabin Claim No. 3	343	376
Cabin Claim No. 4	343	376
Cabin Claim No. 5	343	377
Cabin Claim No. 6	343	377
Cabin Claim No. 7	343	378
Judy No. 1	349	340

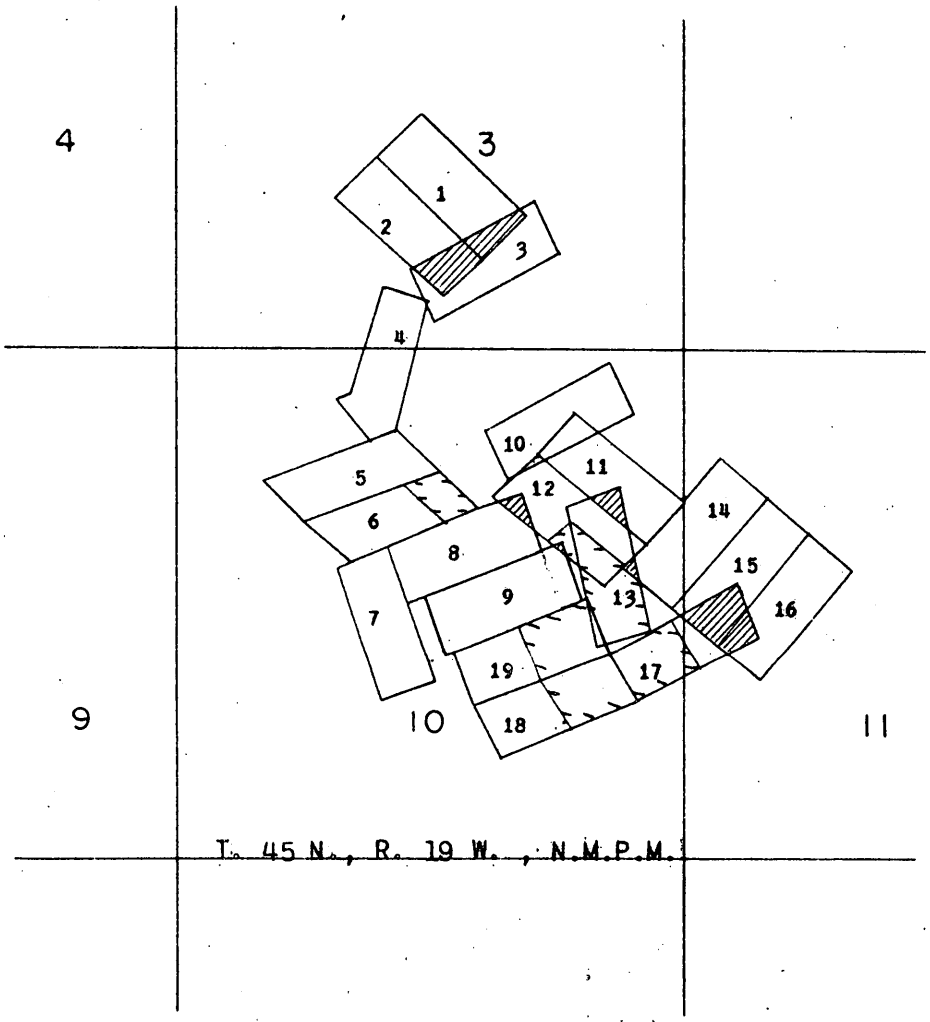
* The Book and Page set opposite the above claims refer respectively to the recordation of the Location Certificates of such claims in the office of the Recorder of the County and State aforesaid.

2. All of the following described mining equipment and machinery located on the above claims:

1 Ingersoll-Rand Compressor (gasoline) 105 cub. ft.
1 Ingersoll-Rand 45# Jackhammer
1 Chicago Pneumatic 55# Jackhammer & Jackleg (air & water hoses)
2 Two ton ore cars
1 Skagit double drum hoist, Wisconsin air-cooled motor
1 Ingersoll-Rand Air Tugger
1 Gardner-Denver Tugger
1 Joy double drum slusher and scraper
1 35 ton steel bin
1 10' x 36" air receiver and misc. small tools
1 Underground steel loading ramp
1 6" blower
misc. timber, pipe, rail, ties, etc.

These maps were all received with
Mr. Traver's memorandum March 12, 1956

RECEIVED
MAR 14 1956



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U.S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

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JANUARY 1955

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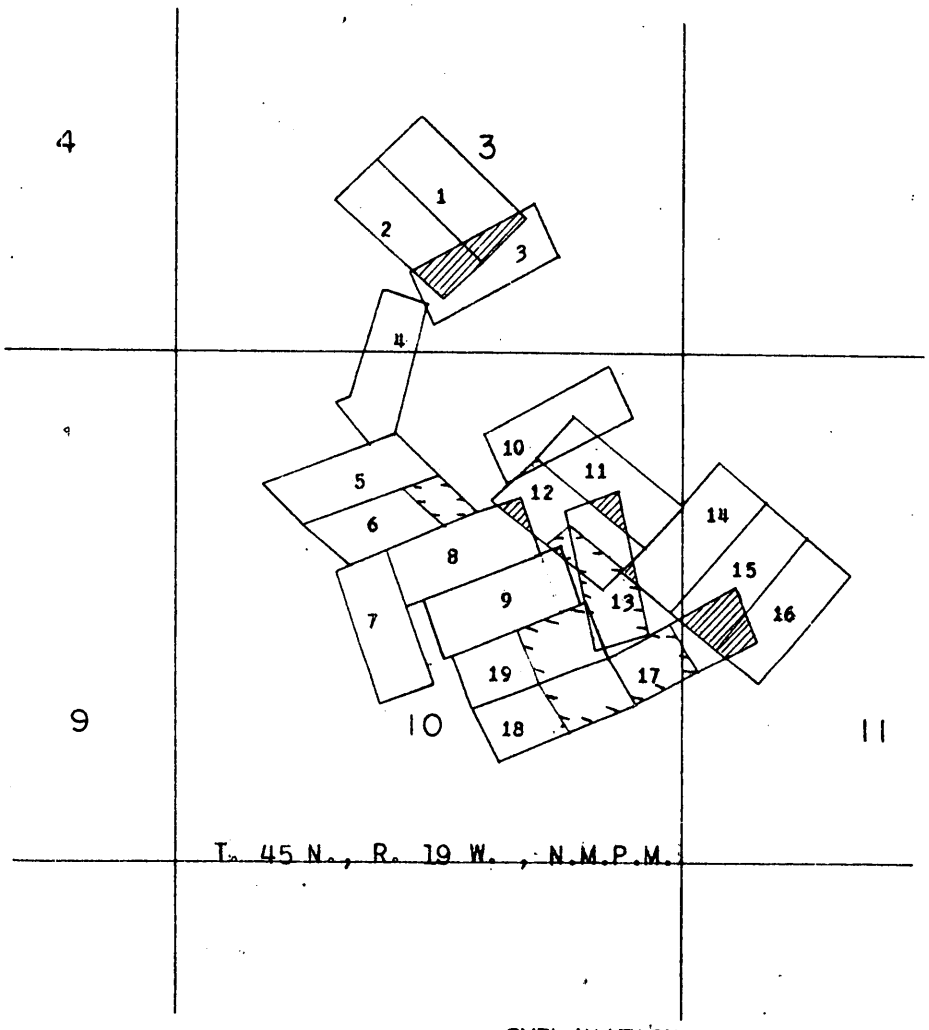

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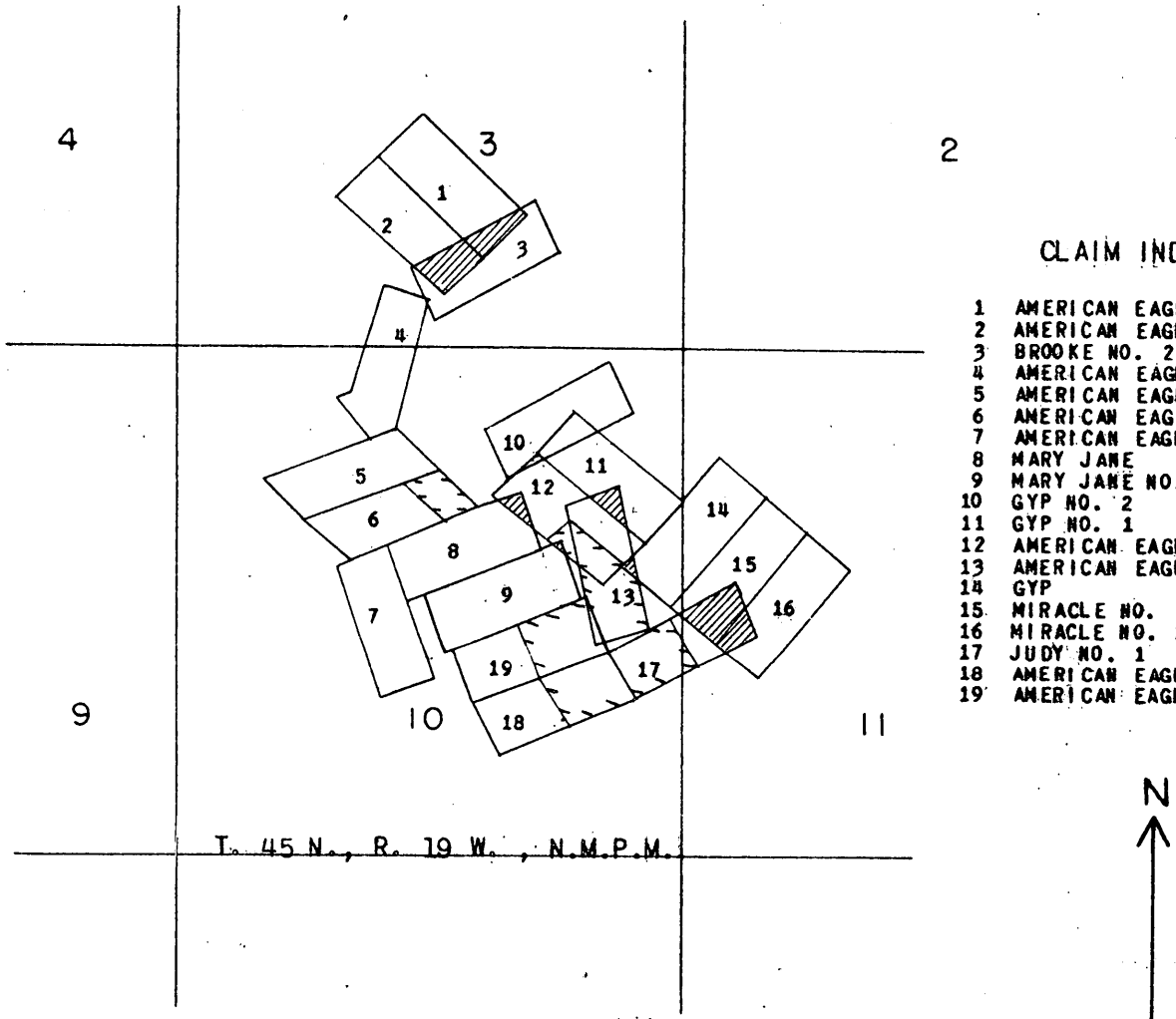

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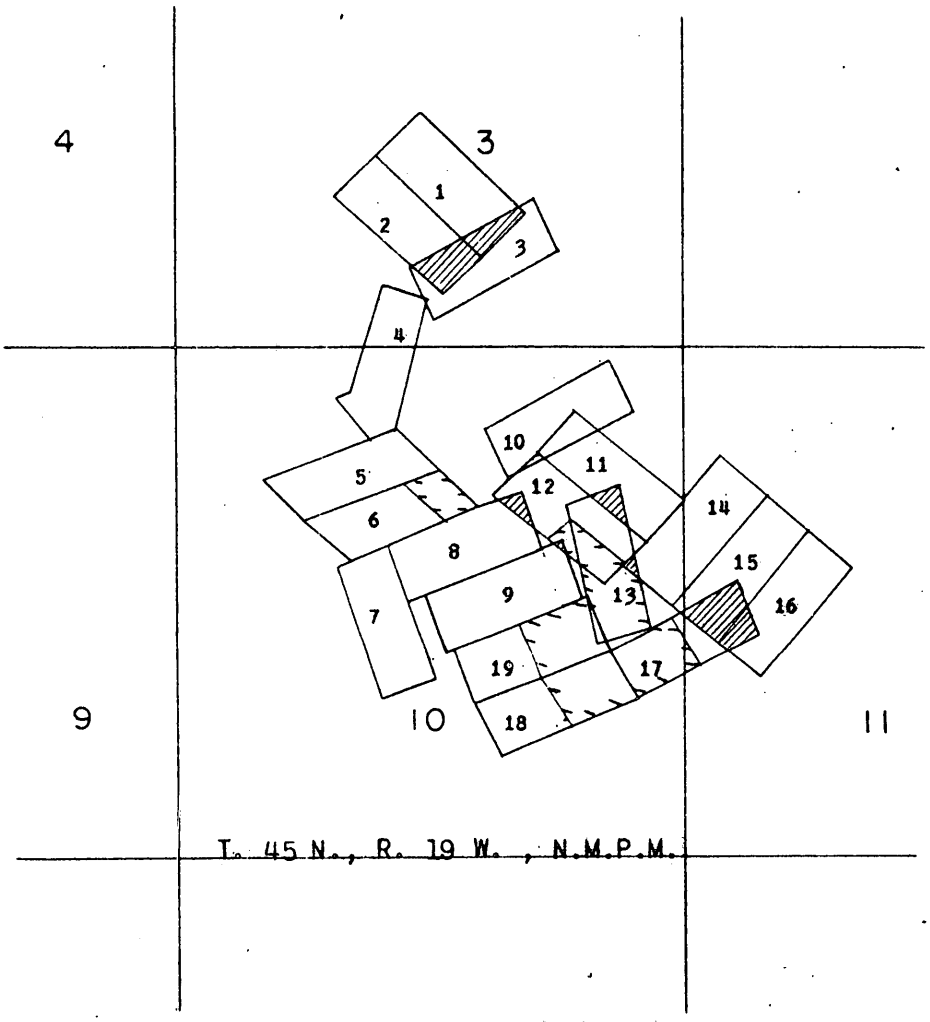

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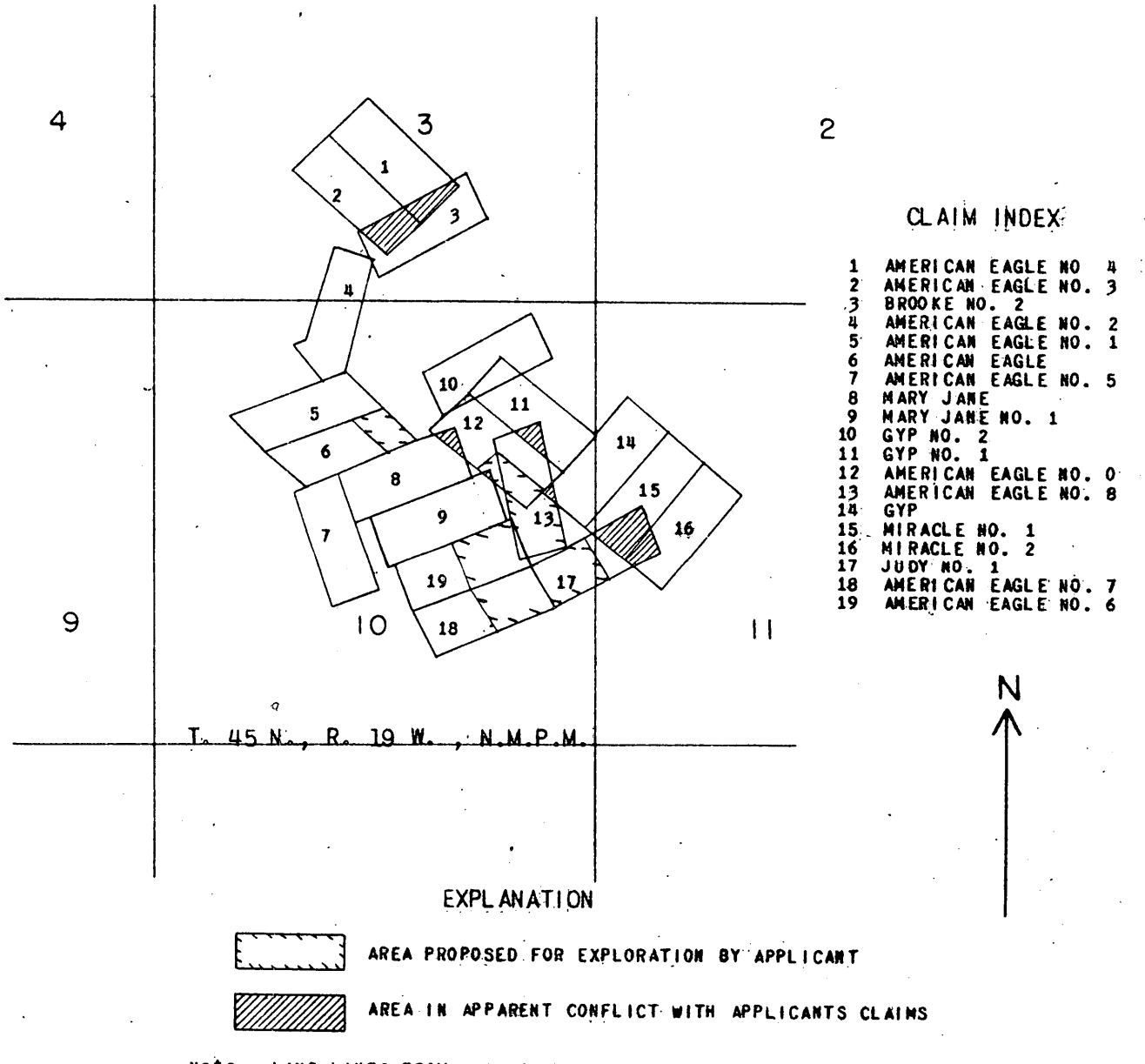

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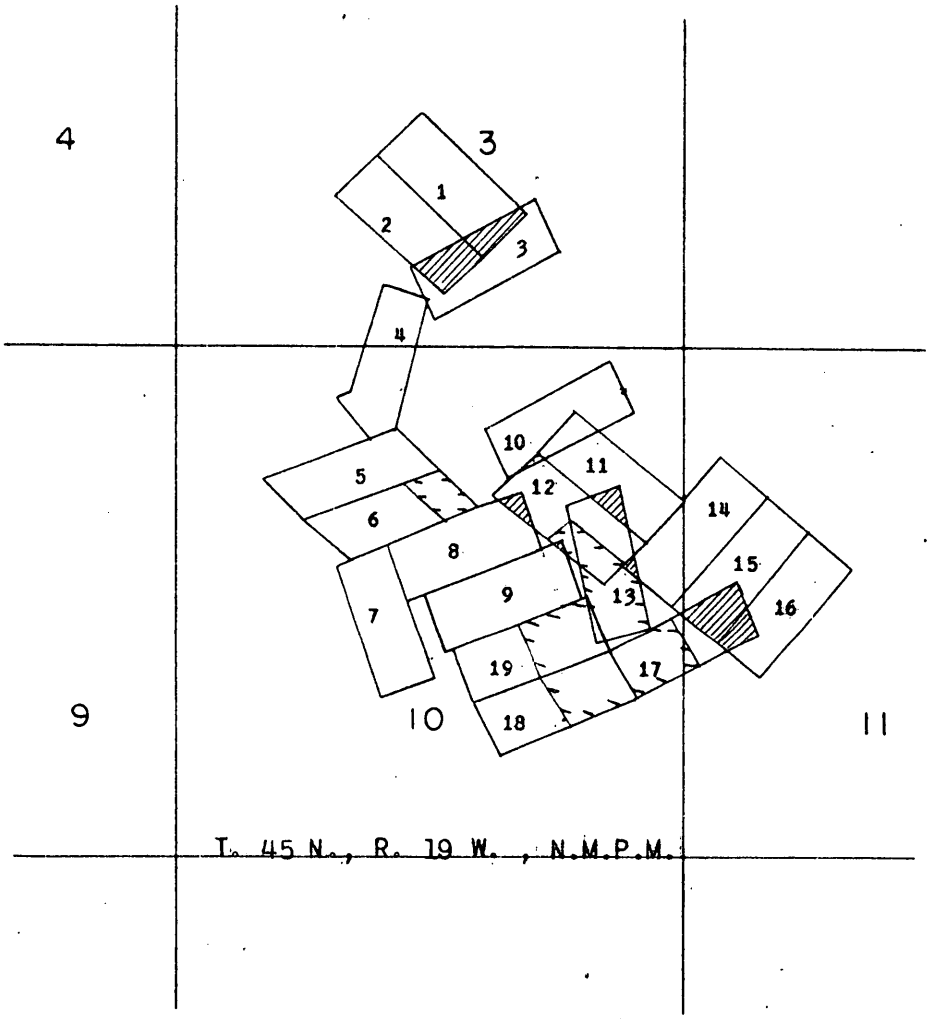

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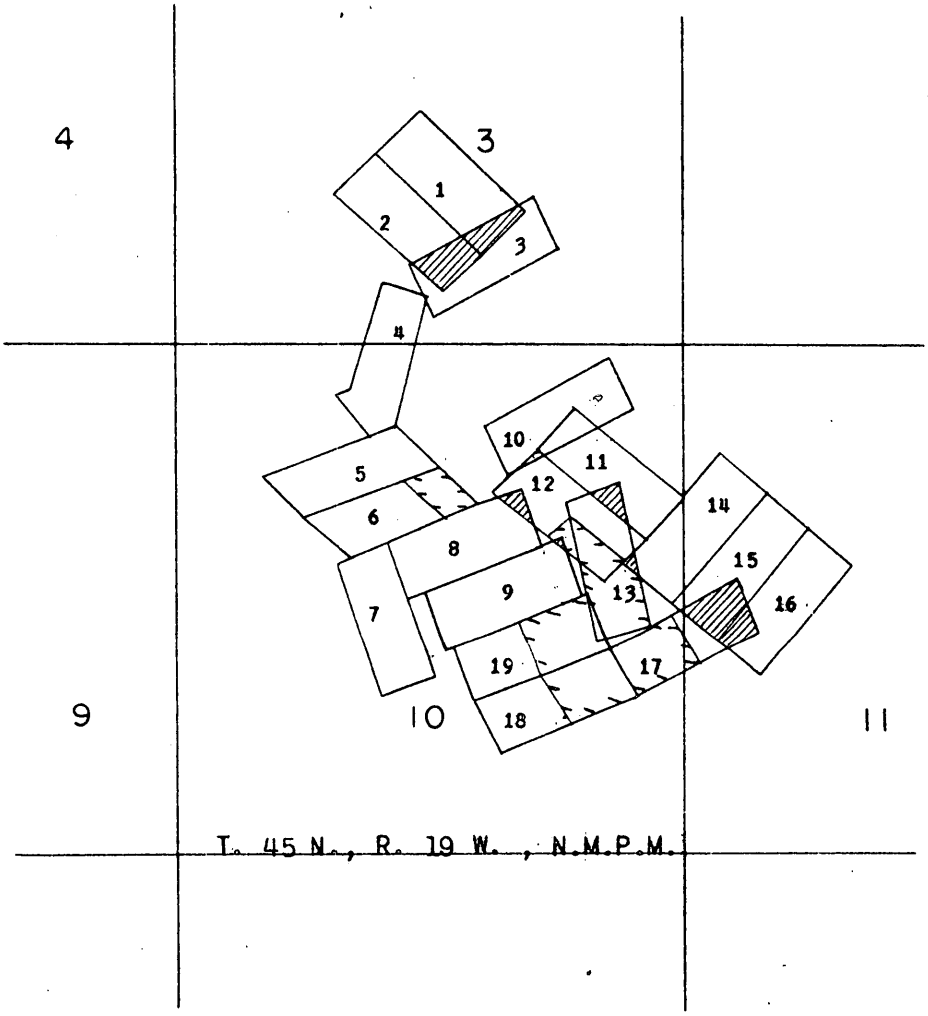

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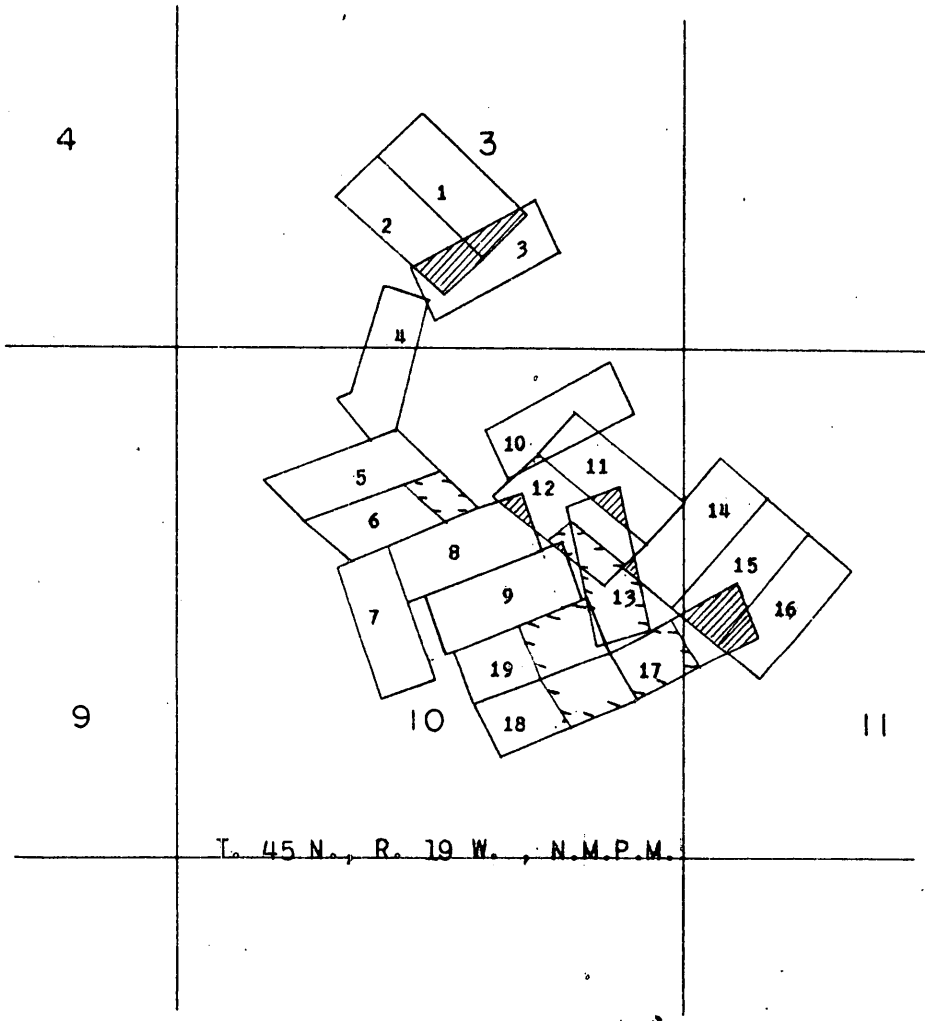

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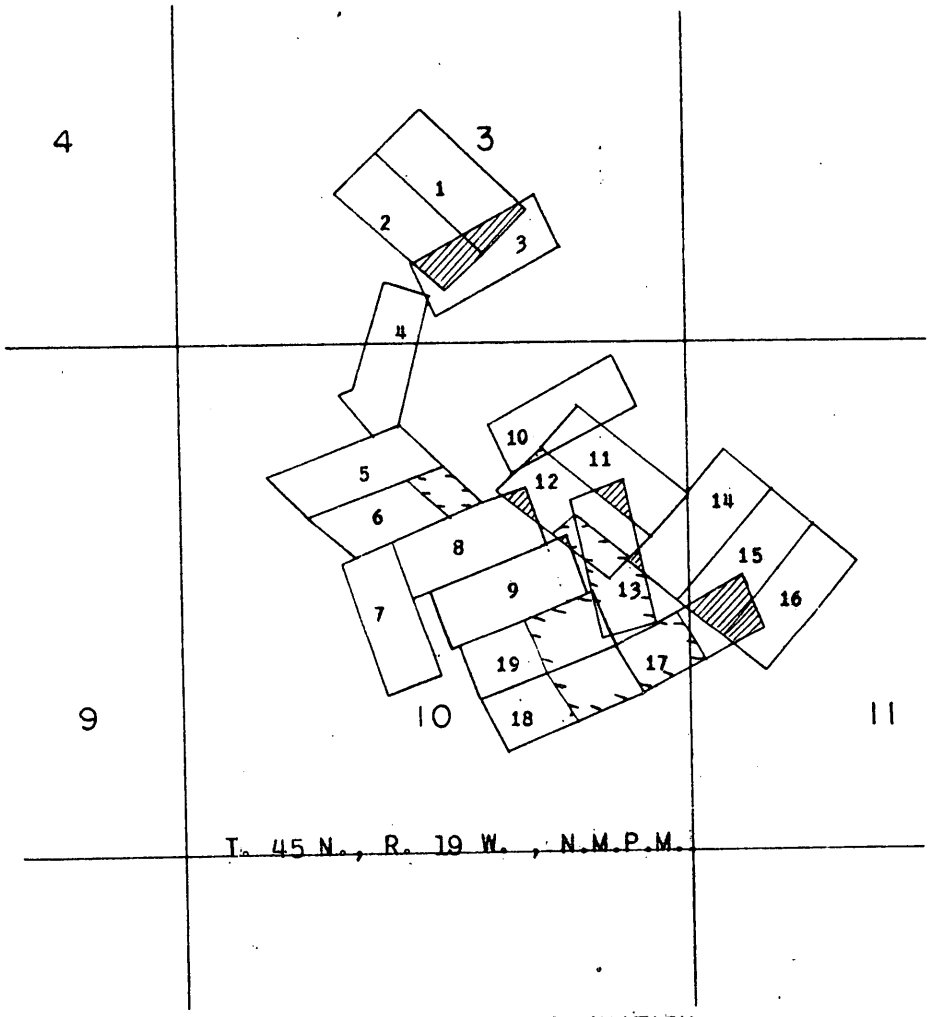

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15 MIRACLE NO. 1
16 MIRACLE NO. 2
17 JUDY NO. 1
18 AMERICAN EAGLE NO. 7
19 AMERICAN EAGLE NO. 6

N

EXPLANATION

AREA PROPOSED FOR EXPLORATION BY APPLICANT

AREA IN APPARENT CONFLICT WITH APPLICANTS CLAIMS

Note: LAND LINES FROM U.S. GEOLOGICAL SURVEY ANDERSON MESA QUADRANGLE, COLORADO.
CLAIM BOUNDARIES FROM U.S. GEOLOGICAL SURVEY DATA.

2000 0 6000 FEET

FIGURE 2. SKETCH MAP SHOWING AREA PROPOSED FOR EXPLORATION BY APPLICANT AND CLAIMS WHICH ARE IN APPARENT CONFLICT WITH JUDY NO. 1 AND PARTS OF AMERICAN EAGLE CLAIMS, TWIN ARROW PETROLEUM CORPORATION, MONTROSE COUNTY, COLORADO.

U.S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DEFENSE MINERALS EXPLORATION ADMINISTRATION
DOCKET 3950
JANUARY 1955

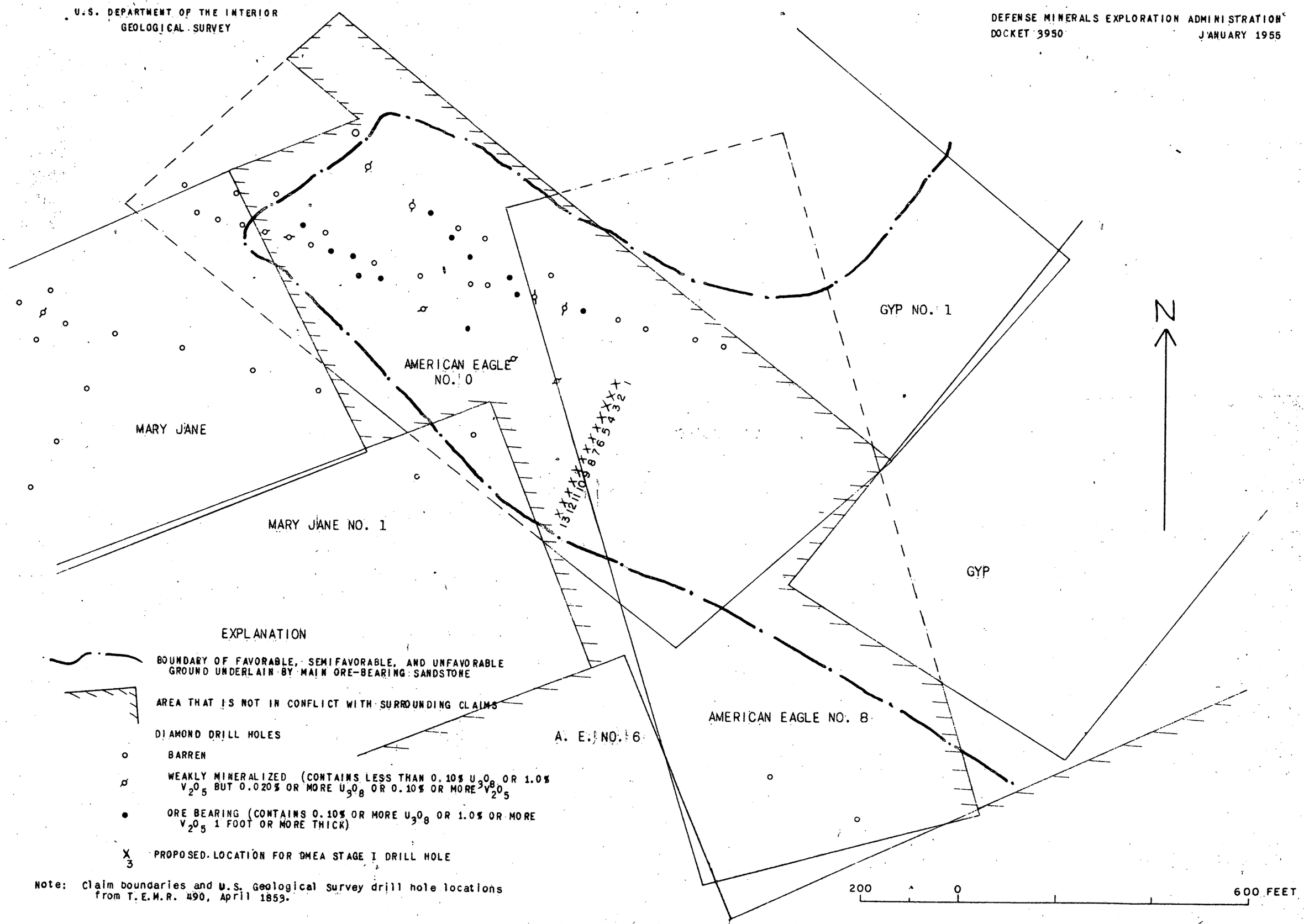

FIGURE 3. SKETCH MAP OF AMERICAN EAGLE NO. 0 AND NO. 8 AND ADJOINING CLAIMS, SHOWING U.S. GEOLOGICAL SURVEY DRILLING AND PROPOSED D.M.E.A. DRILL HOLE LOCATIONS, TWIN ARROW PETROLEUM CORPORATION, MONTROSE COUNTY, COLO.

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U.S. DEPARTMENT OF THE INTERIOR
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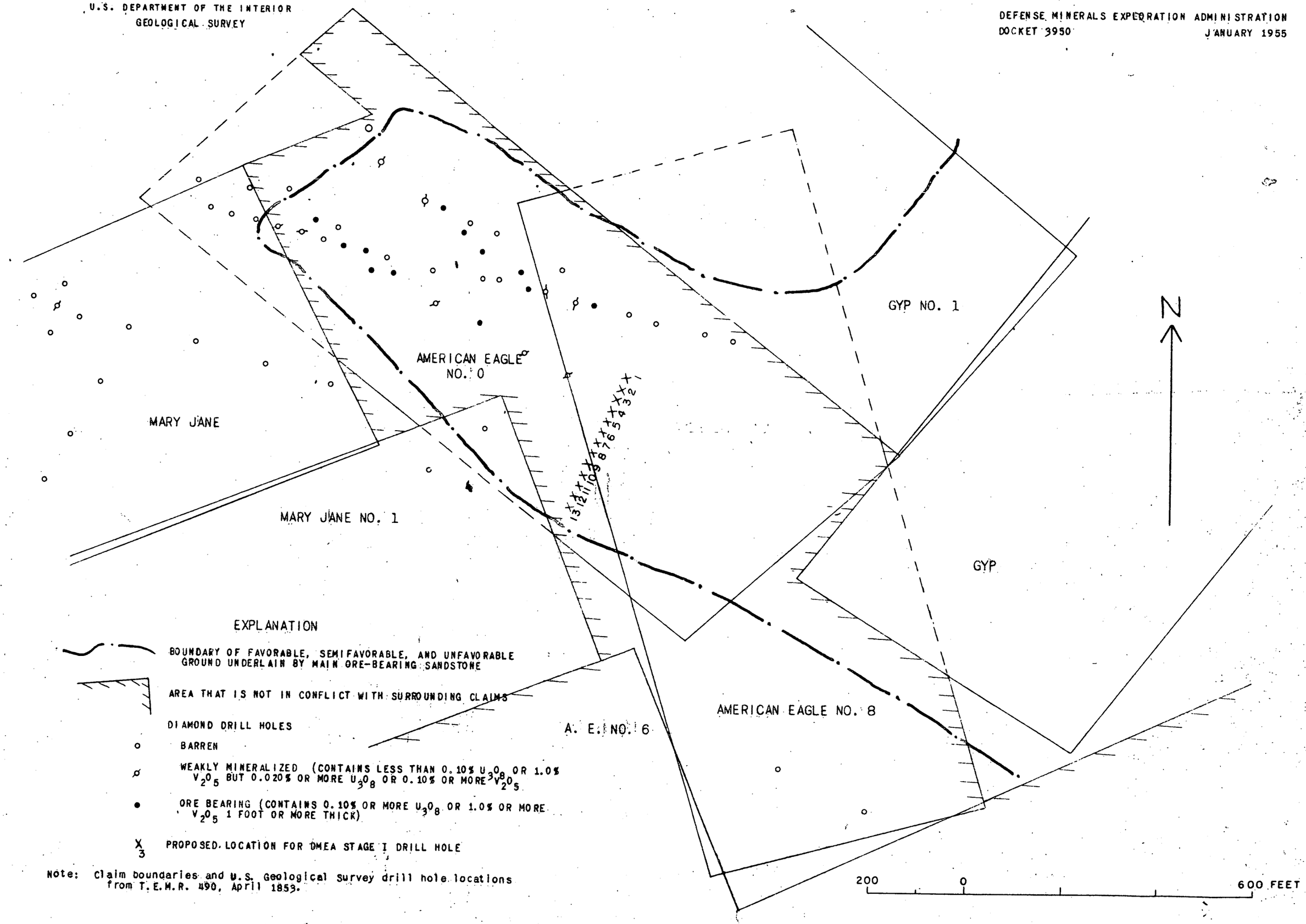

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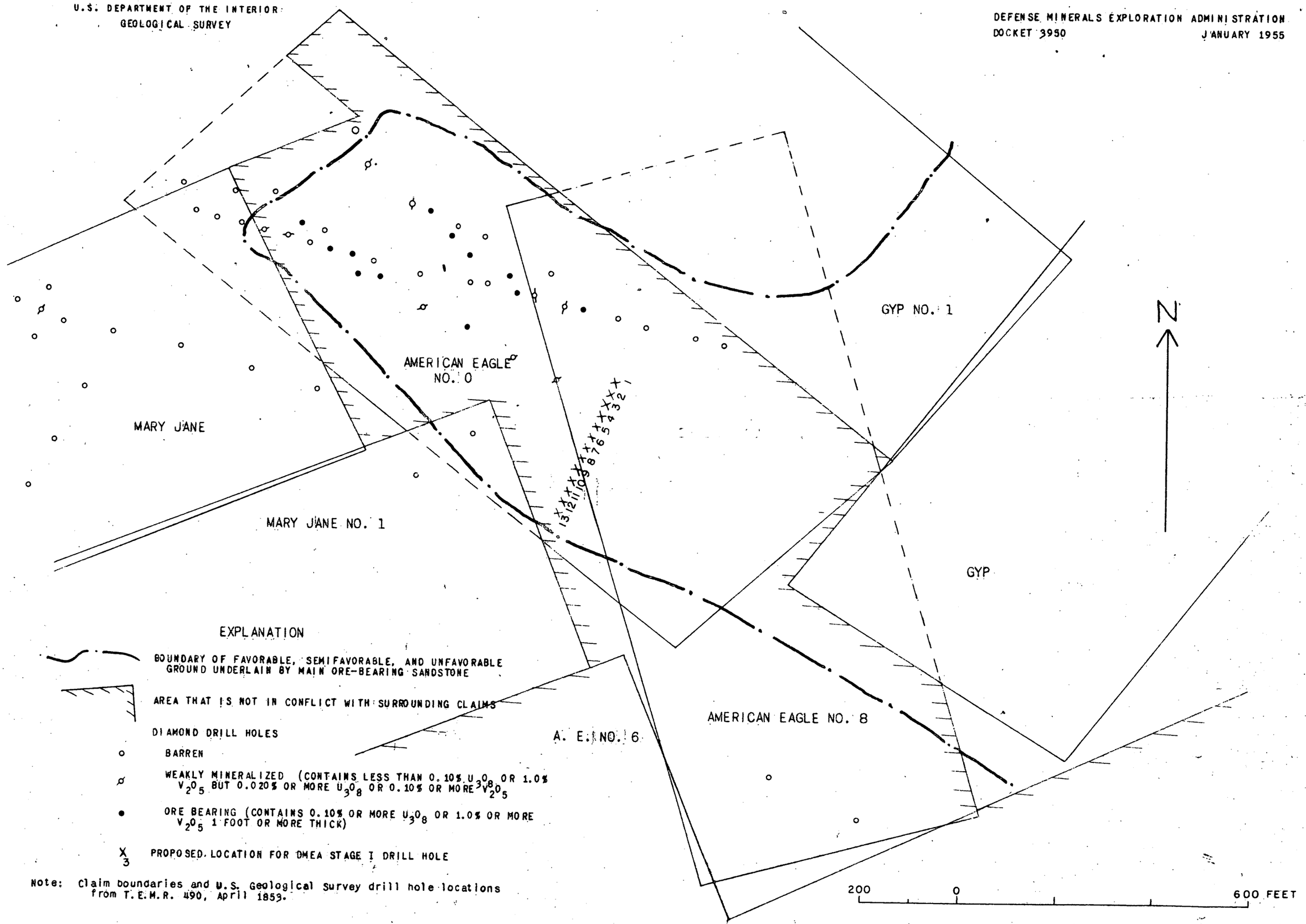

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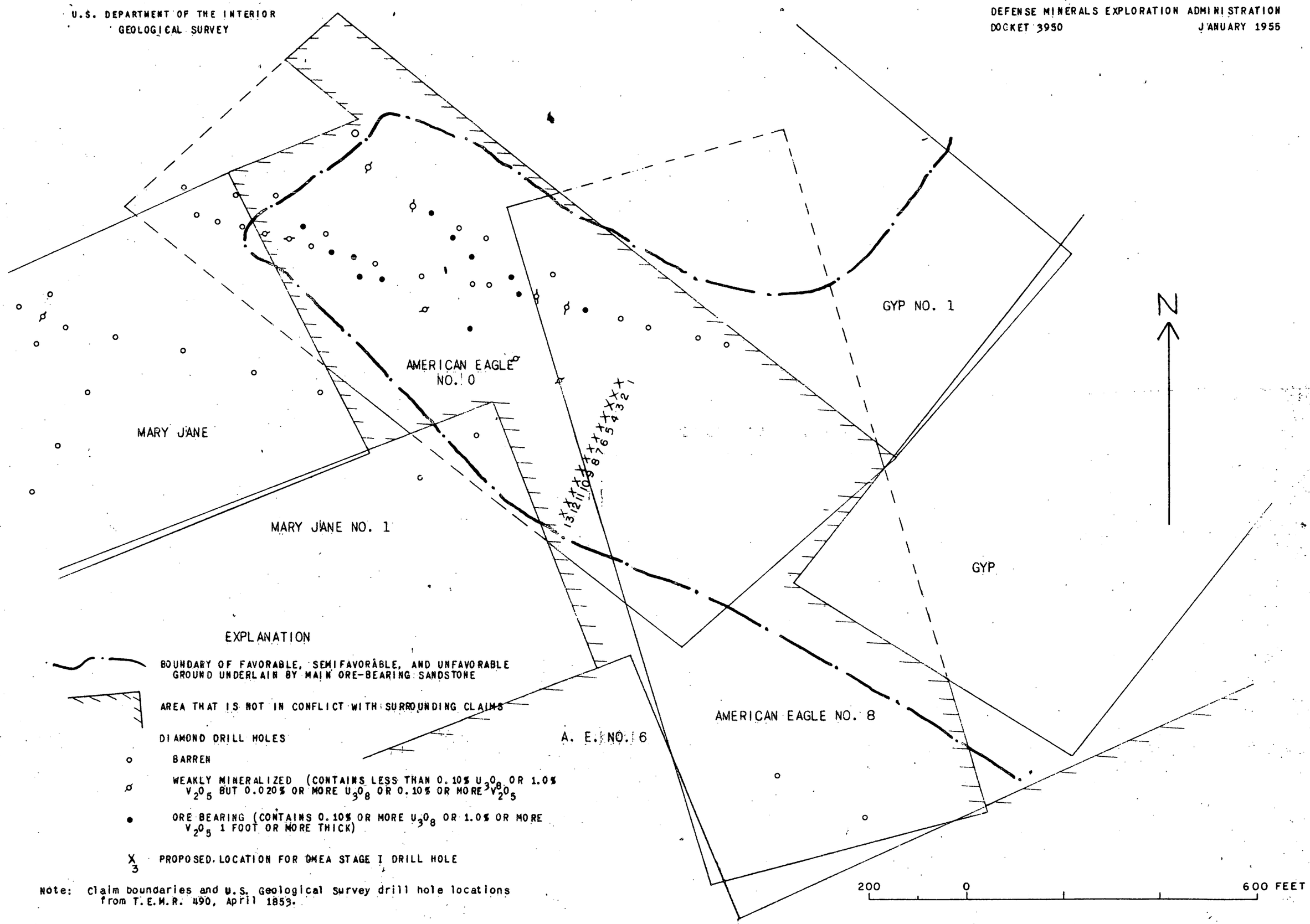

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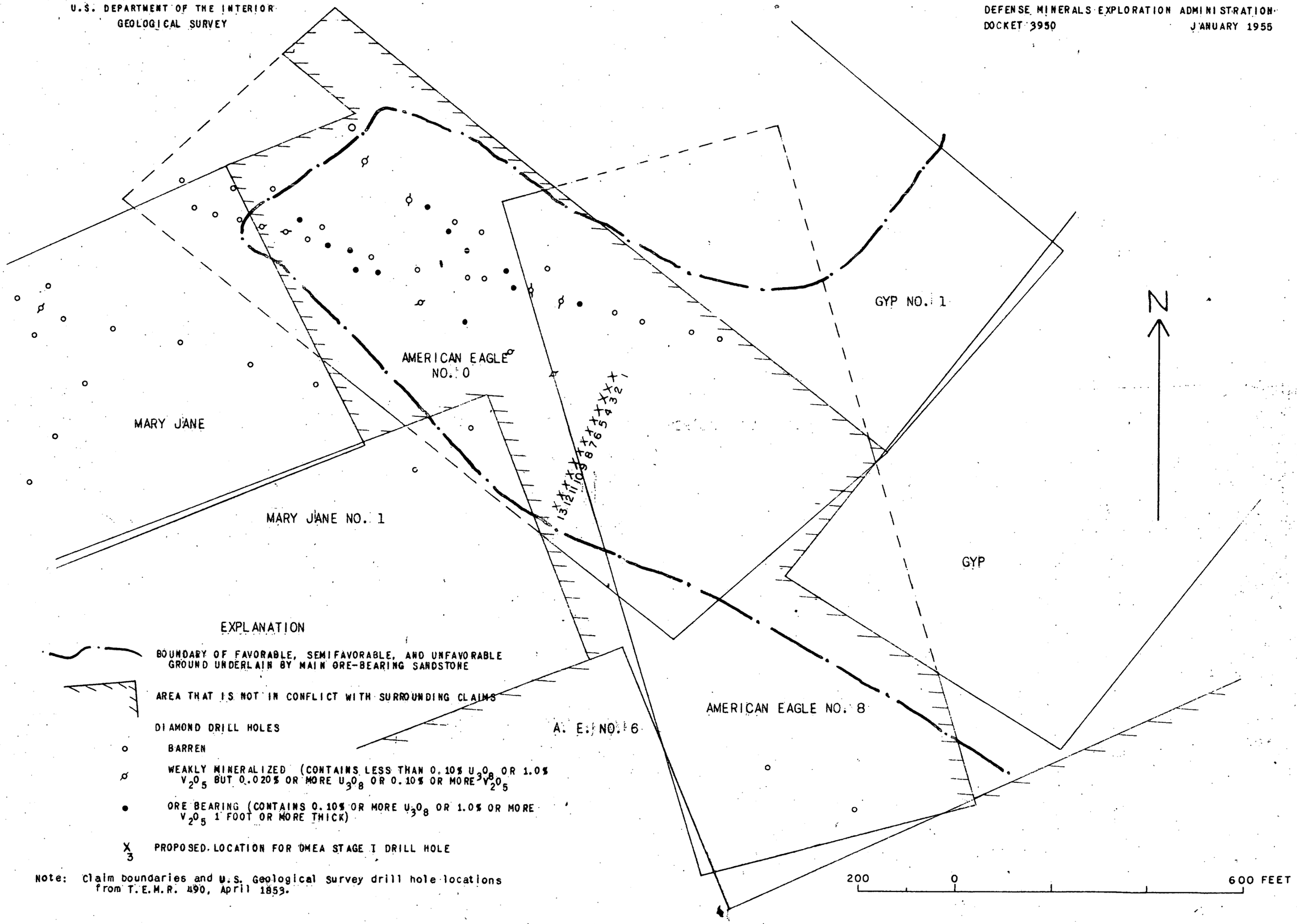

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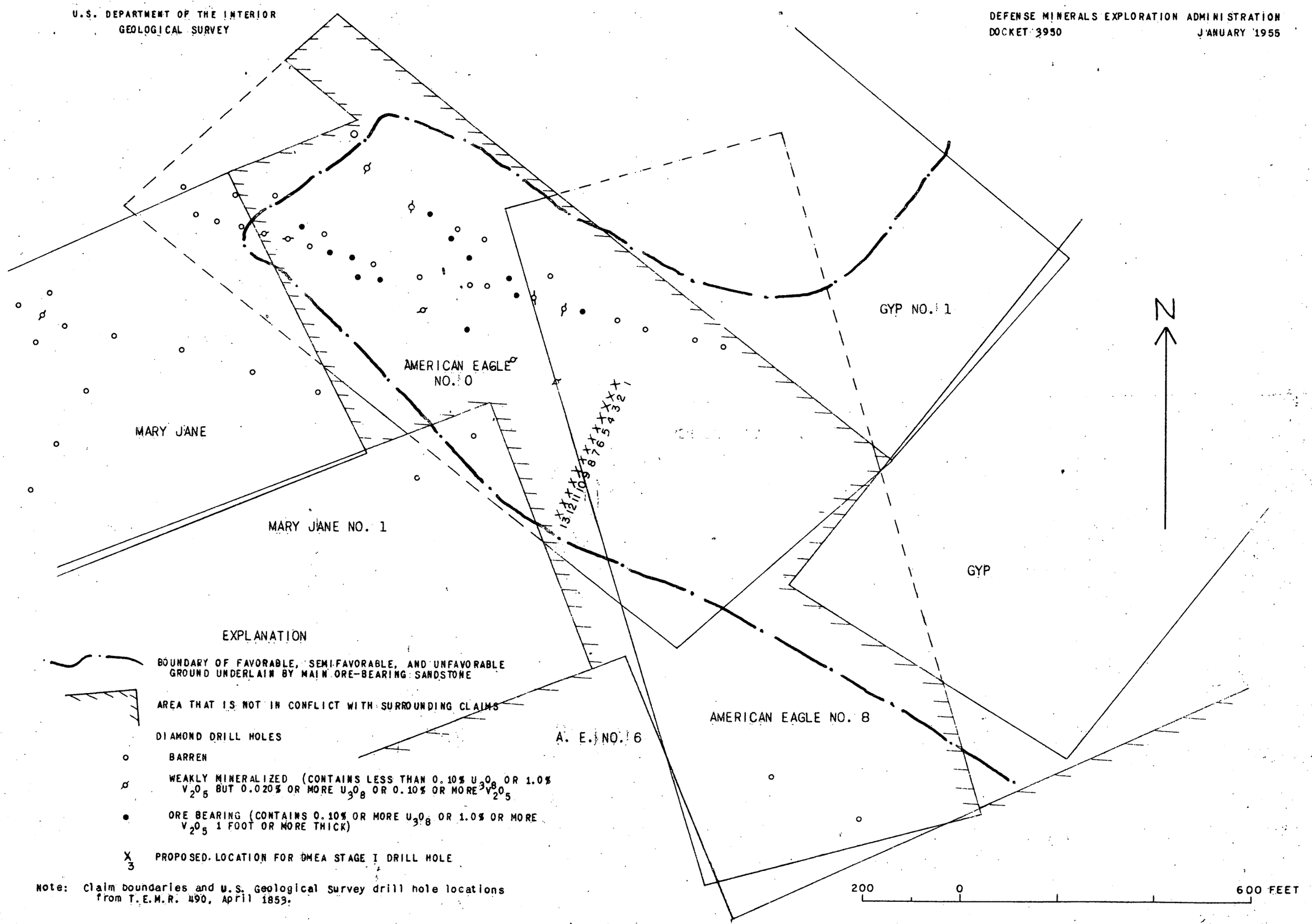

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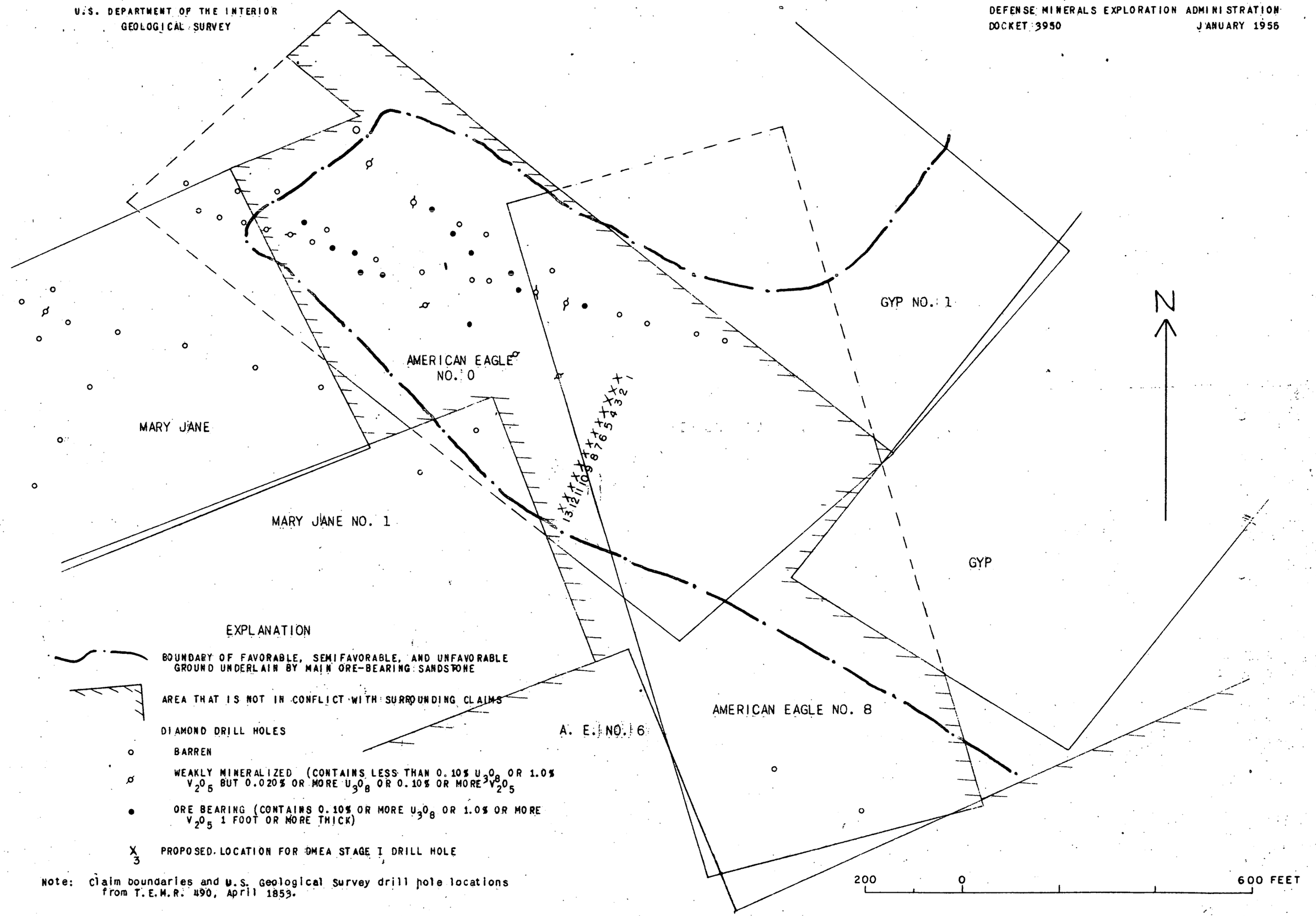

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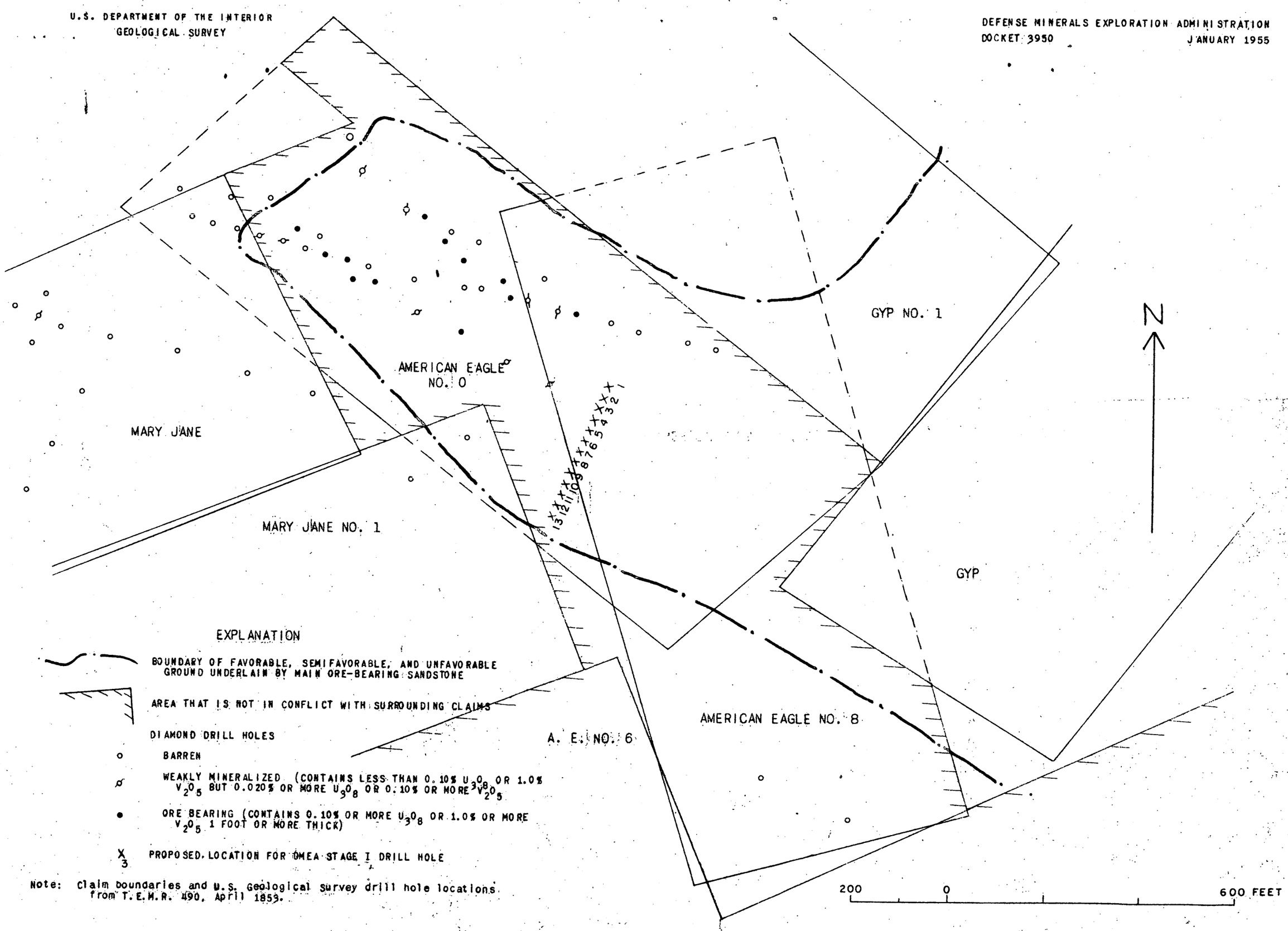

Note: Claim boundaries and U.S. Geological Survey drill hole locations from T.E.M.R. 490, April 1953.

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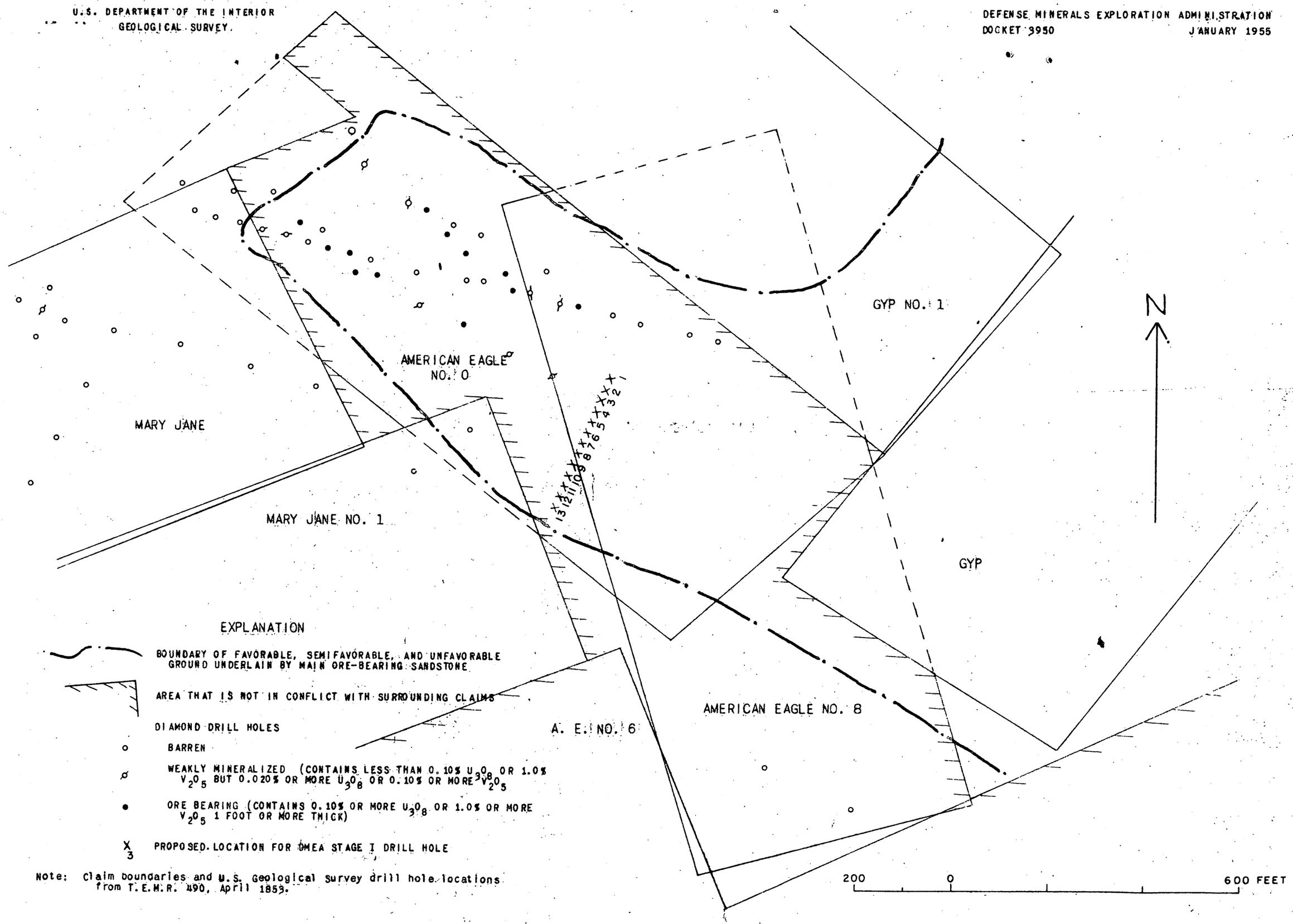

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MAR 14 1956

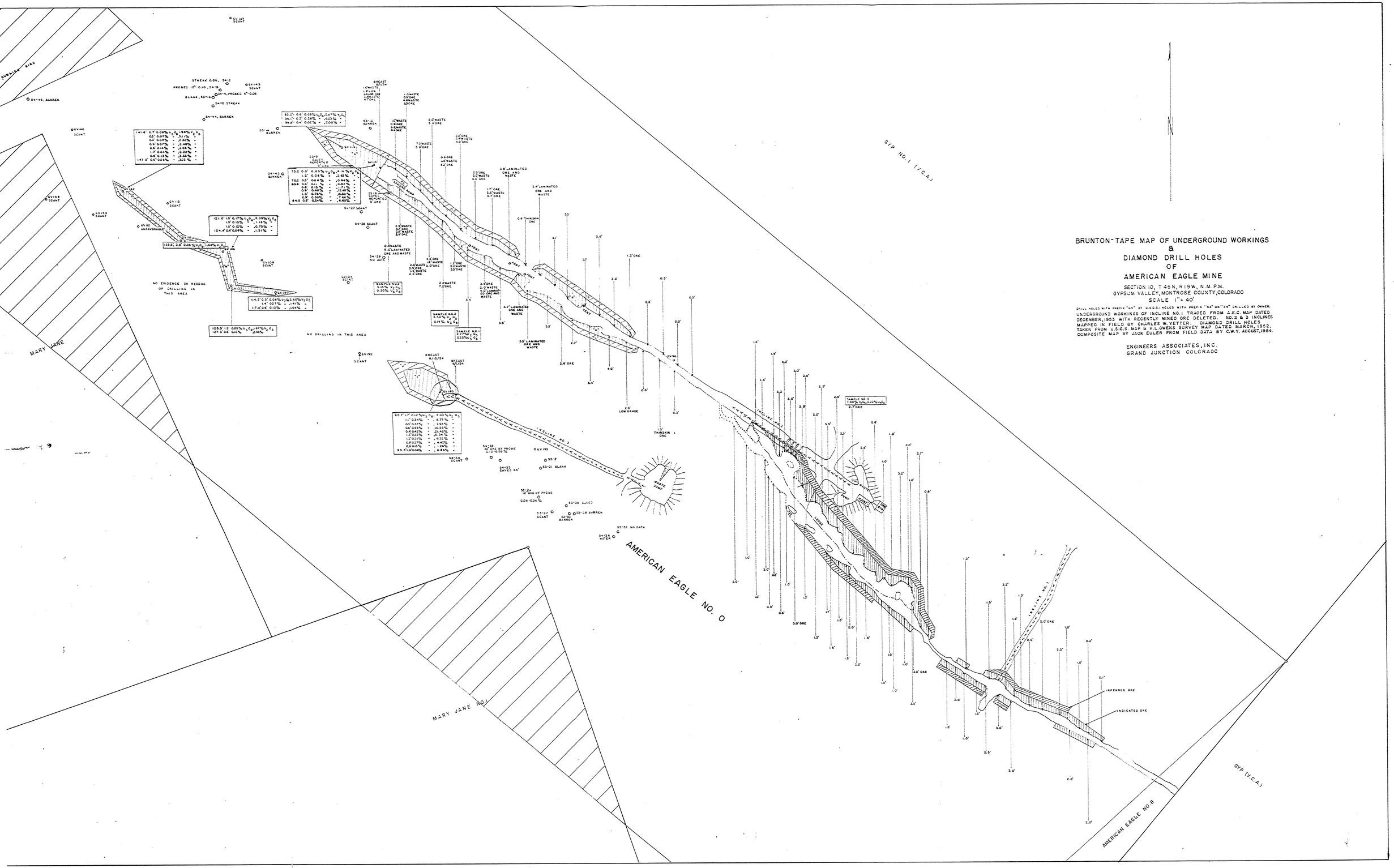
Uranium Discovery & Development Co.
Box 709
Wallace, Idaho

First Class

DEFENSE MINERALS EXPLORATION ADMINISTRATION

DEPARTMENT OF THE INTERIOR

WASHINGTON 25, D.C.

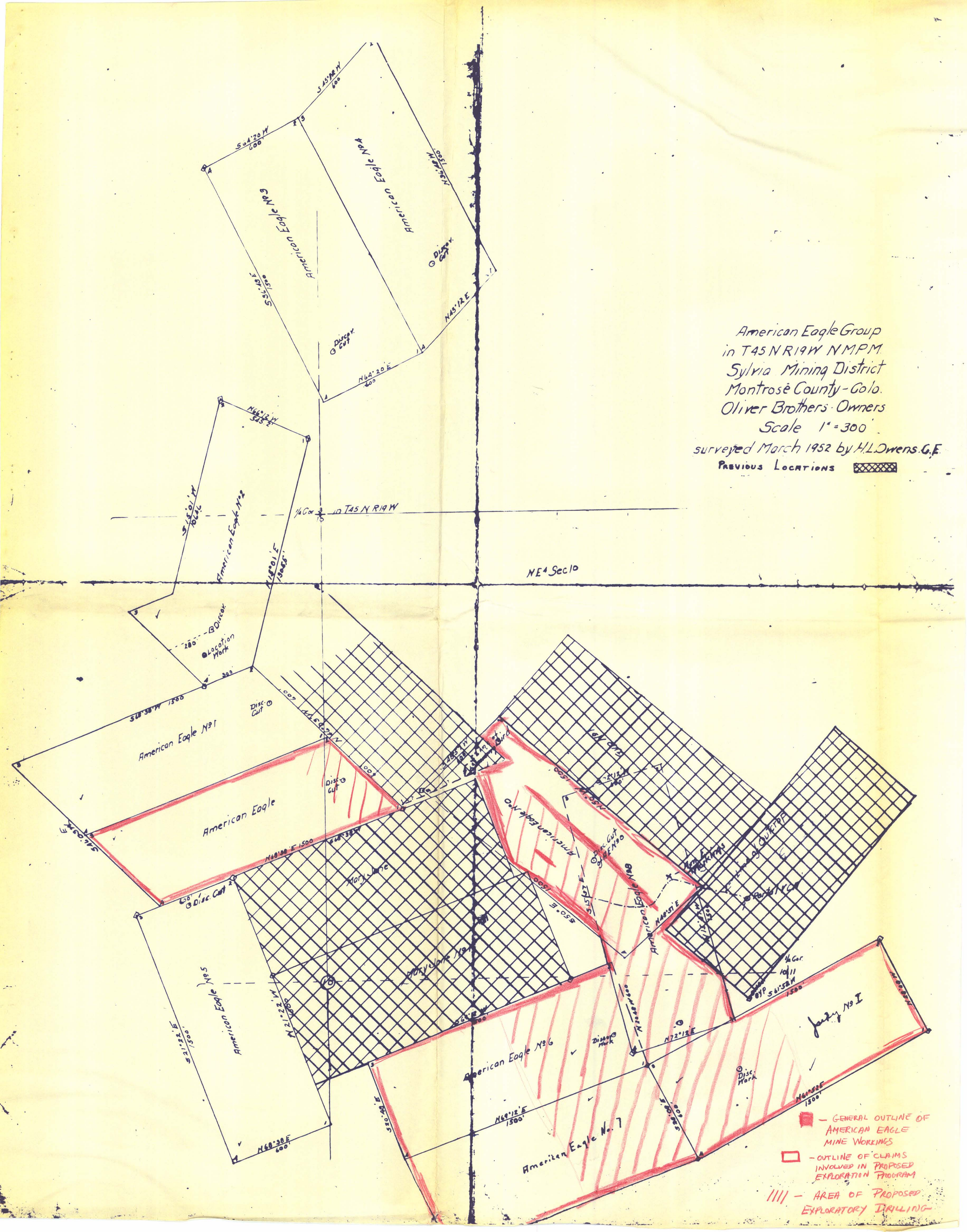


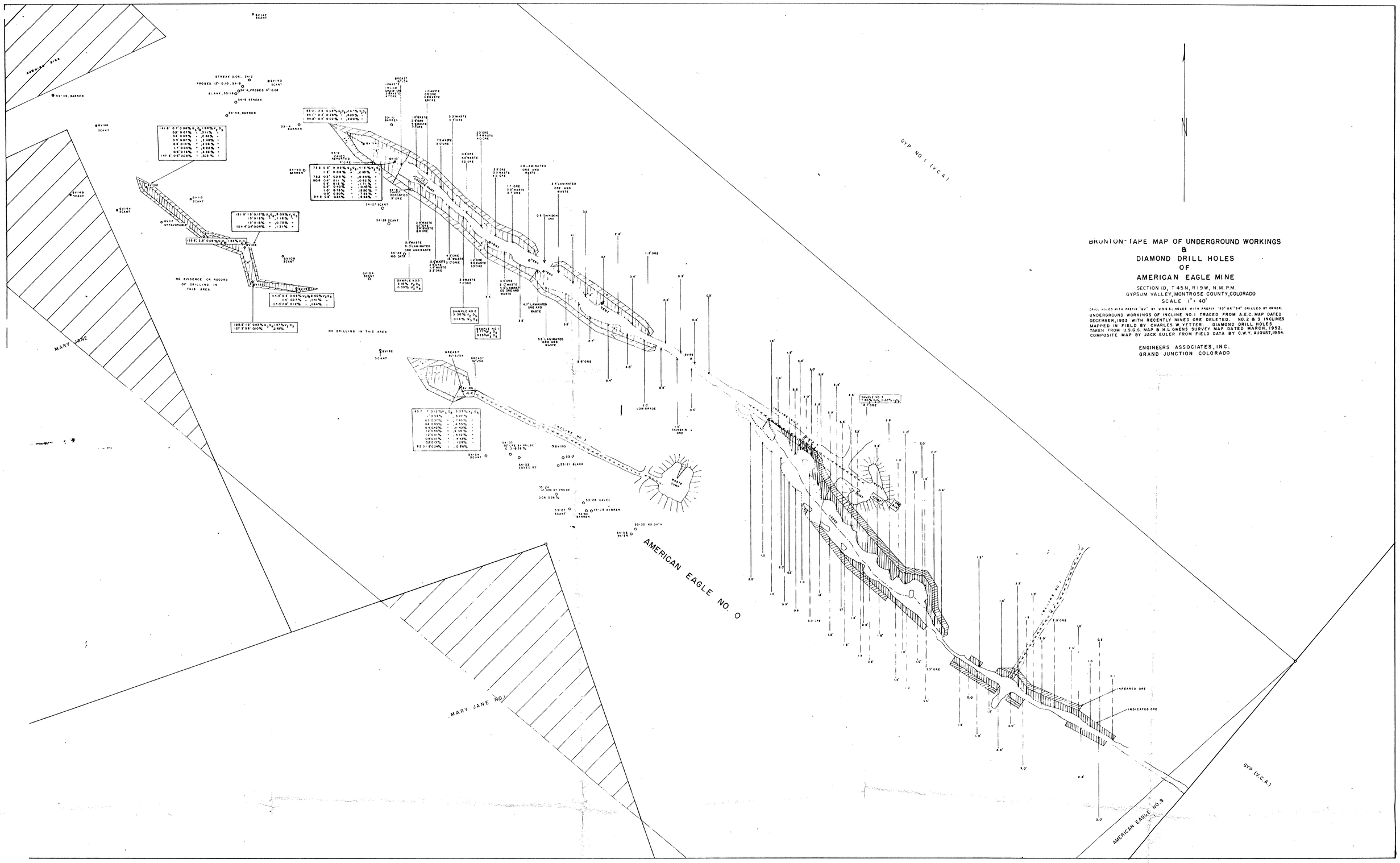
BRUNTON-TAPE MAP OF UNDERGROUND WORKINGS
&
DIAMOND DRILL HOLES
OF
AMERICAN EAGLE MINE

SECTION 10, T 45 N, R 19 W, N.M.P.M.
GYPSUM VALLEY, MONTROSE COUNTY, COLORADO
SCALE 1" = 40'

DRILL HOLES WITH PREFIX "GV" BY U.S.G.S.; HOLES WITH PREFIX "53" OR "54" DRILLED BY OWNER.
UNDERGROUND WORKINGS OF INCLINE NO. 1 TRACED FROM A.E.C. MAP DATED DECEMBER, 1953 WITH RECENTLY MINED ORE DELETED. NO. 2 & 3 INCLINES MAPPED IN FIELD BY CHARLES W. YETTER. DIAMOND DRILL HOLES TAKEN FROM U.S.G.S. MAP & R.L. OWENS SURVEY MAP DATED MARCH, 1952. COMPOSITE MAP BY JACK EULER FROM FIELD DATA BY C.W.Y. AUGUST, 1954.

ENGINEERS ASSOCIATES, INC.
GRAND JUNCTION COLORADO


American Eagle Group
in T45 N R19 W N.M.P.M.
Sylvia Mining District
Montrose County - Colo.
Oliver Brothers - Owners
Scale 1" = 300'
surveyed March 1952 by H.L. Owens C.E.
Previous Locations
American Eagle No 4
American Eagle No 3
American Eagle No 2
American Eagle No 1
American Eagle
Mary Jane
Mary Jane No 1
Jenny No I
American Eagle No 5
American Eagle No 6
American Eagle No. 7
1/4 Cor 3/10
10 T45 N R19 W
NE 1/4 Sec 10
Location Work
Disc. Cut
Disc. Work
Top of Outcrop
— General outline of American Eagle mine workings
— Outline of claims involved in proposed exploration program
//// — Area of proposed exploratory drilling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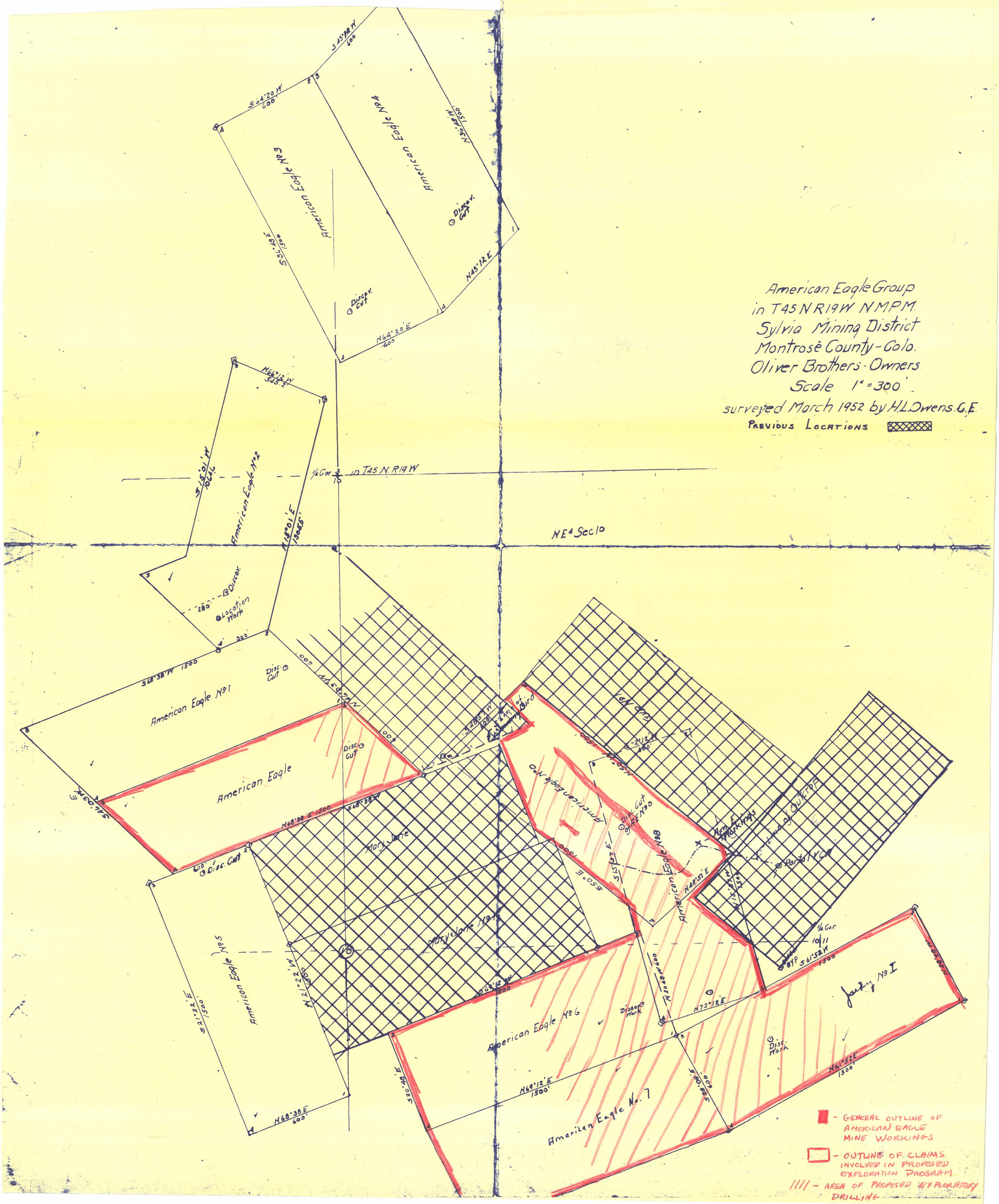
&
DIAMOND DRILL HOLES
OF
AMERICAN EAGLE MINE
SECTION 10, T 45 N, R 19 W, N.M.P.M.
GYPSUM VALLEY, MONTROSE COUNTY, COLORADO
SCALE 1" = 40'
DRILL HOLES WITH PREFIX "GV" BY U.S.B.S.; HOLES WITH PREFIX "33" OR "34" DRILLED BY OWNER.
UNDERGROUND WORKINGS OF INCLINE NO. 1 TRACED FROM A.E.C. MAP DATED DECEMBER, 1953 WITH RECENTLY MINED ORE DELETED. NO. 2 & 3 INCLINES MAPPED IN FIELD BY CHARLES W. YETTER. DIAMOND DRILL HOLES TAKEN FROM U.S.G.S. MAP & H.L. OWENS SURVEY MAP DATED MARCH, 1952. COMPOSITE MAP BY JACK EULER FROM FIELD DATA BY C.W.Y. AUGUST, 1954.
ENGINEERS ASSOCIATES, INC.
GRAND JUNCTION COLORADO
N
GYP NO. 1 (V.C.A.)
MARY JANE
MARY JANE NO. 1
AMERICAN EAGLE NO. 0
AMERICAN EAGLE NO. 8
GYP (V.C.A.)
INCLINE NO. 1
INCLINE NO. 2
INCLINE NO. 3
LEVEL
WASTE DUMP
NO EVIDENCE OR RECORD OF DRILLING IN THIS AREA
NO DRILLING IN THIS AREA
INFERRED ORE
INDICATED ORE


American Eagle Group
in T45 N R19W NMPM
Sylvia Mining District
Montrose County - Colo.
Oliver Brothers - Owners
Scale 1" = 300'
surveyed March 1952 by H.L. Owens C.E.
PREVIOUS LOCATIONS
S 45°12' W 600
S 64°20' W 600
American Eagle No 4
American Eagle No 3
N 36°48' W 1500'
S 36°48' E 1500
Discov. Cut
N 45°12' E
N 64°20' E 600
N 66°12' W 525.2
S 15°01' W 1064.6
American Eagle No 2
N 15°01' E 1906.5'
1/4 Cor 3/10 to T45 N. R19 W
NE 1/4 Sec 10
Location Work
280'
300'
S 68°38' W 1500
American Eagle No 1
Disc. Cut
N 68°38' E 1500
S 68°38' W
S 21°22' E 1500'
N 21°22' W 1500
Mary Jane
Mary Jane No 1
American Eagle No 5
American Eagle No 6
American Eagle No 7
American Eagle No 8
American Eagle No 9
Disc. Cut of AE No 9
Disc. Work
N 72°12' E
N 69°12' E 1500'
N 68°38' E 600'
S 20°48' E
S 28°08' E 900'
N 61°52' E 1500'
S 61°52' W 1500'
1/4 Cor 10/11
Jerry No I
- GENERAL OUTLINE OF AMERICAN EAGLE MINE WORKINGS
- OUTLINE OF CLAIMS INVOLVED IN PROPOSED EXPLORATION PROGRAM
//// - AREA OF PROPOSED EXPLORATORY DRILLING