rm MF-104 (Rev.)
(April 1952)

Budget Bureau No. 42-R1036.5

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

OPERATOR'S MONTHLY REPORT AND VOUCHER

PAID ON VOUCHER & SCHEDULE OF PAYMENTS K- 59

Month of Sept., 1957 Docket No. DMEA 4381 Contract No. Idm-E 1002
Operator's Name National Lead Co. Minerals Zinc
Address 111 Broadway, New York 6, N.Y.
Contract Amount, $ 40,530.00 Government Participation: 50 % Amount, $ 20,265.00

ITEMS OF COSTS	FOR OPERATOR'S USE			FOR GOVERNMENT USE ONLY		
	Monthly Total	Totals Previously Reported	Totals To Date	Approved Monthly Total	Approved Totals Previously Reported	Approved Totals To Date
(1) Independent Short Form Contracts:						
Drilling	1173.00	34,827.00	36,000.00	7/29/58		
Bulldozing						
Crosscutting						
Drifting						
Reaming	0	876.00	876.00			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis						
Payroll Taxes						
Liability Insurance						
Assays	22.50	76.50	99.00			
(8) Contingencies (specify):						
Incidental Allowance @ .26/ft.	101.66	3018.34	3120.00			
TOTALS	1297.16	38,797.84	40,095.00	1297.16	38 797.84	40 095.00

I certify that the above bill is correct and just and that payment therefor has not been received.

Date Sept. 1957 *Payee National Lead Co.

Per [signature] Title Superintendent

*When a voucher is signed or receipted in the name of a company or corporation, the name of the person writing the company or corporate name, as well as the capacity in which he signs, must appear. For example: "John Doe Company, per John Smith, Secretary," or "Treasurer," as the case may be.

NOTE.—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.

(Instructions on reverse)

Pursuant to authority vested in me, I certify that this account is correct and proper for payment in the amount of:

$ 648.58

Signature [signature]
(Authorized Certifying Officer)

Date JUN 2 1958 Vou. No. 175
(See other side)

648.58

(For Government use only)

CERTIFICATION BY GOVERNMENT REPRESENTATIVE:

I certify that to the best of my knowledge and belief the contractor submitting this voucher is operating a Defense Minerals Exploration Administration project under Contract No. E-1002 in accordance with the terms of the contract.

Signature D. Lynch Title MINING ENGINEER U. S. BUREAU OF MINES Date MAY 1, 1958

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert A. Lawrence Title EXECUTIVE OFFICER DMEA FIELD TEAM REGION V Date MAY 1, 1958

MONTHLY REPORT OF OPERATOR

The Operator (Contractor) of an exploration project is required to make a monthly report to the Government through the Regional Executive Officer. This report consists of three parts as follows:

(a) *Form MF-104—Operator's Monthly Report and Voucher.*—This form details expenditures and constitutes a voucher for reimbursing the Operator for the Government's share of costs;

(b) *Form MF-104A—Operator's Unit Cost and Progress Report.*—This is a statistical report of expenditures which shows costs for the various types of operation; and

(c) *Narrative.*—A concise narrative description of progress made, results accomplished, and any unusual difficulties encountered must be furnished as an attachment to this Report and Voucher. Wherever possible, the narrative is to be illustrated with maps or sketches showing formations penetrated and location and assays of samples taken as well as advances in workings. In the case of diamond drilling or churn drilling, the location and inclination of holes is to be shown on a map; logs and assays also are to be submitted.

The Monthly Report of Operator should be prepared in an original and four copies all of which must be sent to the Executive Officer of the Region not later than the 15th of the month following.

Preparation of Form MF-104—Operator's Monthly Report and Voucher.—All the applicable spaces in Form MF-104 should be filled in by the Operator, and the Operator or his agent should sign the certification in the lower left corner of the form.

The items of costs are arranged in the order they appear in Article 6 (a) of Form MF-200 (Revised February 1952), however, this form is readily adaptable for use in reporting activities under other contract forms.

Under Item (1) delete words "Short Form" if the contract is a sub-contract under Form MF-200; and delete word "Independent" if the contract reported is on Form MF-200 (A). Also, report work paid for on a unit basis under contract Form MF-200 as though it were performed under an independent contract.

Under Item (2) include labor, supervision and technical services incurred for the exploratory operations. Do not include labor, supervision and technical services used for work performed under items (5) and (6).

Under Item (3) include the costs of material and supplies used in the project other than that used under items (5) and (6).

Under Item (4) appear the three types of operating equipment expenditures, that is, rental, purchase and depreciation. The expenditures made for renting equipment belonging to a third party will be reported under "Rental". The amount paid or duly obligated for payment for the purchase of equipment will be reported under "Purchase". The amount of expenditures due the Operator to reimburse him for depreciation of equipment owned will be reported under "Depreciation".

Item (5) comprises costs of labor, supervision, technical services, materials, etc., which are used in the initial rehabilitation and repair of existing buildings, installations, fixtures, and equipment. These costs, therefore, should not be reported under items (2) and (3).

Item (6) includes the labor, supervision, technical services, materials, etc., used in the installation or construction of new buildings, fixed improvements, etc., necessary for the project. These costs, therefore, should not be reported under items (2) and (3).

Item (7) covers miscellaneous types of expenditure such as payroll taxes, liability insurance, workmen's compensation insurance, repairs to equipment and sampling and analysis. Only that part of payroll taxes, liability insurance and workmen's compensation which are paid by the operator should be reported under item (7). The share paid by the employee as a payroll deduction is to be included under item (2) as labor costs.

Item (8) includes any unforeseen costs not included in the other seven categories.

The original of Form MF-104 when submitted for reimbursable expenses incurred under contract Form MF-200 must be supported by original documentation or by certified copies of purchase orders, payrolls or transcripts of payrolls, unless such documentation has been waived by the Regional Executive Officer. This certification may be stated thus, "Certified True Copy (or Transcript)", followed by appropriate signature. If the Executive Officer of the Region determines that a contract under Form MF-200 should have an "on-site" audit, that is, a Government auditor should make an audit of the Operator's books and records of account, the Operator need not support his monthly voucher with original or certified documents except in cases of equipment purchases whose individual costs exceed $50.00. In these cases the original or a certified copy of the purchase order or invoice should be attached to the Monthly Voucher. N. B.—Only the *original* of Form MF-104 is required to be documented. The four copies of Form MF-104 are not to be thus supported.

Form MF-104 submitted for reimbursement under fixed price contracts on Form MF-200 (A), however, are not required to be supported by documentation of any kind. The Operator will submit his claim under item (1) of Form MF-104 by deleting as stated above the word "Independent" and by showing the number of feet or other units immediately after the appropriate descriptive word, such as, drilling, bulldozing, crosscutting, drifting, etc., and giving the "Monthly Total" amount due. "Totals Previously Reported", and "Totals to Date" columns should also be filled in.

Form MF-104A
(April 1952)

Budget Bureau No. 42-R11

UNITED STATES
DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION

OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of Sept. 1957 Docket No. DMEA 4381 Contract No. Idm-E 1002

Operator's Name National Lead Co. Minerals Zinc

Address 111 Broadway, New York 6, N.Y.

OPERATION	UNIT	COSTS THIS MONTH	UNITS THIS MONTH	COSTS TO DATE	UNITS TO DATE	UNIT COSTS TO DATE	AUTHORIZED BY CONTRACT Units	AUTHORIZED BY CONTRACT Unit Costs
Drifting								
Crosscutting								
Raising								
Shafts								
Winzes								
Drilling: Core	Foot	1173.00	391	36,000.00	12000	3.00	12000	3.00
Churn Reaming	Foot	0	0	876.00	438	2.00	600	2.00
Auger Assays	Each	22.50	18	99.00	89	1.11	140	1.50
Stripping								
Trenching								
Test Pits								
Roads and Trails Incidental Allowance @ .26/ft.	Foot	101.66	391	3120.00	12000	.26	12000	.26
TOTAL DISTRIBUTED COSTS		1297.16		40,095.00				TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS		1297.16		40,095.00				

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this report is correct and complete to the best of their knowledge and belief.

Date Sept. 1957 Operator National Lead Co.

Per [signature] Title Superintendent

NOTE.—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.

REMARKS:

(Instructions on reverse)

(For Government use only)

[signature]

GEOLOGIST, U. S. G. S.

OCT 18 1957

INSTRUCTIONS

Preparation of Form MF-104A—Operator's Unit Cost and Progress Report.—Applicable places on Form 104A should be filled in by the Operator. The purpose of this form is twofold as follows: (1) to furnish the supervising engineers and other administrators with statistical information necessary to better determine the progress of the project; and (2) to furnish more permanent information on mining costs for future use. The more important phases of operation on which permanent information is desired have been outlined in the form. There are blank lines, however, for those unusual phases which may need to be reported for a particular project. It will be necessary for the Operator to distribute his costs among the applicable phases reported with the exception of three items the costs of which are not to be distributed by the Operator. These three items are: "Operating Equipment Purchased", "Initial Rehabilitation and Repairs", and "New Buildings, Improvements, etc." The reason for not distributing these items on a monthly basis is doubtless clear to the Operator, since such distribution might well overstate the cost for any one month or period short of the entire contract period.

Form MF-104A has been designed to tie in with Form MF-104 for both monthly and cumulative costs. The "Total Costs" on Form MF-104A for each month should equal the monthly "Total Costs" as reported on Form MF-104. This is also true of the "Total Costs To Date".

In preparing Form MF-104A, it will be necessary frequently to distribute certain costs over a number of items. For instance, supervisory and engineering costs may have to be distributed over several phases, such as, drifting, crosscutting, raising, etc., provided that these items were reported active for the month. Such distributions should be made on the basis of time spent on the various phases, on man days of labor charged to such phases, or on some other equitable basis. "Operating Equipment", "Initial Rehabilitation and Repairs", and "New Buildings Improvements, etc.", will be distributed to the several phases of the project by the Washington Office of DMEA at the close of the project if determined necessary. The last two columns headed "Authorized by Contract" will be filled in by the Operator if such information is found in the contract. This information is usually a part of Exhibit "A" of the contract. A space for remarks has been provided for the use of the Operator to call attention to any unusual circumstances causing excessive or disproportionate unit costs.

GPO 872894

A PROGRESS REPORT ON THE
INDIAN CREEK PROJECT, GRAINGER COUNTY
TENNESSEE FOR SEPT. 1957

Docket No. 4381
Contract No. Idm-E 1002

During the month of September, one hole was drilled on the Indian Creek Project. Hole IM-3 was drilled 200' south of IM-2. The hole collared in the Mascot formation and was drilled to a depth of 721 feet. The results are summarized below:

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-7½	Overburden	———	———	———
7½-405	Mascot fm.	CMss @ 405	279-280½, 1½' @ 1% est. 280½-282½, 2' @ ½% est. Trace 348.	Light, medium and dark gray dol; some crackle breccia.
405-690	Kingsport fm.	Top "R" @ 596; "S" @ 647; "T" @ 690.	602-609, 7' @ 3/4% est; 615; 617½, 622-626½, 4½' @ 3/4% est. 629-633, 4' @ 1% est. 639½-640, ½' @ ½% est. 641½-642, ½' @ ½% est. 645-647½, 2½' @ 3/4% est. 650½-653, 2½' @ 1% est. 654½-655, ½' @ 1% est. 665½-667, 1½' @ 3/4% est. 684½-685, ½' @ 2% est.	Light, medium and dark gray dolomite; lower part interbedded with recrystalline and some limestone; in part brecciated.
690-721	Longview fm.	———	Trace @ 690½.	Recrystalline, dolomite, and chert.

The enclosed voucher shows a total of 391 drilling units for the month although the invoice from Joy Mfg. Co. shows 721 units. The 391 units is the amount authorized to complete the contract.

Drilling has been discontinued at Indian Creek and work is now underway to evaluate the drilling results. A final report on the project is being prepared.

National Lead Co.; L.Wolfe #3
Indian Creek Project,
Grainger Co., Tenn.
Drilled by Joy Mfg. Co.
Logged by J.W. Spears & W.T. Hill

Collar August 24, 1957
BX 6'
AX 20'
Elev. 1372.87 (Site)
Bottomed; Sept.9, 1957 @ 721'.

0-7	Overburden
-38	Lt. gr. dol; 6" heavy gouge at 12½, shears from 11½-12; 25-26 heavy fault gouge; shears 23-25; shear at 33.
-41	Med. dk. gr. dol; mott. & banded, shaly; thin shears thruout. 2" blk. shale at base.
-45½	Lt. gr. mott. dol; chert nods 44,45; thin ss 45 above chert.
-46	Lt. gr. heavy mott. dol.
-46½	Dk. gr. mott. dol.
-50	Med. gr. heavy mott. dol; thin shear 48; entire bed slightly siliceous.
-53	Very dk. gr. dol; shaly; mott; thin shears at 52 .
-58	Lt. gr. dol; mott to 55; heavy ss from 55-56½; CM. base marked by TGS.
-65	Dk. gr. banded dol.
-66	Med. gr. dol.
-81	Lt. gr. dol, banded 66-67½;68-76 (light) CMss 67;71½ thin shears scatt. from 78-81.
-85	Med. gr. dol; sheared; in part sand.
-90	Dol, dk. gr.; sheared; 4' core loss.
-91 D	Dol., fault zone.
-94	Lt. gr. dol; t in shears thruout; scatt. ss 95.
-98	Lt. gr. dol; heavy bands; TGS at base.
-101	Med. gr. mott; siliceous.
-103	Primary blue & sec. white chert; in part sheared.
-107½	Dol., med. gr. slightly vuggy, edgewise congl; at base.
-112½	Sugary med. dol., (semi re-xl.) few thin scatt. shears thruout; ½" fault gouge at base.
-113½	Dk. gr. dol; mottl.; thin oxid. joint 113.
-115½	Lt. med. gr. dol; faintly mott.; thin oxid. shears thruout; base marked by ½" heavy ss. underlain by white chert nod & TGS.
-128½	Lt. gr. dol, mott., breec. 128-128½.
-129½	Chert., white & brn.; in part faulted.
-131	Dol., med. gr.; thin steep angle fault at 130.
-137	Dol., lt. med. gr. mott. & eyelets, few thin shears.
-140	Re-xl, brn. mottled.
-146	Lt. gr. dol., banded; 1" scatt. ss at 143.
-147½	Med. gr. dol.
-153	Med.-dk. gr. dol., shaly, TGS at base; 6" fault breccia at base.
-158	Med. gr. dol.
-160	Med. gr. dol., mott. vuggy; on part siliceous.
-164	Lt. gr. faintly mott. dol; thin steep angle shears at 161; dip 33° at 164'.
-168	Med. dk. gr. dol., banded; heavy scatt. ss at 167½-168; crackle 166-167.
-171	Med. gr. dol., mott.
-173	Dk. gr. dol.
-174½	Med. gr. banded dol; 4" scatt. sand underlain by 3" breec; blue chert at base.
-178	Br. band re-xl, sec. white chert at top; siliceous from 176½-178; scatt. ss at 177; base marked by scatt. ss & blue chert nod. & TGS.
-185	Med. gr. banded dol.

-189 Med. dk. gr., very mott., shaly dol; in part siliceous; TGS at 186; base marked by blue chert nod & heavy ss & oolite.

-198½ Med. dk. gr. dol., heavy mott., chert nod at 189, 189½, 196; few eyelets; in part siliceous.

-200 Dk. gr. dol.

-204 Lt. med. dk. gr. well banded dol; heavy ss. from 201-02, in part CM; dip 32° at 203'; blue chert nod & TGS at base.

-208 Med. gr. dol., white chert(sec.) at 205,206½.

-211 Med. gr. sugary dol., 6" heavy ss 210-210½; chert & scatt. ss 210½-11.

-215 Lt. gr. banded dol., TGS at 211½; scatt. ss 211½-212½; heavy ss & CM at 212½-213; blue chert nod at 213.

-216 Brn. med. grained re-xl.

-222 Med. gr. faintly banded dol., blue chert nod at 216½,217½; 1" of heavy ss at base.

-224 White and brn. sec. chert.

-226 Coarse brn. re-xl., mottled, siliceous.

-230 Med. gr. faintly banded dol.

-233 Dk. gr. mott. dol, lightly sheared.

-238½ Lt. med. gr. dol., blueish mottling; 3" heavy ss at top; thin steep angle shear at 234,235½.

-249 Dk. gr. mott. dol., thin steep angle fracts. 241-243.

-251 Lt. gr. dol., thin shear at 251.

-257½ Dk. gr. dol., mott., breec at 254½-55; scatt. thin fracts. thruout; 3" scatt. ss & chert at base.

-260½ Med. gr. mott. dol; scatt. gangue filled fracts.

-261½ Lt. gr. dol., banded.

-266 Med. gr. mott. dol., gangue filled fract. at 265½; lt. ss at 261.

-276 Med. gr. heavy mott. dol., in part siliceous; blue chert at 274; thin steep angle shears at 270(silicified); 274;276.

-282½ Dk. gr. dol., crackle breec. 276-282; ZnS mineralization 279-282½. Est. 2% plus from 279-280½; Est. ½% 280½-282½; dip at 283 is 37°.

-287 Lt. gr. banded dol., scatt. ss at 284½; white sec. chert at 284½; TGS at 286; Thin steep angel shears thruout.

-289 Dk. gr. dol.

-289½ Blue & white chert (bleached).

-298 Lt. gr. dol; blue chert nods at 291½,292,294,295½,298; TGS at 298; banded from 295-298.

-302 Med. gr. heavy dol.

-305 Med. gr. dol.

-310 Med. gr. blue mott. dol., sugary; scatt. gangue fracts; light scatt. ss at 310.

-315½ Lt. gr. dol; scatt. gangue fracts.

-330 Lt. gr. mott. duggy dol., lt. ss at 324; lt. gr. dol; chert nods at 326½(bleached); lt. fract. thruout.

-332 Lt. gr. dol.

-335 Lt. gr. dol., mott.

-340 Med. gr. mott. dol; siliceous.

-343 Lt. gr. banded dol; lt. ss. at 343½; few thin scatt. shears; base marked by 3" white dolomitic chert.

-349 Lt. gr. mott. dol; 1" blue & white chert & ss at 347; white sec. chert at 347½-348; vuggy re-xl & chert at 348-348½ and traces ZnS.

*354½	Med. gr. mott. dol.
-359	Dk. gr. shaly dol.
-362½	Med. gr. mott. dol.
-363½	Lt. gr. banded dol., 2" heavy ss at 363½; ss & oolite & TGS at 363½.
-365	Med. gr. mott. dol.
-368	Lt. gr. mott. dol.
-370	Med. gr. mott. dol.
-374	Dk. gr. mott. silic. dol; few thin gangue fracts.
-375½	Lt. gr. banded dol; scatt. ss at 374-374½; base marked by TGS & 4" blue chert.
-385½	Lt. gr. banded dol; TGS at base.
-387	Lt. gr. mott. dol.
-388½	Med. gr. mott. dol; gangue fract . at top.
-394	Lt. gr. well banded dol.
-395	Med. gr. mott. dol.
-400	Dk. gr. mott. dol.
-402	Med. gr. dol.
-402½	6" heavy low angle fault gouge.
-412	Lt. gr. dol; banded; 6" CMss at 405; lt. ss at 407.
-414½	Med. gr. heavy mott. dol; heavy ss at 414-414½.
-431	Very lite gr. banded dol; 2" scatt. ss at 415; lite SS at 416½-417.
-442	Med. gr. heavy mott. dol; siliceous; dip at 436'- 37°. chert at 437; crackle 436-438; rubble from 440-442.
-447	Lt. gr. banded dol; crackle 442-443; rubble 443-444; FeS shines 442-444(est. 50%) heavy ss at 444-445,446; dip 38° at 443.
-454	Med. gr. mott. dol; crackle thruout; fleurite at 447; ½% FeS from 447½-453.
-455	Med. brn. siliceous dol. & sec. chert bands.
-460	Med. gr.(brn.) dol.; rubble breec. 457-458;459; breec. with sec. chert 458½; base marked by 8" heavy ss in part CM.

TOP KINGSPORT 460

-465	Dk. gr. dol; lite crackle; 2% FeS 463-464; 2" blue chert 463.
-476	Lt. med. gr. dol.
-487	Med. gr. lightly banded dol; chert at 477½;483,484,487.
-491	Lt. gr. heavy banded dol.
-492	Lt. gr. dol; TGS at 492.
-495	Med. gr. mott. dol; crackle.
-496	Med. gr. dol; blue chert nod at 495,496; 4" with chert band at 496.
-508	Lt. med. gr. faintly banded dol; chert at 499½,506,507; thin silic shear at 504; TGS at 507; & FeS shine; lite crackle 506-08.

-508½ Med. gr. dol; 2" hvy. ss & TGS at base.
-521 Lt. gr. dol; mott; core loss - 1' between 508-510; 1' between 510-512; 2' between 512-15.
-549 Lt. gr. banded dol; hvy . fault gange 522-22½; thin scatt. shears thruout; ch. nods at 532,532½; core loss - 2' between 522-526; 2½' between 529-532; 1' between 537-540. FeS sh. at 529½.
-540½ Med. gr. heavy mott. dol.
-550 Lt. gr. strongly banded dol; hvy fault gangue 540½-541; lite crackle brecc. 542-49; rubble brecc. 549-550½; FeS sh. 544-545. (.25%) dip 548 @ 32°.
-578 Lt. gr. dol; blue ch. nod 550½,561½,570. TGS at 571; banded 568,571; scatt. steep fract. in part open thruout. Core loss - 6" between 550-551; 1' between 551-553; 2' between 553-558; 1' between 558-561; 2' between 561-565; 2' between 565-568.
-584 Med. gr. mott. dol; sheared (open) 579-80; thin steep frac. thruout; core loss - 6" between 577-580; 1' between 580-586.
-586 Dk. gr. dol; heavy fault gangue 584-585 (open); blue chert nod at 585½; FeS shine at 585.
-588 Lt. gr. dol; brecc; 2% FeS; 1' core loss.
-592 Lt. gr. mott. dol; fractured & some gangue filling.
-594 Lt. gr. dol; brecc. sealed with chert; lite ss at 592,594.
*-596 Lt. gr. dol; brecc. blue ch. at 594,595,595½; lite ss at 594½,596; 4" green sh. 596.
-600 Med. gr. hvy. mott. dol; TGS 598; 4" re-xl at 596 & 600; lite crackle brecc. sealed with ch. & gangue.
-613 Lt. gr. dol; brecc. 602-04,607-12; crackle 600-07, 604-07; 5" green ch. band & sh. 601½-02; 1% ZnS 602-04; 1% ZnS 605-09; 2% FeS 610-610½; 2% FeS 611-612.
-620 Br. Re-xl; siliceous; in part brecc.; tr. of ZnS 615,617½; hvy. FeS 617½. Core loss - 6" between 602-05; 1' between 605-09; 1' between 609-611; 1' between 612-615; 1' between 615-617; 1' between 617-620.
-624½ Med. gr. dol, mott; rubble brecc. 621½-24½; crackle brecc. 620-21½; lost 1' core from 620-624; ZnS 622-623 est 1½%; 623½-624 est FeS 4%; at 624 wh. sec. ch. seam.
-626½ Lt. gr. dol; brecc. ch. nod at 625½; 624½-626½ est 3/4 % ZnS; TGS at base. 624½-625 est ½% FeS.
-629 Med. gr. mott. re-xl; little crackle brecc; trace FeS 627½.
-631½ Lt. gr. dol; crackle brecc; at 630 is 4" fault gange; 630-30½ rubble dry brecc; 629-30 est ¼% ZnS.
-633 N. dk. gr. dol; rubble brecc; blue ch. at 632½; est. 2½% ZnS.
-635 Med. gr. dol; crackle brecc; ¼" green sh. at base.
-640 Br. re-xl, siliceous; crackle brecc; 639½-40 est ¼% ZnS.
-643 Med. gr. strongly mott. dol; crackle brecc. 641½-42 est ¼% ZnS, 1% FeS.
-644½ Dk. gr. dol, mott. crackle brecc; at 644 is 4" of shearing 75° dip.
-645½ Lt. gr. dol, crackle brecc. ZnS sh. 645; TGS at base & smoky ch.
-646 Br. re-xl, brecc. sealed w/ chert, green sh., gangue, dol.
-647½ Lt. gr. dol, brecc. est 3/4 % ZnS from 645-647½.
-651 Br. re-xl, 647½-648 rubble brecc. & blue chert brecc. 648, remainder crackle recc; 650½-51 est ¼% ZnS.
-651½ Brecc. blue chert.
-652 Lt. gr. dol, brecc. w/ est 2% ZnS.
-653 Br. re-xl brecc. est ½% ZnS.

* Top "R" Bed 596

L.W. #3

-659½	Med. gr. re-xl, 654½-55 brecc. w/ est 1% ZnS. v. cherty 656-656½; 658-58½;
-661	Lt. shaly re-xl, 2½" gr. shale top & bott.
-661½	Lt. med. gr. dol, crackle.
-665	Lt. shaly re-xl; some blocks dol & chert.
-667½	Lt. med. gr. dol, crackle; est 3/4% ZnS 665½-667; v. cherty 667-67½ w/ ZnS sh.
-668 3/4	Lt. gr. dol; TGS at base.
-673	Med. dk. gr. dol; some crackle w/ re-xl & gangue.
-676½	Med. re-xl; v. mott; crackle w/ re-xl & gangue; occ. blocks dol.
-678½	Med. gr. dol, crackle; chert nod 678½.
-683½	V. fine grained lt. re-xl, crackle; chert nod 679½.
-685½	Med. gr. re-xl, v. sheared to crackle; some silic shears. Est. ½% ZnS 684½-685; band sec. chert 685½.
-690	LS

BASE KINGSPORT 690'

-692	Med. gr. dol; mott to 691 w/ crackle & tr. ZnS; chert nod 691.
-693½	Dk. gr. dol, brecc.
-695½	Med. gr. dol; mott; brecc. 694-95 w/ gangue, silic. re-xl.
-696½	Br. re-xl. (1½' core loss 692-696).
-699	Lt. med. gr. dol; chert nod 699.
-700½	Sec. chert; some nods.
-701½	Br. re-xl, v. cherty, tr. FeS.
-704	Lt. med. gr. dol., v. sugary to semi re-xl for top foot; banded w/ many chert nods.
-706½	Lt. br. silic re-xl.
-709	V. lt. fine grained re-xl, crackle w/ silica; heavy ss 709.
-712½	Br. silic re-xl.
-713½	Lt. gr. dol.
-715½	Lt. br. re-xl, v. cherty top foot.
-719½	Lt. med. gr. dol, mott. sands at base then TGS.
-721	Br. re-xl, crackle 719½-20 w/ chert nods 20,21. T.D. 721.

JOY MANUFACTURING COMPANY

HENRY W. OLIVER BUILDING

PITTSBURGH 22, PENNSYLVANIA

CUSTOMER'S ORDER NO.	DATE	REQ. NO.	OUR ORDER NO.	DATE	AT REC. POINT	B.O. NO.
CONTRACT	CODE 63			DATE	AT SHIP POINT	

SOLD TO

National Lead Company
P.O. Box 2047
Morristown, Tenn.

~~TERMS NET 30 DAYS~~
NO CASH DISCOUNT

PLEASE REMIT TO
PITTSBURGH, PA.

INVOICE NO. 96712

INVOICE DATE 9-23-57

DATE SHIPPED

SHIPPED VIA

SHIPPED TO

Indian Creek, Tenn.

P. O. ADDRESS

MARKS

REQUESTED ROUTING

SHIPPED FROM

ORIGINAL QUANTITY ORDERED	UNIT	PART NUMBER	DESCRIPTION		CODE	UNIT PRICE	QUANTITY BACK ORDERED	QUANTITY SHIPPED	AMOUNT
		To 721.' agreement.	Core Drilling at Indian Creek, Tennessee as per						
		Prospect #	From	To		Total Feet		Unit Cost	Total Cost
		Woef #3 W-3	0.	721.		721.		$3.00	$2,163.00

F. O. B. SHIPPING POINT UNLESS OTHERWISE SPECIFIED

NO RETURNS ALLOWED UNLESS AUTHORIZED BY THIS OFFICE

GOODS COVERED BY THIS INVOICE WERE PRODUCED IN COMPLIANCE WITH THE REQUIREMENTS OF THE FAIR LABOR STANDARDS ACT OF 1938, AS AMENDED, INCLUDING SECTION 12(A).

FORM P133A

INDUSTRIAL
AND
ANALYTICAL
CHEMISTS

The Bruce Williams Laboratories

ESTABLISHED 1890

MAIN OFFICE: 618-622 JOPLIN STREET
TELEPHONE MAYFAIR 3-1556

Joplin, Missouri

ENGINEERING
INSPECTIONS
AND
TESTS

BRANCH OFFICES:

306 VALLEY DRIVE
ST. LOUIS, MISSOURI
TELEPHONE HOBART 7-3226

219 TERMINAL WAREHOUSE BLDG.
LITTLE ROCK, ARKANSAS
TELEPHONE FRANKLIN 2-0693

CONNELL HOTEL BLDG.
PICHER, OKLAHOMA
TELEPHONE 710

STATEMENT OF YOUR ACCOUNT

National Lead Company
P. O. Box 61
~~Thorn Hill, Tennessee~~

TERMS CASH
NO DISCOUNT

DATE	ASSAY NO.	DESCRIPTION	
1957 Sept.		Statement rendered for work from 8-26 to 9-25-57 incl.	
		Total Amount Due	$25.00 - 15.00 10.00

ENGINEERS
INSPECTIONS and TESTS

The Bruce Williams Laboratories

CHEMISTS
INDUSTRIAL and ANALYTICAL

ESTABLISHED 1898

MAIN OFFICE AND LABORATORIES 618-624 JOPLIN ST. TELEPHONE MAYFAIR 3-1555

JOPLIN, MISSOURI

BATESVILLE, ARKANSAS ST. LOUIS, MISSOURI PICHER, OKLAHOMA

National Lead Company
P. O. Box 61
Thorn Hill, Tenn.

9-29-57

OUR NO.	MARK	DESCRIPTION	WEIGHT	ZINC
	W-3			
777241	Depth	605-607	307 G	0.11
242		607-609	197 G	0.48
243		622-624	243 G	0.10
244		633½	110 G	0.34
245		639½-641½	146 G	0.07
246		645-647	461 G	0.08
247		654½-655	354 G	0.56
248	Composite of broken fragments loose in box		1153 G	0.22

ADDRESS ALL COMMUNICATIONS TO JOPLIN, MISSOURI

Bruce Williams

63-840

10

INDUSTRIAL
AND
ANALYTICAL
CHEMISTS

The Bruce Williams Laboratories

ESTABLISHED 1898

MAIN OFFICE: 618-622 JOPLIN STREET
TELEPHONE MAYFAIR 3-1556

Joplin, Missouri

ENGINEERING
INSPECTIONS
AND
TESTS

BRANCH OFFICES:

306 VALLEY DRIVE
ST. LOUIS, MISSOURI
TELEPHONE HOBART 7-3226

219 TERMINAL WAREHOUSE BLDG.
LITTLE ROCK, ARKANSAS
TELEPHONE FRANKLIN 2-0693

CONNELL HOTEL BLDG
FISHER, WEST VIRGINIA
TELEPHONE [illegible]

STATEMENT OF YOUR ACCOUNT

National Lead Company
P. O. Box 2047
Morristown, Tennessee

TERMS CASH
NO DISCOUNT

DATE	ASSAY NO.	DESCRIPTION		
1957 April		Statement rendered for work from 3-26 to 4-25-57 incl.		
		Total Amount Due		$12.50

ENGINEERS
INSPECTIONS and TESTS

Batesville, Ark.
151 No. Central
Telephone 1309

Picher, Oklahoma
Connell Hotel Bldg.
Telephone 710

The Bruce Williams Laboratories

ESTABLISHED 1893
Main Office 618-622 Joplin Street Telephone MA 3-1556
JOPLIN, MISSOURI

CHEMISTS
INDUSTRIAL and ANALYTICAL

Emporia, Kansas
321 Union St.
Telephone 3604

St. Louis, Missouri
306 Valley Drive
Telephone Hobart 7-3223

National Lead Company
P. O. Box 2047
Morristown, Tennessee

April 9, 1957

OUR NO.	MARK	DESCRIPTION	ZINC	IRON	LEAD	LIME	MOISTURE
765364	Dalton #8,	223-225	0.14				
365		225-227	0.28				
366		227-229	0.16				
367		235½-237½	0.30				
368		257-259	1.20				
369		259-261	0.50				
370		261-263	0.56				
371		263-264½	0.38				
372		264½-266½	3.00				
373		269-271	1.36				

Bruce Williams

AHCO INC. CHICAGO

ACTION ON INTERIM
OR FINAL FIELD TEAM REPORT

Date 7-27-57

Referred to:

1. ~~Mr. Mittendorf~~
2. ~~Mr. Johnson~~
3. ~~Mr. Chambers~~
4. Docket Control Mails and Files
5. Divisi
6. Docket Control Mails and Files
7. 500

Note comments in report regarding:

1. We might be justified
2. in encouraging request
3. for more footage

Correct total footage appears to be 12,390', including deepening of pre-contract hole by 71'. Talbot 10/1/57

and take appropriate action.

- - - - - - - -

Action taken by Division:

Robert E. Adams

RE

OFFICIAL FILE COPY
DMEA
RECEIVED SEP 27 1957
DATE | INITIALS | CODE
9/27 | B | 220
30 | [illegible] | 100
10/1 | [illegible] | 500

INTERIM REPORT

DMEA-4381, Idm-E1002 (Zinc)

Operator: The National Lead Co., New York, N.Y. --Assignee

Location: Indian Creek area, Grainger County, Tennessee

With the completion of Hole LW-3, the last hole to be drilled under the present contract in the Indian Creek area, the 12,000 feet of diamond drilling alloted for the project has been exhausted. A summary of the total completed drilling on the project and that completed since the last inspection follows:

Footage completed in holes since last inspection....	721
Total footage in holes completed on project	12,322 12,330
Number of holes completed since last inspection.....	1
Number of holes completed on project.....	21 + 1 designed
Number of holes showing commercial zinc ore	0
Number of holes showing non-commercial mineralization	16
Number of barren holes.....	5

A summary of the one hole completed since the last inspection follows:

Hole No.	Property	Total depth	Remarks
LW-3	L. Wolfe	721	Location: 200 ft S 20°E of Hole LW-2. Abbreviated log: 0-7 overburden; 7-460 Mascot dolomite; 460-596 upper Kingsport dolomite member; 596-690 lower Kingsport limestone member; 690-721 Longview dolomite. Mineralization: 602-609 3/4% Zn (est); 622-630 1/2% Zn (est.); 631½-633, 2½% Zn (est.); 635-685 strong local shines of Zns.

With the completion of the alloted footage on the Indian Creek contract the Operator is preparing a final report on the information available to date. Although no commercial-ore holes were drilled in the course of the DMEA contract, one pre-DMEA hole was classified as containing ore, and many of the DMEA holes show strong mineralization. The Operator, in the course of preparing the final report, is constructing a peg model of the drilling in an attempt to analyze the data in a fashion not readily done with sections and maps. From that part of the model already constructed it appears that the drilling may have just missed significant ore-trend possibilities,

which would have been drilled had more footage been available under the contract. Thus, to explore adequately a project area the size of that included in the Indian Creek contract, it would appear that 12,000 feet of diamond drilling is not sufficient and that a contract at least the size of that at Thorn Hill (DMEA-4422) or preferably the size of the New Jersey Zinc Company contracts elsewhere on Copper Ridge (DMEA-4153, -4177,-4286, and 4586) which allows for 35,000 feet of drilling is needed. At the time of the inspection it was indicated by the Operator's local representatives that if the final report on the present contract showed significant potentialities yet remaining in the contract area, the Operator may apply for an extension of sufficient footage to explore the additional potentialities before requesing that the project be terminated. Meanwhile, the drill rig has been moved to operations on the Puncheon Camp Creek project (DMEA-4580).

Inspected: September 17, 1957

Helmuth Wedow, Jr., Geologist
Geological Survey

L. E. Shirley, Mining Engineer
Bureau of Mines

z

Form MF-104 (Rev.)
(April 1952)

RECEIVED SEP 30 1957 DMEA

Budget Bureau No. 42-R1036.5

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
OPERATOR'S MONTHLY REPORT AND VOUCHER

PAID ON VOUCHER & SCHEDULE OF PAYMENTS K- 16

Month of August, 1957 Docket No. DMEA 4381 Contract No. Idm-E 1002
Operator's Name National Lead Company Minerals Zinc
Address 111 Broadway, New York 6, N.Y.
Contract Amount, $ 40,530.00 Government Participation: 50 % Amount, $20,265.00

ITEMS OF COSTS	FOR OPERATOR'S USE: Monthly Total	Totals Previously Reported	Totals To Date	FOR GOVERNMENT USE ONLY: Approved Monthly Total	Approved Totals Previously Reported	Approved Totals To Date
(1) Independent Short Form Contracts:				7/29/58	OPK	
Drilling	3975.00	30,852.00	34,818.00	3,975.00	30,852.00	34,827.00
Bulldozing						
Crosscutting						
Drifting						
Reaming	0	876.00	876.00		876.00	876.00
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis						
Payroll Taxes						
Liability Insurance						
Assays	0	76.50	76.60		76.50	76.50
(8) Contingencies (specify):						
Incidental Allowance @ .26/ft.	344.50	2673.84	3018.34	344.50	2,673.84	3018.34
TOTALS	4319.50	34,478.34	38,788.84	4,319.50	34,478.34	38,797.84

I certify that the above bill is correct and just and that payment therefor has not been received.

Date August, 1957 *Payee National Lead Company

Per [signature] Title Superintendent.

*When a voucher is signed or receipted in the name of a company or corporation, the name of the person writing the company or corporate name, as well as the capacity in which he signs, must appear. For example: "John Doe Company, per John Smith, Secretary," or "Treasurer," as the case may be.

NOTE.—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.

(Instructions on reverse)

Pursuant to authority vested in me I certify that this account is correct and proper for payment in the amount of:

$2,159.75

Signature [signature] (Authorized Certifying Officer)

Date SEP 27 1957 Vou. No. 58

(See other side)

10k

2159.75

(For Government use only)

CERTIFICATION BY GOVERNMENT REPRESENTATIVE:

I certify that to the best of my knowledge and belief the contractor submitting this voucher is operating a Defense Minerals Exploration Administration project under Contract No. Idaho E1002 in accordance with the terms of the contract.

Signature [illegible] Title MINING ENGINEER U. S. BUREAU OF MINES Date SEP 20 1957

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert A. Lawrence Title EXECUTIVE OFFICER DMEA FIELD TEAM REGION V Date SEP 20 1957

MONTHLY REPORT OF OPERATOR

The Operator (Contractor) of an exploration project is required to make a monthly report to the Government through the Regional Executive Officer. This report consists of three parts as follows:

(a) *Form MF-104—Operator's Monthly Report and Voucher.*—This form details expenditures and constitutes a voucher for reimbursing the Operator for the Government's share of costs;

(b) *Form MF-104A—Operator's Unit Cost and Progress Report.*—This is a statistical report of expenditures which shows costs for the various types of operation; and

(c) *Narrative.*—A concise narrative description of progress made, results accomplished, and any unusual difficulties encountered must be furnished as an attachment to this Report and Voucher. Wherever possible, the narrative is to be illustrated with maps or sketches showing formations penetrated and location and assays of samples taken as well as advances in workings. In the case of diamond drilling or churn drilling, the location and inclination of holes is to be shown on a map; logs and assays also are to be submitted.

The Monthly Report of Operator should be prepared in an original and four copies all of which must be sent to the Executive Officer of the Region not later than the 15th of the month following.

Preparation of Form MF-104—Operator's Monthly Report and Voucher.—All the applicable spaces in Form MF-104 should be filled in by the Operator, and the Operator or his agent should sign the certification in the lower left corner of the form.

The items of costs are arranged in the order they appear in Article 6 (a) of Form MF-200 (Revised February 1952), however, this form is readily adaptable for use in reporting activities under other contract forms.

Under Item (1) delete words "Short Form" if the contract is a sub-contract under Form MF-200; and delete word "Independent" if the contract reported is on Form MF-200 (A). Also, report work paid for on a unit basis under contract Form MF-200 as though it were performed under an independent contract.

Under Item (2) include labor, supervision and technical services incurred for the exploratory operations. Do not include labor, supervision and technical services used for work performed under items (5) and (6).

Under Item (3) include the costs of material and supplies used in the project other than that used under items (5) and (6).

Under Item (4) appear the three types of operating equipment expenditures, that is, rental, purchase and depreciation. The expenditures made for renting equipment belonging to a third party will be reported under "Rental". The amount paid or duly obligated for payment for the purchase of equipment will be reported under "Purchase". The amount of expenditures due the Operator to reimburse him for depreciation of equipment owned will be reported under "Depreciation".

Item (5) comprises costs of labor, supervision, technical services, materials, etc., which are used in the initial rehabilitation and repair of existing buildings, installations, fixtures, and equipment. These costs, therefore, should not be reported under items (2) and (3).

Item (6) includes the labor, supervision, technical services, materials, etc., used in the installation or construction of new buildings, fixed improvements, etc., necessary for the project. These costs, therefore, should not be reported under items (2) and (3).

Item (7) covers miscellaneous types of expenditure such as payroll taxes, liability insurance, workmen's compensation insurance, repairs to equipment and sampling and analysis. Only that part of payroll taxes, liability insurance and workmen's compensation which are paid by the operator should be reported under item (7). The share paid by the employee as a payroll deduction is to be included under item (2) as labor costs.

Item (8) includes any unforeseen costs not included in the other seven categories.

The original of Form MF-104 when submitted for reimbursable expenses incurred under contract Form MF-200 must be supported by original documentation or by certified copies of purchase orders, payrolls or transcripts of payrolls, unless such documentation has been waived by the Regional Executive Officer. This certification may be stated thus, "Certified True Copy (or Transcript)", followed by appropriate signature. If the Executive Officer of the Region determines that a contract under Form MF-200 should have an "on-site" audit, that is, a Government auditor should make an audit of the Operator's books and records of account, the Operator need not support his monthly voucher with original or certified documents except in cases of equipment purchases whose individual costs exceed $50.00. In these cases the original or a certified copy of the purchase order or invoice should be attached to the Monthly Voucher. N. B.—Only the *original* of Form MF-104 is required to be documented. The four copies of Form MF-104 are not to be thus supported.

Form MF-104 submitted for reimbursement under fixed price contracts on Form MF-200 (A), however, are not required to be supported by documentation of any kind. The Operator will submit his claim under item (1) of Form MF-104 by deleting as stated above the word "Independent" and by showing the number of feet or other units immediately after the appropriate descriptive word, such as, drilling, bulldozing, crosscutting, drifting, etc., and giving the "Monthly Total" amount due. "Totals Previously Reported", and "Totals to Date" columns should also be filled in.

Form MF-104A
(April 1952)

Budget Bureau No. 42-R1151.2

UNITED STATES
DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION

OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of August 1957 Docket No. DMEA 4381 Contract No. Idm-E1002
Operator's Name National Lead Company Minerals Zinc
Address 111 Broadway, New York 6, N.Y.

OPERATION	UNIT	COSTS THIS MONTH	UNITS THIS MONTH	COSTS TO DATE	UNITS TO DATE	UNIT COSTS TO DATE	AUTHORIZED BY CONTRACT	
							Units	Unit Costs
Drifting								
Crosscutting								
Raising								
Shafts								
Winzes								
Drilling: Core	Foot	3975	1325	34,818.00	11609	3.00	12000	3.00
~~Churn~~ Reaming	Foot	0	0	876.00	438	2.00	600	2.00
~~Auger~~ Assays	Ea.	0	0	76.50	71	1.08	140	1.50
Stripping								
Trenching								
Test Pits								
Roads and Trails Incidental Allowance @.26/ft.	Foot	344.50	1325	3,018.34	11609	.26	12000	.26
TOTAL DISTRIBUTED COSTS		4319.50	[illegible]	38,788.84				TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS		4319.50		38,788.84				

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this report is correct and complete to the best of their knowledge and belief.

Date August, 1957 Operator National Lead Company

Per [signature] Title Superintendent.

NOTE.—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.

(Instructions on reverse)

REMARKS:

(For Government use only)

"Costs to date" for drilling should be $34,827.00 and "totals" should be $38,797.84

[signature]
GEOLOGIST, U. S. G. S.

SEP 20 1957

[signature]
MINING ENGINEER
U. S. BUREAU OF MINES

SEP 20 1957

INSTRUCTIONS

Preparation of Form MF-104A—Operator's Unit Cost and Progress Report.—Applicable places on Form 104A should be filled in by the Operator. The purpose of this form is twofold as follows: (1) to furnish the supervising engineers and other administrators with statistical information necessary to better determine the progress of the project; and (2) to furnish more permanent information on mining costs for future use. The more important phases of operation on which permanent information is desired have been outlined in the form. There are blank lines, however, for those unusual phases which may need to be reported for a particular project. It will be necessary for the Operator to distribute his costs among the applicable phases reported with the exception of three items the costs of which are not to be distributed by the Operator. These three items are: "Operating Equipment Purchased", "Initial Rehabilitation and Repairs", and "New Buildings, Improvements, etc." The reason for not distributing these items on a monthly basis is doubtless clear to the Operator, since such distribution might well overstate the cost for any one month or period short of the entire contract period.

Form MF-104A has been designed to tie in with Form MF-104 for both monthly and cumulative costs. The "Total Costs" on Form MF-104A for each month should equal the monthly "Total Costs" as reported on Form MF-104. This is also true of the "Total Costs To Date".

In preparing Form MF-104A, it will be necessary frequently to distribute certain costs over a number of items. For instance, supervisory and engineering costs may have to be distributed over several phases, such as, drifting, crosscutting, raising, etc., provided that these items were reported active for the month. Such distributions should be made on the basis of time spent on the various phases, on man days of labor charged to such phases, or on some other equitable basis. "Operating Equipment", "Initial Rehabilitation and Repairs", and "New Buildings Improvements, etc.", will be distributed to the several phases of the project by the Washington Office of DMEA at the close of the project if determined necessary. The last two columns headed "Authorized by Contract" will be filled in by the Operator if such information is found in the contract. This information is usually a part of Exhibit "A" of the contract. A space for remarks has been provided for the use of the Operator to call attention to any unusual circumstances causing excessive or disproportionate unit costs.

GPO 872894

A PROGRESS REPORT ON THE
INDIAN CREEK PROJECT, GRAINGER COUNTY,
TENNESSEE FOR JULY, 1957.

Docket No. 4381
Contract No. Idm-E 1002

During the month of August, two holes were drilled on the Indian Creek Project. Leffew Heirs hole #6 (LH-6) was drilled 200' north of J.W.-4. The hole collared in the Mascot formation and was drilled to a depth of 676'. The results are summarized below:

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks.
0-3	Overburden	---	---	---
3-453	Mascot	CMss @453'	Tr. ZnS @ 316½, 317½.	Light, med., and dark gray dolomite.
453-651	Kingsport fm.	Top of "R" bed @ 578'; Top of "S" bed @ 641.	---	Light, med. and dark gray dol. with re-xl in lower part; in part brecciated.
651-676	Longview fm.	Top of "T" @ 651'; Top of "U" @ 688½?	---	Med. gr. dol., and semryst alline; some brecc. TD @ 676'.

The second hole was drilled 200' south of Dalton #1(D-1). The hole collared in the Mascot formation and was drilled to a depth of 649'. The results are summarized below;

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks.
0-5	Overburden	---	---	---
5-378½	Mascot fm.	CmSS @ 378½	ZnS @ 199,201, Est. 1% ZnS 213-214.	Light, med. and dark gray dol; some crackle breccia.
378½-615	Kingsport fm.	Top of "R" 516', Top of "S" @ 594½.	ZnS shine 511½, 512, 512½,514,515½,523,524, 525,526,526½,528½,529, 529½, Est. 1% Zn 530-531½,545,546,547½,549½, 551,554½,Est. 2% 556-559½, 565,568,571,577½,580½, 581,583½,584½.	Light, med., and dark gr. dol; re-xl interbedded with dol; scatt. FeS sh. from 378½-591; "R" & "S" bed zones in part brecc-iated.
615-649	Longview fm.	Top of "T" @ 615', Top of "U" @ 623.	---	Med. gr. brecciated dol. interbedded with re-xl.

Drilling is now underway 200' south of LW-2.

National Lead Co., L. Wolfe #2
Indian Creek Project.
Grainger Co., Tenn.
Drilled by Joy Drilling Co.
Logged by John W. Spears

Collar 849-57
BX 7'
AX 19'

0-3	Overburden
-8	Med. gr. dol, mott; steep gange filled shears.
-9	Lt. med. gr. dol.
-16	Lt. gr. dol, banded ; v. banded 12-15; fault 15½-16.
-18½	Med. gr. dol, v. mott.
-20	Sec. chert; 2" of re-xl at base.
-26	Lt. med. gr. dol, sli. mott; ox. shears 24-26 & fault 25½-26.
-30	Lt. med. semi re-xl, sli. silic; v. mott; steep ox. shears 29-30.
-31½	Med. gr. dol, v. mott to banded.
-38½	Lt. med. gr. dol; mott.
-41	Med. gr. dol; mott; eyelets.
-52½	Lt. med. gr. dol: sli. banded to 45½; chert 42-42½; brecc. chert sealed w/ chert 44-45½; mott 45½-52½; tr. brecc. 45½; chert 46½-47; thin sand 50½.
-53½	Lt. silic re-xl.
-56½	Lt. med. gr. dol; mott.
-60	Lt. gr. dol; sli. banded; thin sands 59-60.
-61½	Lt. med. gr. dol.
-63	Med. gr. dol; banded; chert nod at 63.
-71	Med. dk. gr. dol, mott to banded.
-76	Med. gr. dol, banded to 73½; mott 73½-76; thin fault 75-76.
-80	Lt. gr. dol, sli. mott.
-87½	Lt. med. gr. dol., mott; many small vugs 82-83½; v. heavy ss 84.
-88	Med. gr. dol., mott. eyelets.
-90½	Lt. med. gr., lt. banding to mott 88-90½ w/ scatt thin sands 90-90½.
-91½	Med. gr. dol, v. mott; dk. chert nod near top.
-93½	Lt. med. gr. dol, v. mott & sandy 91½-92½; w/ TLS 92½ & chert nod 93, ox shears 93½.
-106	Med. gr. dol; sli. banding to 101, then well mottled to 105; Fl. 102½; chert nod 103,105; lt. banding 105-106 w/ heavy ss 106 then 2" dk. chert seam.
-108	Lt. med. gr. dol., v. mott.
-117½	Med. gr. dol to med. dk. gr.; mott; many silic eyelets to 115½ w/ TLS 115½; from 117-117½ banded & lighter w/ TLS 117½.
-120	Lt. gr. dol; banded; sands 118-119¼ w/ CMss at 119¼; TLS 120.
-124	Lt. med. gr. dol, large chert nod near top; white nod at 121 ; TLS 124.
-126½	Med. gr. dol, v. mott; thin sands 126-126½.
-127	Lt. med. gr. dol, banded, sandy w/ heaviest sand at base.
-128	Lt. silic re-xl.
-130	Lt. med. gr. dol; chert nod near top; sandy shaly chert seam 129, scatt. sand grains 129-30; 1" CM 130.
-131	Sec. chert, doloclastic.
-138½	Lt. med. gr. (grades to med. gr.) v. heavy sands 137½-38 w/ CMss at 138, then scatt sands to 139½.
-140	Lt. gr. dol., v. sandy.
-141½	Chert bed.
-142	Sec. chert, doloclastic.
-143	Tr. re-xl, v. silic.
-145	Lt. med. gr. dol.
-148	Med. gr. dol., mott.
-149½	Med. dk. gr. dol, mott; eyelets.
-150	Lt. gr. re-xl, silic; sandy.
-154	Lt. med. gr. dol; few eyelets; sli. mott.

		Footage	DIP
-159	Med. dk. gr. dol; mott.		
-160	Med. gr. dol, mott; fault at base.	25	35
-170	Dk. gr. dol; mott.	50	35
-180	Med. gr. dol, mott to banded; thin sand 176; 180.	75	35
-181	Med. dk. gr. dol, v. mott.	100	35
-190	Med. gr. dol, mott; eyelets.	125	36
-194	Lt. med. gr. dol, steep fault 191-94.	150	34
-200½	Med. gr. dol, crackle 198½-199¼ w/ ZnS shines;(chert nod 199½).		
-202	Lt. med. gr. dol., banded; brecc. 200½-01 w/ ZnS shines; thin sands 20102.		
-204	Brecc. chert sealed w/ sec. chert.		
-209	Lt. gr. dol, steep vertical faults & shears thruout; chert nod at base.		
-215	Med. gr. dol; crackle 213-14 w/ 1% ZnS		
-222	Lt. med. to lt. gr. dol., mott.	200	35
-224	Med. gr. dol, 223-24 v. sandy & congl.	250	32
-231	Lt. gr. dol, sli. mott.	275	33
-237½	Lt. med. gr. dol, mott; v. vuggy.	300	33
-247	Lt. gr. dol, banded & scatt. sands to 239 w/ chert nod 239.		
-252	Lt. med. gr. dol; mott; vert. shears.	325	32
-253½	Med. gr. dol, eyelets; TBS at base.	350	38
-256	Lt. med. gr. dol, banded.		
-261	Lt. gr. dol, mott; bott. 6" sli. silic; vuggy; some gangue w/ ZnS shine.		
-269½	Lt. med. gr. dol., mott; crackle & shearing; thin fault 262½; sandy at 263½ W/ chert nod; fault 264½,267½.		
-275	Med. gr. dol, many eyelets.		
-276	Lt. med. gr. dol; sand & oolite at 276.		
-277	Lt. gr. dol, sand dike 276-76½.		
-282	Lt. med. gr. dol., mott.		
-287½	Med. gr. dol; few eyelets to 284; then mott 287½.		
-288½	Lt. med. gr. dol; thin ss near top & at base.		
-290½	Br. re-xl, bott 6" brecc. chert sealed w/ re-xl.		
-301½	Med. gr. dol; banded to 298; 1" green shale 300; mott 300-01½ w/ oolitic chert nod at 301½.		
-307½	Lt. med. gr. dol., mott to 303 w/ some ox. shears; then banded.		
-318	Med. gr. dol, TGS 308½; fault 308½-09; mott & few shaly zones; fault 317-18.		
-319	Med. dk. gr. dol, fault.		
-328	Lt. med. gr. dol, banded to 322; sandy 321½-22 w/ GMss at 322; v. sheared 322-26.		
-332	Lt. med. gr. dol, v. mott to 331; sand 331-32.		
-347½	Lt. gr. dol, sli. mott to banding; some vert. ox. shears.		
-350	Med. dk. gr. dol; fault 347½-49 then sheared.		
-356	Med. gr. dol, lt. banding; sheared; FeS shines 352-54.		
-368½	Lt. med. gr. dol; v. banded to 358½; thin sand 357,358½; v. sheared 351-358; fault 358-63; FeS shines 363,366.		
-370	Med. gr. dol, v. sli. to mostly sec. chert at base.		

-378½ lt. med gr. dol, fault 371-72; 373-74; large chert nod 374 (370-76 = 40% rec) sheared and few eyelets; 1½ inches of colite & sand at 378½

TOP KINGSPORT 378½'

-389 lt med gr dol, Fe shine near top, mott & sheared to 380 w/TGS 380, then v. sheared to faulted (381-92 = 65% rec)

-406 lt gr dol, mott, brecc 393-94 w/ heavy FeS, fault at 400, brecc. chert nod at 401 w/ strong FeS (394-401 = 40% rec) then crackle brecc. to 402, chert nods 402, 03, 04 & 06; steep shears 405-07 (401-407 = 80% rec)

-410 lt med gr dol., v. banded, vert. fault thruout, FeS shines 406-07, 409

-416 lt med gr dol., white chert nod at base, fault 411-13 & vert. faults thruout

-431 lt gr dol., mott, vert. shears to 417½, lt crackle w/ FeS shines 417-19½; chert nod 421 w/ FeS shine; thin sands 421-21½; crackle 426-27 w/ FeSshines; chert nods 428 & 428½, FeS shine 430, scatt sands 430-31 w/ chert nod W/ FeS shines at 431

-439 Lt. med. gr. dol., crackle 431-32 w/ chert nod 432; nod 436 w/ trl oolite; mott 436-37 w/ few ss grains; chert nod w/ ptl oolite at 437.

-442 Lt. gr. dol, crackle w/ FeS 439-39½.

-443 M Med. gr. dol., mott.

-447 Lt. gr. dol, tr. crackle w/ FeS shine at top; ox. shears 445 then chert nods; crackle 445-47 w/ FeS shines.

-450 Lt. med. gr. dol., v. banded; fault 449.

-466 Lt. gr. dol, fault at 453; 453-54 v. banded to mott w/ some ss at 454; (453-462-55% rec.) silic & cherty 454-57; v. sheared to faulted 455-463; banded 463-466 w/ TGS 466 & scatt. sand grains for 2" above the shale.

-468 Lt. med. gr. dol; v. sheared to faulted.

-471 Lt. gr. dol; v. sheared to faulted; TGS at base.

-472 Lt. med. gr. dol; fault at 472.

-479 Lt. gr. dol; lt. mottling.

-490½ Lt. med. gr. dol; chert nods 479,479½; vert. faults 479-81; tr. FeS 483; v. sheared 483-85; sec. chert 485-85½; from 485½-490½ crackle w/ some FeS shines & many vertical faults.

-496½ Lt. gr. dol; crackle to 493; thin fault 496½.

-499 Lt. med. gr. dol; mott; occ. v. thin shears.

-503 Med. gr. dol, mott, fault at 503.

-506 Med. dk. gr. dol.

-508 Lt. med. gr. dol, lt. banding to 506½ w/ sand & TGS at 506½; then v. mott to 508 w/ tr. crackle at 508 w/ FeS shine.

-512½ Lt. med. to med. gr. dol; sli. banded to mott; FeS shine 510,511; ZnS shine in crackle 511½-12.

-516 Lt. med. gr. dol, v. mott; ZnS shine 512½,514; ZnS & FeS in re-xl filled shear at 512½; few scatt. sand grains 515½-16

Top "R" bed 516.

-518½ Br. re-xl, v. shaly top foot; chert nods at base.

-520 Lt. med. gr. dol; scatt. sand grains 519-19½; half chert 519½-20.

-521 Br. re-xl; top 6" mostly silic ss & chert; then shaly.

-527 Lt. med. gr. dol, sugary at top; mott to banded; thin ss 521½; v. sheared to faulted 522½-25 w/ ZnS in crackle at 522½,524,525,526-26½.

-528½ Dk. mott semi re-xl; sli. tr. ZnS top & bott.

-529½ Lt. gr. dol, v. sheared; ZnS shines.

-530 Br. re-xl grading to all silica; good ZnS sh. 529½- 3/4.

-531½ Lt. gr. dol, crackle w/ est. 1% ZnS.

L.W. #2

Lick Ck.

-533½ Lt. med. gr. dol; ZnS shine 532; sheared 532-33½; Fault 533½-40.
-541½ Dk. gr. dol., mott; sugary, v. sheared 540-41½.
-551 Lt. med. gr. dol; fault 541½-45; sheared 545-46 w/ FeS & ZnS shine in crackle 545-46; Fault 546-47½ w/ ZnS shines 546-46½; chert nod 548 w/ ZnS shine; crackle 548-51 w/ occ. ZnS shine strongest at 551.
-556 Br. re-xl, v. shaly at top; ZnS shine 554½. 554½-56 much green shale; Flourite shine at 555½.
-559½ Med. gr. dol, brecc. 2% Zn & tr. FeS.
-561 Chert.
-562 Med. dk. gr. dol, sugary, brecc.
-563 Lt. med. gr. dol, bott 9" dry brecc.
-565½ V. sil. re-xl, blocks of chert & dol; ZnS shine 565;"poss. dry brecc."
-566 Br. re-xl, fine grained.
-567 Lt. med. gr. dol; dry brecc.
-572 Med. gr. dol, sheared; ZnS & FeS shine 568; chert nod 569; ZnS sh, 571.
-574 Med. dk. gr. dol., v. sheared.
-575 Re-xl & silic.; lt. gr. dol. v. sheared 575-77; crackle w/ ZnS shine 578; white chert nod 577; banded 577-79; fault & silic. 580-80½ w/ ZnS shine.
-583 V. cherty br. re-xl, ZnS shine 580½-81; from 581-82½ mostly chert.
-587 Lt. gr. re-xl, crackle w/ ZnS 583½-584½; FeS shine 586.
-594½ Lt. gr. dol; some dker blocks; brecc. sealed mostly w/ white gangue; to 591; est. 4% FeS 587-91; fault 594-94½ (594-608 -60% rec.)
TOP "S" BED 594½.
-611 Dry brecc. some dol. blocks & chert in re-xl & silica.
BASE KINGSPORT? 615.
-619 Large blocks of lt. med. gr. dol separated by silic; large chert nod at base.
-623 Med. gr. dol; mott; vert. fault 619-23; some crackle.
-625 Lt. v. silic cherty re-xl, v. sheared.
-632 Med. gr. dol; crackle; cherty 627, in places sugary to semi; 630-31½ mostly blue secondary? chert; fault 631-32.
-633 Re-xl, v. cherty.
-635 Lt. med. gr. dol, mott.
-637 Br. v. silic re-xl; chert nods 636 & 637; in places almost doloclastic chert.
-637½ Med. gr. dol.
-638½ V. silic re-xl, chert nod at base.
-639½ Med. gr. dol, chert nod 639.
-648 Lt. br. re-xl, shaly in places; v. cherty 643½; tr. brecc. 645; some jasperoid 646-46½.
-649 Lt. med. gr. dol, bott 1" re-xl. TOTAL DEPTH.

Collar 7-25-57
IX 3'
AX 2'

Leffew Heirs #6
Elev. [illegible].5

0-3	Overburden
-3	Lt. gr. dol; lite mott, eyelets.
-10	Lt. med. gr. dol; sli. banded; heavy ss at base.
-13	Lt. gr. dol; lite mott; few eyelets; oxidised at base.
-15½	Med. gr. dol; v. mott; few sand grains 15; TOS 15½.
-18	Lt. med. gr. dol., mott.
-21	Lt. gr. dol., few v. small vugs at 18½ & 19½; mott 20-21 w/ TOS 21.
-26	Lt. med. to med. gr. dol; fault, 25-25½; v. shaly at base.
-28	Med. dk. gr. dol., v. banded to mott.
-30	Med. gr. dol., bott foot med. dk; many eyelets; banded; sand at base.
-33	Lt. med. gr. dol; few ss grains at 31.
-34	Med. gr. dol.
-35	Dk. gr. dol, mott; dk. chert nod at base.
-41	Lt. med. gr. dol., sli. mott; TOS then heavy ss at 38; banded 38-41.
-42	Dk. gr. dol.
-43	Lt. gr. dol; thin sand at base.
-47½	Med. gr. dol, mott; crackle top foot; oxidized at 45(lost wtr. at 45); TOS 47½. (80 % rec. 43-55; 60 % rec. 67-71.)
-53	Lt. med. gr. dol., oxidised at 49½; tr. of ss, chert, & re-xl at 53.
-55	Lt. gr. dol., sli. banded; red mott & oxidised, TPS at base.
-62	Dk. gr. dol, sli. banded.
-64	Med. gr. dol, mott. occ. eyelets.
-73½	Lt. gr. dol., sli. banding, v. thin ss at 67½.
-75½	Lt. med. gr. dol; banded; oxidized at base.
-80	Med. gr. dol; mott; top foot semi re-xl.
-80½	Lt. gr. dol.
-82½	Lt. med. gr. dol. sli. banding.
-84	Med. gr. dol; dk. chert nod 83½.
-86	Med. re-xl grading to semi re-xl; v. mott.
-88	Dk.gr. dol; mott, eyelets.
-91½	Med. gr. dol, sli. banding, steep thin fault 91.
-97	Lt. med. gr. dol, v. banded; w/ thin sand at top; (75% rec. 93-97)
-99½	Med. gr. dol; mott; eyelets; ox. at base.
-103½	Lt. med. gr. dol., lt. banding; white chert nod at 103.
-105	Lt. med. semi re-xl to sugary dol., mott.
-107	Med. gr. dol, sli. mott; sugary.
-110½	Dk. gr. dol, v. sugary, mott.
-120	Med. gr. dol; v. mott.
-127	Lt. med. gr. dol; sli. banded top, occ. chert 124-25; crackle 125-27.
-131	Lt. gr. dol., v. mott to 130 w/ top re-xl-semi re-xl, few ss grains at 31 then occ. chert seam.
-133	Med. gr. dol.
-134½	Lt. silic re-xl.
-135½	Lt. med. gr. dol, mott.
-139	Lt. gr. dol; banded, v. heavy sands 137½-38; color grades to-
-144½	Med. gr. dol; banded to 142 w/ TOS 142; then v. mott to 144½.
-150	Lt. med. gr. dol, mott to 148 w/ few small chert nods 148; banded 148 -150 w/ heavy sand at 150, then chert nod.
-153	Med. gr. dol., mott.
-154	Lt. med. gr. dol., mott.
-157	Lt. gr. dol., lite mott.
-161	Med. gr. dol, mott 157-60½, banded 160½-61 w/ heavy scatt sand.

-165½ Lt. med. gr. dol., sli. mott.
-168 Med. gr. dol. lt. banding, scatt sand grains 167½; chert nod 168.
-170 Lt. med. gr. mott semi re-xl.
-180½ Med. gr. dol, eyelets 177-180½; thin sand & oxidized at 180½.
-182½ Lt. silic re-xl; v. mott.
-193½ Med. gr. dol, many silic eyelets 182½-91½.
-196 Lt. med. gr. dol., sli. banded; 1½" CM at 195, then heavy sands to 196.
-196½ Med. gr. silic semi re-xl.
-205 Lt. med. gr. dol. from 201-04½ mott, scatt sands 203-04 w/ 3" silic re-xl at 204 & chert nod 205.
-207½ Lt. gr. dol, scatt sands 206-07½ w/ CM sands 07-07½.
-208½ Silic re-xl, chert nod at top.
-214 Med. gr. dol, blue mott to 210, then lt. banding, chert nod 211, v. heavy sands 212½-13½ w/ CM at 13½; chert nod 214.
-215 Lt. med. gr. dol., scatt sands.
-217 Chert, mostly secondary, bott 4" silic re-xl.
-217½ Oolitic chert.
-219½ Med. gr. mott semi re-xl.
-223½ Med. gr. dol., mott.
-226 Med. dk. gr. dol., v. mott; sand bott. 3".
-230 Lt. med. gr. dol, few sa grains & small vugs 226-27½, few eyelets 227½-230.
-239 Med. dk. gr. dol., mott, silic eyelets to 36; lite mott-band to 239.
-242 Lt. med. gr. dol; mott; fault at 242.
-250 Med. dk. gr. dol., scatt sand grains & eyelets 249-50 w/ heavy sand bott 2".
-252 Lt. med. gr. dol, mott to banded.
-262½ Med. gr. dol., mott sand at 253½; few eyelets 253½-58, thin fault 258, many eyelets 258-60; shears 262-62½.
-265 Lt. med. gr. dol.
-266 Lt. med. semi re-xl, top 6" mott, bott. banded.
-269½ Lt. med. gr. dol., mott., sugary.
-273½ Med. gr. dol., mott, eyelets.
-275 Lt. med. gr. dol. banded; v. sandy 274-75 w/ chert nod & TOS at 275.
-277 Lt. med. gr. semi re-xl.
-278½ Lt. silic re-xl-semi re-xl.
-282½ Med. gr. dol., crackle 27½-81; thin scatt sands at 282 w/ oolitic chert nod 282; chert nod 282½.
-287 Lt. gr. dol; shears 284-85.
-288 Lt. med. gr. dol.
-291 Med. gr. dol., sli. banded; thin fault 291.

Footage	Dip
90	32
100	36
110	32
120	35
130	?
140	30
150	31
160	30
180	30
190	30
200	31
210	35

Footage	Dip
230	29
240	33
250	31
260	30
270	31
280	37
290	30

-295 Lt. med. gr. dol., mott; few vugs 291½-92½; chert nod 295.
-297 Lt. gr. dol, sli. banded, few ss grains at base.
-302 Med. gr. dol, mott; few eyelets bott. 6".
-309 Lt. med. gr. dol., shears 303½; mott 303½-09.
-310 Lt. gr. dol, banded.
-316½ Lt. med. gr. dol, mott; few ss grains 310½; few vugs 310½-13, many vugs 313-15; banded 315-16 w/ thin sands; v. mott. & silic 316-16½ w/ ZnS shine 316½.
-323½ Lt. gr. dol, fracture w/ ZnS from 317½-18; 2" edgewise congl. at 318, banded 318-20.
-327½ Lt. med. gr. dol, sugary, v. mott; some silica.
-331 Med. gr. dol, eyelets to 329.
-356 Lt. med. gr. dol, banded; eyelets 331-33; heavy sand 335; sec. chert 335-35 3/4; v. mott 335 3/4-37½; sli. banded 337½-38½; chert nods few ss grains at 378½, few small vugs 38½-43 w/ sand at 343; then mott w/ occ. white eyelets to 347½; strong fault 347½-48½; sli. mott 348½-56; TGS 351½; TBS 356.
-357 Med. gr. dol, mott; cherty at base.
-368 Lt. med. gr. dol; sandy 358-59 w/ 3" oolitic chert at 359; ox. shears 361-63; mott 361-63; eyelets 365-68; w/ TBS 366; ox. shears 368.
-371 Dk. gr. dol; v. mott.
-376½ Lt. med. gr. dol; heavy ss at 371½, then brecc. oolitic chert to 372; 2" sec. chert at 372; well banded 372-76½.
-379½ Med. gr. dol, thin fault at base.
-381½ Lt. med. gr. dol; 2" v. mott at base.
-387½ Lt. gr. dol, well banded; TbS at base.
-397 Lt. med. gr. dol, mott.; large gouge filled shear 388½, TGS 389, vert. ox. fault 393½-95.
-398 Med. dk. gr. dol., v. mott, dk. chert nod at base.
-401 Lt. gr. dol, sli. banded; fault 398-99½.
-404½ Lt. med. gr. dol., sli. mott, few eyelets; v. heavy sand 401-01½ w/ CMss at 401½.
-408 Med. gr. dol., v. mott.
-418 Lt. gr. dol.; heavy ss 408½; scatt. sands to 410 w/ heavy ss 410.
-424 Lt. med. gr. dol., banded 415-20 w/ TBS 420; then mott to banded.
-425½ Med. gr. dol.
-430 Lt. med. gr. dol., sli. banded to mott to 428; banded 428-30 w/ chert nods 428,29,30.
-441½ Lt. med. gr. dol., v. banded to 438; chert nod 430½; scatt. sands 436½-38; mott 438-41½.
-443½ Med. gr. dol; mott. to banded; chert nod 443; brecc. 443-43½; but bott. 2" sec. chert.
-448 Lt. gr. dol, some steep ox. shears.
-453 Lt. med. gr. dol; v. banded to 450½ w/ heavy scatt sand grains 449½-50½ w/ some edgewise congl. at 450½; v. heavy oolite & sand 452½-53 w/ TGS 453. TOP KINGSPORT 453.
-469½ Lt. gr. dol; sli. mott; TBS 458, med. gr. 461½-62 w/ TGS 462; banded 462-69½.
-476½ Lt. med. gr. dol; chert nods 469½,470,471; banded 471-72 w/ chert nod 472; v. banded 472-76 w/ nods 472½,72½; scatt. sands 475-76; then 3" green shale, 3" sec. chert.
-486½ Lt. gr. dol, chert nod & ½" TGS at 480; chert nod 485-486½.
-494 Lt. gr. dol, v. banded to 488 w/ v. thin sand at 488; chert nod 491½; oolitic chert nod 493 & 493½; scatt. sand grains 493½-94 w/ TGS 494.
-498 Lt. med. gr. dol., mott.
-502½ Lt. gr. dol, v. banded to 500½ w/ chert nod 500½.
-504½ Lt. med. gr. dol, banded.
-508 Lt. gr. dol; sli. banded to 507½; then v. mott. to banded to 508 w/ chert nod 508.

-511 Lt. med. gr. dol, v. cherty 509½-11 w/ brecc. chert nod 51 ½-11.
-515½ Lt. gr. dol, sand at 511½; sli. banded.
-522 Lt. med. gr. dol., mott to 519 w/ few eyelets; well banded to 522 w/ TGS.
-523 Med. gr. dol.
-530½ Lt. med. gr. dol., well banded to 526; thin ss 526; 2" TGS 526½, fault at 527½, 530.
-535 Lt. med. gr. dol., mott to banded top 2'; few shears, chert nod at base.
-544 Med. gr. dol; chert nod 536½; crackle 536½-37; sli. banded.
-551 Lt. med. gr. dol; sli. banded; brec . 548½-551; FeS shine 547; 2" TGS 551.
-554 Med. gr. dol., v. mott.
-556 Med. dk. gr. dol., many thin ox. shears.
-557 Lt. med. gr. dol; banded, thin sand at base.
-559 Med. gr. dol; mott; shears throughout w/ fault at 559.
-572 Lt. med. gr. dol; banded; brecc. 562-65 w/ heavy green shale at 565; & brecc. chert nod at 565,566; at 568 heavy ss & green shale; mott 568-72 w/ many ox. shears.
-573 Dk. gr. dol; oxidized brecc.
-575 Brecc. chert sealed w/ silica & some gangue.
-578 Lt. gr. dol, crackle w/ FeS shine to 576½; shaly at base & few ss grains.

TOP "B" PAD 578.
-581½ Lt. silic. re-xl, crackle brecc.
-583½ Lt. med. gr. dol., brecc.
-587 Gr. br. re-xl, banded 583½-84½; w. silic 585-87.
-593 Lt. gr. dol., brecc. w/ FeS shine top 3", grades to crackle; some zones of brecc. not sealed.
-594½ Dk. re-xl, bott. 6" brecc.
-598 Dk. re-xl; lt. & dk. gr. dol, brecc. & sealed w/ gangue.
-601 Br. re-xl, v. silic w/ chert fragments to 6 0½; then mott.
-606 Lt. med. gr. sugary dol; mott; brecc. 602½-06 w/ FeS shine 604-05; bott. 6" brecc. chert sealed w/ gangue & sec. chert.
-616 Med. gr. dol; many zones of brecc; mostly w/ white gangue, but some "dry Brecc.".
-622 Br. re-xl, crackle brecc. to 618; occ. chert fragments.

-629 Br. re-xl, 625-26 sec. chert; then v. silic to sec. chert fragments to base.
-631½ Lt. gr. dol, brecc. sealed w/ sec. chert, bott brecc. chert nod sealed w/ sec. chert.
-632½ Sec. chert.
-641 Lt. gr. dol, banded; 632½-36 crackle w/ silica, re-xl & some gangue; 636 to 641 brecc. w/ silica, re-xl. & some gangue.
TOP "G" BED 641.
-645 Silica; tr's of re-xl, some blocks of dolomite & chert.
-649 Lt. br. re-xl, v. silic.
-650½ Lt. gr. re-xl.
- BASE KINGSPORT 650½
-662 Med. gr. dol; chert nod near top; 4" of re-xl at 652½, chert nod 653½; mott 657-662; oolitic chert nod at 662 then 3" v. silic re-xl.
-668½ Lt. med. gr. dol, mott; semi re-xl to sugary top 2 feet; crackle thruout.
-672 Br. re-xl, v. silic to 671 w/ chert nod 671
-674 Lt. med. gr. dol; brecc. & sealed w/ re-xl & gangue; few ss grains at top.
-676 TOTAL DEPTH. br. re-xl, mott; silic top 3".

JOY MANUFACTURING COMPANY

HENRY W. OLIVER BUILDING

PITTSBURGH 22, PENNSYLVANIA

CUSTOMER'S ORDER NO.	DATE	REQ. NO.	OUR ORDER NO.	DATE	AT REC. POINT	B.O. NO.
CONTRACT	CODE			DATE	AT SHIP POINT	
	63					

SOLD TO: National Lead Company
P.O. Box 2047
Morristown, Tenn.

~~TERMS NET 30 DAYS~~
NO CASH DISCOUNT

PLEASE REMIT TO PITTSBURGH, PA.

INVOICE NO. 96621

INVOICE DATE 8-16-57

DATE SHIPPED

SHIPPED VIA

SHIPPED TO: Indian Creek, Tenn.

P. O. ADDRESS

MARKS

REQUESTED ROUTING

SHIPPED FROM

ORIGINAL QUANTITY ORDERED	UNIT	PART NUMBER	DESCRIPTION		CODE	UNIT PRICE	QUANTITY BACK ORDERED	QUANTITY SHIPPED	AMOUNT
		To 676.' Core Drilling at Indian Creek, Tennessee as per agreement.							
		Prospect #	From	To		Total Feet		Unit Cost	Total Cost
		~~416~~ 416	0.	676.		676.		$3.00	$2,028.00

F. O. B. SHIPPING POINT UNLESS OTHERWISE SPECIFIED

NO RETURNS ALLOWED UNLESS AUTHORIZED BY THIS OFFICE

GOODS COVERED BY THIS INVOICE WERE PRODUCED IN COMPLIANCE WITH THE REQUIREMENTS OF THE FAIR LABOR STANDARDS ACT OF 1938, AS AMENDED, INCLUDING SECTION 12(A).

FORM P133A

JOY MANUFACTURING COMPANY

HENRY W. OLIVER BUILDING

PITTSBURGH 22, PENNSYLVANIA

CUSTOMER'S ORDER NO.	DATE	REQ. NO.	OUR ORDER NO.	DATE	AT REC. POINT	B.O. NO.
CONTRACT	CODE			DATE	AT SHIP POINT	
	63					

SOLD TO: National Lead Company
Box 2047
Morristown, Tenn.

[redacted]
NO CASH DISCOUNT

PLEASE REMIT TO PITTSBURGH, PA.

INVOICE NO. 96667

INVOICE DATE 8-24-57

DATE SHIPPED

SHIPPED VIA

SHIPPED TO: Indian Creek, Tenn.

P. O. ADDRESS

MARKS

REQUESTED ROUTING

SHIPPED FROM

ORIGINAL QUANTITY ORDERED	UNIT	PART NUMBER	DESCRIPTION	CODE	UNIT PRICE	QUANTITY BACK ORDERED	QUANTITY SHIPPED	AMOUNT
		To 649.' agreement.	Core Drilling at Indian Creek, Tennessee as per					
		Prospect #	From / To		Total Feet		Unit Cost	Total Cost
		Wolf #2	0. / 649.		649.		$3.00	$1,947.00

F. O. B. SHIPPING POINT UNLESS OTHERWISE SPECIFIED

NO RETURNS ALLOWED UNLESS AUTHORIZED BY THIS OFFICE

GOODS COVERED BY THIS INVOICE WERE PRODUCED IN COMPLIANCE WITH THE REQUIREMENTS OF THE FAIR LABOR STANDARDS ACT OF 1938, AS AMENDED, INCLUDING SECTION 12(A).

FORM P133A

ACTION ON INTERIM
OR FINAL FIELD TEAM REPORT

Date 9-5

Referred to:

1. ~~Mr. Mittendorf~~
2. ~~Mr. Jabson~~
3. ~~Mr. Chambers~~
4. Docket Control Mails and Files
5. Division
6. Docket Control Mails and Files
7. 500

Note comments in report regarding:

1. Completed footage appears to be in error.

2. 9/9/57

3.

4.

and take appropriate action.

- - - - - - - - -

Action taken by Division:

Robert E. Adams

OFFICIAL FILE COPY
DMEA
RECEIVED 5 1957
DATE CODE
9-5 C 220
9/9 COPY 500

INTERIM REPORT

DMEA-4381, Idm-E1002 (Zinc)

Operator: National Lead Company, New York, N. Y.---assignee

Location: Indian Creek area, Grainger County, Tennessee

Diamond drilling on the Indian Creek project completed to date and since the last inspection on August 8, 1957 is summarized as follows:

Footage in holes completed since last inspection . . .	649
Total footage in holes completed to date	11,601 11,609'
Number of holes completed since last inspection . . .	1
Total number of holes completed to date	20 plus 1 abandoned
Number of holes showing commercial zinc ore	0
Number of holes showing non-commercial zinc mineralization	15
Number of barren holes	5

A summary of the one hole completed since the last inspection is given below:

Hole No.	Property	Total Depth	Remarks
LW-2	L. Wolfe	649	Location: 200 feet S. 20° E. of Hole D-1 Abbreviated log: 0-5 Overburden; 5-378 Mascot dolomite; 378-516 upper Kingsport dolomite member; 516-615 lower Kingsport limestone member; 615-649 Longview dolomite Mineralization: Local shines of ZnS 510-515, 523-529; 1½ ft estimated @ 1.0% Zn @ 530-531½; local shines of ZnS 532-555; 3½ ft estimated @ 2% @ 556-559½; local shines of ZnS 564-584

One hole was in progress at the time of inspection. This hole, located on the L. Wolfe tract, is 200 feet S. 20° E. of Hole LW-2. At the time of inspection it was 103 feet deep and drilling in the Mascot dolomite. Inasmuch as only 399 feet of drilling yet remain under the 12,000 feet allotted under the DMEA contract, the Operator plans to complete the hole on his own, the estimated total depth being about 750 feet.

Inspected: August 27, 1957

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey

ACTION ON INTERIM
OR FINAL FIELD TEAM REPORT

Date 8/16

Referred to:

1. ~~Mr. Mittondorf~~
2. ~~Mr. Johnson~~
3. ~~Mr. Chambers~~
4. Docket Control Mails and Files
5. ~~Division~~
6. Docket Control Mails and Files
7. 500

Note comments in report regarding:

1. Correct footage to date
2. is 10,960', including 71'
3. deepening of hole drilled prior to contract.

Falbert 8/20/59

4.

and take appropriate action.

- - - - - - - -

Action taken by Division:

Robert E. Adams

OFFICIAL FILE COPY
DMEA
RECEIVED AUG 16 1957

DATE	INITIALS	CODE
8/19	Com	100
8/20	WWH	500

INTERIM REPORT

DMEA-4381, Idm-E1002 - Zinc

Operator: National Lead Company, New York, N. Y.---assignee

Location: Indian Creek area, Grainger County, Tennessee

Diamond drilling on the Indian Creek project of National Lead Company completed to date and since the last inspection on July 24, 1957 is summarized as follows:

Footage in holes completed since last inspection . . .	676 ✓
Total footage in holes completed to date	10,952 X 10,960'
Number of holes completed since last inspection . . .	1 ✓
Total number of holes completed to date	19 ✓
Number of holes showing commercial zinc ore	0
Number of holes showing non-commercial zinc mineralization	14
Number of barren holes	5

A summary of the one hole completed since the last inspection follows:

Hole No.	Property	Total Depth	Remarks
LH-6	Leffew Heirs	676	Abbreviated log: 0-453 Mascot dolomite (depth of overburden not available); 453-578 upper Kingsport dolomite; 578-651 lower Kingsport limestone; 651-676 Longview dolomite. Mineralization: Trace hole; weak shine of sphalerite @ 317.

At the time of inspection the drill rig was being moved to a new site 200 feet S. 20° E. of Hole D-1.

Inspected: August 8, 1957

Helmuth Wedow, Jr.
Geologist
U. S. Geological Survey

Form MF-104 (Rev.)
(April 1952)

Budget Bureau No. [illegible]-R1036.5

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
OPERATOR'S MONTHLY REPORT AND VOUCHER

PAID ON VOUCHER & SCHEDULE [illegible] PAYMENTS K- 6

Month of July, 1957 Docket No. DMEA 4302 Contract No. [illegible]-B 1002
Operator's Name National Lead Company Minerals Inc
Address 111 Broadway, New York 6, N.Y.
Contract Amount, $ 40,532.00 Government Participation: 50 % Amount, $ 20,266.00

ITEMS OF COSTS	FOR OPERATOR'S USE: Monthly Total	Totals Previously Reported	Totals To Date	FOR GOVERNMENT USE ONLY: Approved Monthly Total	Approved Totals Previously Reported	Approved Totals To Date
(1) Independent Short Form Contracts:				9/4/57 [illegible]		
Drilling	5589.00	25,254.00	30,843.00	5589.00	25263.00	30852.00
Bulldozing						
Crosscutting						
Drifting						
Reaming	0	876.00	876.00	-	876.00	876.00
(2) Labor and Supervision:						
Labor						Approved
Supervision						[illegible]
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						Betty
Explosives						
Pipe						
Track						
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis						
Payroll Taxes						
Liability Insurance						
Assays	0	76.50	76.50	-	76.50	76.50
(8) Contingencies (specify): Incidental Allowance 0 .26/28	484.38	2189.46	2673.84	484.38	2189.46	2673.84
TOTALS	6073.38	28,404.96	34,478.34	6073.38	28404.96	34478.34

RECEIVED AUG 13 1957 DMEA

I certify that the above bill is correct and just and that payment therefor has not been received.
Date July 31, 1957 *Payee National Lead Company
Per [signature] Title Superintendent

*When a voucher is signed or receipted in the name of a company or corporation, the name of the person writing the company or corporate name, as well as the capacity in which he signs, must appear. For example: "John Doe Company, per John Smith, Secretary," or "Treasurer," as the case may be.

NOTE.—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.

(Instructions on reverse)

Pursuant to authority vested in me, I certify that this account is correct and proper for payment in the amount of:
$ 3036.69
Signature [signature] (Authorized Certifying Officer)
Date AUG 9 1957 Vou. No. 26
(See other side)

3036.69

(For Government use only)

CERTIFICATION BY GOVERNMENT REPRESENTATIVE:

I certify that to the best of my knowledge and belief the contractor submitting this voucher is operating a Defense Minerals Exploration Administration project under Contract No. E-1002 in accordance with the terms of the contract.

Signature W. J. Lynch Title MINING ENGINEER U. S. BUREAU OF MINES Date AUG 6 1957

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert A. Lawrence Title EXECUTIVE OFFICER DMEA FIELD TEAM REGION V Date AUG 6 1957

MONTHLY REPORT OF OPERATOR

The Operator (Contractor) of an exploration project is required to make a monthly report to the Government through the Regional Executive Officer. This report consists of three parts as follows:

(a) *Form MF-104—Operator's Monthly Report and Voucher.*—This form details expenditures and constitutes a voucher for reimbursing the Operator for the Government's share of costs;

(b) *Form MF-104A—Operator's Unit Cost and Progress Report.*—This is a statistical report of expenditures which shows costs for the various types of operation; and

(c) *Narrative.*—A concise narrative description of progress made, results accomplished, and any unusual difficulties encountered must be furnished as an attachment to this Report and Voucher. Wherever possible, the narrative is to be illustrated with maps or sketches showing formations penetrated and location and assays of samples taken as well as advances in workings. In the case of diamond drilling or churn drilling, the location and inclination of holes is to be shown on a map; logs and assays also are to be submitted.

The Monthly Report of Operator should be prepared in an original and four copies all of which must be sent to the Executive Officer of the Region not later than the 15th of the month following.

Preparation of Form MF-104—Operator's Monthly Report and Voucher.—All the applicable spaces in Form MF-104 should be filled in by the Operator, and the Operator or his agent should sign the certification in the lower left corner of the form.

The items of costs are arranged in the order they appear in Article 6 (a) of Form MF-200 (Revised February 1952), however, this form is readily adaptable for use in reporting activities under other contract forms.

Under Item (1) delete words "Short Form" if the contract is a sub-contract under Form MF-200; and delete word "Independent" if the contract reported is on Form MF-200 (A). Also, report work paid for on a unit basis under contract Form MF-200 as though it were performed under an independent contract.

Under Item (2) include labor, supervision and technical services incurred for the exploratory operations. Do not include labor, supervision and technical services used for work performed under items (5) and (6).

Under Item (3) include the costs of material and supplies used in the project other than that used under items (5) and (6).

Under Item (4) appear the three types of operating equipment expenditures, that is, rental, purchase and depreciation. The expenditures made for renting equipment belonging to a third party will be reported under "Rental". The amount paid or duly obligated for payment for the purchase of equipment will be reported under "Purchase". The amount of expenditures due the Operator to reimburse him for depreciation of equipment owned will be reported under "Depreciation".

Item (5) comprises costs of labor, supervision, technical services, materials, etc., which are used in the initial rehabilitation and repair of existing buildings, installations, fixtures, and equipment. These costs, therefore, should not be reported under items (2) and (3).

Item (6) includes the labor, supervision, technical services, materials, etc., used in the installation or construction of new buildings, fixed improvements, etc., necessary for the project. These costs, therefore, should not be reported under items (2) and (3).

Item (7) covers miscellaneous types of expenditure such as payroll taxes, liability insurance, workmen's compensation insurance, repairs to equipment and sampling and analysis. Only that part of payroll taxes, liability insurance and workmen's compensation which are paid by the operator should be reported under item (7). The share paid by the employee as a payroll deduction is to be included under item (2) as labor costs.

Item (8) includes any unforeseen costs not included in the other seven categories.

The original of Form MF-104 when submitted for reimbursable expenses incurred under contract Form MF-200 must be supported by original documentation or by certified copies of purchase orders, payrolls or transcripts of payrolls, unless such documentation has been waived by the Regional Executive Officer. This certification may be stated thus, "Certified True Copy (or Transcript)", followed by appropriate signature. If the Executive Officer of the Region determines that a contract under Form MF-200 should have an "on-site" audit, that is, a Government auditor should make an audit of the Operator's books and records of account, the Operator need not support his monthly voucher with original or certified documents except in cases of equipment purchases whose individual costs exceed $50.00. In these cases the original or a certified copy of the purchase order or invoice should be attached to the Monthly Voucher. N. B.—Only the *original* of Form MF-104 is required to be documented. The four copies of Form MF-104 are not to be thus supported.

Form MF-104 submitted for reimbursement under fixed price contracts on Form MF-200 (A), however, are not required to be supported by documentation of any kind. The Operator will submit his claim under item (1) of Form MF-104 by deleting as stated above the word "Independent" and by showing the number of feet or other units immediately after the appropriate descriptive word, such as, drilling, bulldozing, crosscutting, drifting, etc., and giving the "Monthly Total" amount due. "Totals Previously Reported", and "Totals to Date" columns should also be filled in.

Form MF-104A
(April 1952)

Budget Bureau No. 42-R1151.2

UNITED STATES
DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION

OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of July 1957 Docket No. DMEA 4361 Contract No. Id-S 1002
Operator's Name National Lead Company Minerals Zinc
Address 111 Broadway, New York 6, N.Y.

OPERATION	UNIT	COSTS THIS MONTH	UNITS THIS MONTH	COSTS TO DATE	UNITS TO DATE	UNIT COSTS TO DATE	AUTHORIZED BY CONTRACT Units	AUTHORIZED BY CONTRACT Unit Costs
Drifting								
Crosscutting								
Raising								
Shafts								
Winzes				52.00				
Drilling: Core	Foot	5569.00	1863	30,843.00	10284	3.00	12,000	3.00
Churn Reming	Foot	0	0	876.00	438	2.00	600	2.00
Auger Assays	No.	0	0	76.50	72	1.00	140	1.50
Stripping								
Trenching								
Test Pits								
Roads and Trails Incident-al allowance 0.26/ft	Foot	484.38	1863	2673.84	10284	.26	12,000	.25
TOTAL DISTRIBUTED COSTS								TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS		6073.38		34,469.34				

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this report is correct and complete to the best of their knowledge and belief.

Date July, 1957 Operator National Lead Co.

Per [signature] Title Superintendent

NOTE.—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.

REMARKS:

(Instructions on reverse)

(For Government use only)

RECEIVED AUG 13 1957

[signature]
MINING ENGINEER
U. S. BUREAU OF MINES

INSTRUCTIONS

Preparation of Form MF-104A—Operator's Unit Cost and Progress Report.—Applicable places on Form 104A should be filled in by the Operator. The purpose of this form is twofold as follows: (1) to furnish the supervising engineers and other administrators with statistical information necessary to better determine the progress of the project; and (2) to furnish more permanent information on mining costs for future use. The more important phases of operation on which permanent information is desired have been outlined in the form. There are blank lines, however, for those unusual phases which may need to be reported for a particular project. It will be necessary for the Operator to distribute his costs among the applicable phases reported with the exception of three items the costs of which are not to be distributed by the Operator. These three items are: "Operating Equipment Purchased", "Initial Rehabilitation and Repairs", and "New Buildings, Improvements, etc." The reason for not distributing these items on a monthly basis is doubtless clear to the Operator, since such distribution might well overstate the cost for any one month or period short of the entire contract period.

Form MF-104A has been designed to tie in with Form MF-104 for both monthly and cumulative costs. The "Total Costs" on Form MF-104A for each month should equal the monthly "Total Costs" as reported on Form MF-104. This is also true of the "Total Costs To Date".

In preparing Form MF-104A, it will be necessary frequently to distribute certain costs over a number of items. For instance, supervisory and engineering costs may have to be distributed over several phases, such as, drifting, crosscutting, raising, etc., provided that these items were reported active for the month. Such distributions should be made on the basis of time spent on the various phases, on man days of labor charged to such phases, or on some other equitable basis. "Operating Equipment", "Initial Rehabilitation and Repairs", and "New Buildings Improvements, etc.", will be distributed to the several phases of the project by the Washington Office of DMEA at the close of the project if determined necessary. The last two columns headed "Authorized by Contract" will be filled in by the Operator if such information is found in the contract. This information is usually a part of Exhibit "A" of the contract. A space for remarks has been provided for the use of the Operator to call attention to any unusual circumstances causing excessive or disproportionate unit costs.

GPO 872894

JOY MANUFACTURING COMPANY

HENRY W. OLIVER BUILDING

PITTSBURGH 22, PENNSYLVANIA

CUSTOMER'S ORDER NO.	DATE	REQ. NO.	OUR ORDER NO.	DATE	AT REC. POINT	B.O. NO.
CONTRACT	CODE			DATE	AT SHIP POINT	

SOLD TO

National Lead Co.
P. O. Box 2047
Morristown, Tennessee

SHIPPED TO

Indian Creek, Tennessee

~~TERMS NET 30 DAYS~~
NO CASH DISCOUNT

PLEASE REMIT TO
PITTSBURGH, PA.

INVOICE NO. 96551

INVOICE DATE 7-19-57

DATE SHIPPED

SHIPPED VIA

P. O. ADDRESS

MARKS

REQUESTED ROUTING

SHIPPED FROM

ORIGINAL QUANTITY ORDERED	UNIT	PART NUMBER	DESCRIPTION	CODE	UNIT PRICE	QUANTITY BACK ORDERED	QUANTITY SHIPPED	AMOUNT
			To 863.' core drilling at Indian Creek, Tennessee as per agreement.					
			Prospect # / From / To	Total Feet		Unit Cost		Total Cost
			Caffee #1 / 0 / 863	863		$3.00		$2,589.00
			Cementing - June 2nd - 2 hrs. @ $7.50 per hr.					15.00
								$2,604.00

EXTRA COPY
DMEA
RECEIVED AUG 13 1957
COPY

DATE	INITIALS

F. O. B. SHIPPING POINT UNLESS OTHERWISE SPECIFIED

NO RETURNS ALLOWED UNLESS AUTHORIZED BY THIS OFFICE

GOODS COVERED BY THIS INVOICE WERE PRODUCED IN COMPLIANCE WITH THE REQUIREMENTS OF THE FAIR LABOR STANDARDS ACT OF 1938, AS AMENDED, INCLUDING SECTION 12(A).

FORM P133A

JOY MANUFACTURING COMPANY

HENRY W. OLIVER BUILDING

PITTSBURGH 22, PENNSYLVANIA

CUSTOMER'S ORDER NO.	DATE	REQ. NO.	OUR ORDER NO.	DATE	AT REC. POINT	B.O. NO.
CONTRACT	CODE 63			DATE	AT SHIP POINT	

SOLD TO: National Lead Company
Box 2047
Morristown, Tenn.

~~TERMS NET 30 DAYS~~
NO CASH DISCOUNT

INVOICE NO. 96581

INVOICE DATE 7-25-57

SHIPPED TO: Indian Creek, Tenn.

PLEASE REMIT TO PITTSBURGH, PA.

DATE SHIPPED

SHIPPED VIA

P. O. ADDRESS

MARKS

REQUESTED ROUTING

SHIPPED FROM

ORIGINAL QUANTITY ORDERED	UNIT	PART NUMBER	DESCRIPTION		CODE	UNIT PRICE	QUANTITY BACK ORDERED	QUANTITY SHIPPED	AMOUNT
		To 1000.' ending July	Core Drilling at Indian Creek, Tennessee for period 25th as per agreement.						
		Prospect #	From	To		Total Feet		Unit Cost	Total Cost
		Wolf #1	0.	1000.		1000.		$3.00	$3,000.00

F. O. B. SHIPPING POINT UNLESS OTHERWISE SPECIFIED

NO RETURNS ALLOWED UNLESS AUTHORIZED BY THIS OFFICE

GOODS COVERED BY THIS INVOICE WERE PRODUCED IN COMPLIANCE WITH THE REQUIREMENTS OF THE FAIR LABOR STANDARDS ACT OF 1938, AS AMENDED, INCLUDING SECTION 12(A).

FORM P133A

A MONTHLY REPORT ON THE
INDIAN CREEK PROJECT, GRAINGER COUNTY,
TENNESSEE FOR JULY, 1957.

Docket No. 4381
Contract No. Idm-E 1002

During the month of July, diamond drilling continued on the Indian Creek project. Leve Coffee #1(G-1) was drilled 200 feet south of JW-4. The hole collared in the Mascot formation and was drilled to a depth of 863 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-2	Overburden	---	---	---
2-616	Mascot fm.	Chert @ 616'	---	Light, medium, and dark gray dolomite.
616-827	Kingsport fm.	Top of "R" bed @ 734; top of "S" bed @ 786.	---	Light, medium and dark gray dolomite interbedded with recrystalline. "S" bed limestone from 811-827.
827-863	Longview fm.	"T" bed 827-846'	ZnS @ 836,843	Dolomite interbedded with recrystalline; in part brecciated.

LW-1 (Levy Wolfe farm) was drilled 200 feet south of G-1. The hole collared in the Mascot formation and was drilled to a depth of 1000 feet. The results are summarized on the following page:

EXTRA COPY
DMEA
RECEIVED AUG 19 1957
DATE | INITIALS | CODE

Continued:

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-2	Overburden	---	---	---
2-759	Mascot fm.	CM @ 759'	---	Light, medium and dark gray dolomite.
759-990	Kingsport	Top of "R" bed @ 87½ top of "S" bed @ 940'.	---	Light, medium and dark gray dolomite interbedded with recrystalline and limestone
990-1000	Longview	---	---	Dolomite;crackle breccia.

Drilling is now underway 200 feet north of JW-4.

ACTION ON INTERIM
OR FINAL FIELD TEAM REPORT

Date 29

Referred to:

1. ~~Mr. Hirtendorf~~
2. ~~Mr. Johnson~~
3. ~~Mr. Chambers~~
4. Docket Control Mails and Files
5. Division
6. Docket Control Mails and Files
7. 500

Note comments in report regarding:

1. Total footage of completed hole should be 10,284',
2. including 71' deepening
3. of a hole drilled prior to contract. Talbot 7/31/57
4.

and take appropriate action.

- - - - - - - - -

Action taken by Division:

Robert E. Parks

OFFICIAL FILE COPY
DMEA
RECEIVED JUL 29 1957

DATE	INITIALS	CODE
7/30	Com	100
7/31	[illegible]	5-00

INTERIM REPORT

1002

DMEA-4381, Idm-E982 - Zinc

Operator: National Lead Company, New York, N. Y. - assignee

Location: Indian Creek area, Grainger County, Tennessee

Diamond drilling on the National Lead Company's Indian Creek project in the Copper Ridge district completed to date and since the last inspection on July 10, 1957 is summarized as follows:

Drilling completed:

Footage in holes completed since last inspection . . .	1,000
Total footage in holes completed to date	10,286 ?
Number of holes completed since last inspection . . .	1
Total number of holes completed to date	18 ✓
Number of holes showing commercial zinc ore	0
Number of holes showing non-commercial zinc mineralization	13
Number of barren holes	5

A summary of the one hole completed since the last inspection follows:

Hole No.	Property	Total Depth	Remarks
LW-1	L. Wolfe	1000 ft.	Blank. Chert matrix at 759 ft. Top R-bed at 875 ft. Top S-bed at 940 ft. Base of Kingsport fm. at 990 ft.

A drill was being sent up at the time of the inspection on the Leffew heirs property. This site is 200 feet N. 21° W. of Hole JW-4 and is designated as LH-6.

Inspected: July 24, 1957

V. J. Lynch, Mining Engineer
U. S. Bureau of Mines

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

Form MF-104 (Rev.)
(April 1952)

Budget Bureau No. 42-R1036.5

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

PAID ON VOUCHER & SCHEDULE OF PAYMENTS No. 4

OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of June, 1957 Docket No. DMEA 431 Contract No. Idaho 1002
Operator's Name National Lead Company Minerals Zinc
Address 111 Broadway, New York 6, N.Y.
Contract Amount, $40,530.00 Government Participation: 53 % Amount, $ 20,269.00

ITEMS OF COSTS	FOR OPERATOR'S USE: Monthly Total	Totals Previously Reported	Totals To Date	FOR GOVERNMENT USE ONLY: Approved Monthly Total	Approved Totals Previously Reported	Approved Totals To Date
(1) Independent Short Form Contracts:				9/4/57 W.P.K.		
Drilling	2334.00	22,920.00	25,254.00	2334.00	22,929.00	25263.00
Bulldozing						
Crosscutting						
Drifting						
Roasting	0	876.00	876.00	–	876.00	876.00
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						~~Approved~~
(3) Operating Mat'ls. and Supplies:						~~Betty~~
Timber						
Explosives						
Pipe						Betty
Track						
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis						
Payroll Taxes						
Liability Insurance						
Assays	0	76.50	76.50		76.50	76.50
(8) Contingencies (specify):						
Incidental allowance 6-.26/kt	202.28	1987.18	2189.46	202.28	1987.18	2189.46
TOTALS	2536.28	25,868.68	28,405.96	2536.28	25868.68	28404.96

RECEIVED AUG 1 1957 D.M.E.A.

I certify that the above bill is correct and just and that payment therefor has not been received.

Date June, 1957 *Payee National Lead Co.

Per G. W. Bryson Title Supt.

*When a voucher is signed or receipted in the name of a company or corporation, the name of the person writing the company or corporate name, as well as the capacity in which he signs, must appear. For example: "John Doe Company, per John Smith, Secretary," or "Treasurer," as the case may be.

→ NOTE.—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.

(Instructions on reverse)

Pursuant to authority vested in me, I certify that this account is correct and proper for payment in the amount of:

$ 1268.14

Signature Helen R. Mellin
(Authorized Certifying Officer)

Date JUL 30 1957 Vou. No. 16

(See other side)

1268.14

(For Government use only)

CERTIFICATION BY GOVERNMENT REPRESENTATIVE:

I certify that to the best of my knowledge and belief the contractor submitting this voucher is operating a Defense Minerals Exploration Administration project under Contract No. F-1002 in accordance with the terms of the contract.

Signature [illegible] Title U. S. BUREAU OF MINES MINING ENGINEER Date JUL 29 1957

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert A. Lawrence Title EXECUTIVE OFFICER DMEA FIELD TEAM REGION V Date JUL 29 1957

MONTHLY REPORT OF OPERATOR

The Operator (Contractor) of an exploration project is required to make a monthly report to the Government through the Regional Executive Officer. This report consists of three parts as follows:

(a) *Form MF-104—Operator's Monthly Report and Voucher.*—This form details expenditures and constitutes a voucher for reimbursing the Operator for the Government's share of costs;

(b) *Form MF-104A—Operator's Unit Cost and Progress Report.*—This is a statistical report of expenditures which shows costs for the various types of operation; and

(c) *Narrative.*—A concise narrative description of progress made, results accomplished, and any unusual difficulties encountered must be furnished as an attachment to this Report and Voucher. Wherever possible, the narrative is to be illustrated with maps or sketches showing formations penetrated and location and assays of samples taken as well as advances in workings. In the case of diamond drilling or churn drilling, the location and inclination of holes is to be shown on a map; logs and assays also are to be submitted.

The Monthly Report of Operator should be prepared in an original and four copies all of which must be sent to the Executive Officer of the Region not later than the 15th of the month following.

Preparation of Form MF-104—Operator's Monthly Report and Voucher.—All the applicable spaces in Form MF-104 should be filled in by the Operator, and the Operator or his agent should sign the certification in the lower left corner of the form.

The items of costs are arranged in the order they appear in Article 6 (a) of Form MF-200 (Revised February 1952), however, this form is readily adaptable for use in reporting activities under other contract forms.

Under Item (1) delete words "Short Form" if the contract is a sub-contract under Form MF-200; and delete word "Independent" if the contract reported is on Form MF-200 (A). Also, report work paid for on a unit basis under contract Form MF-200 as though it were performed under an independent contract.

Under Item (2) include labor, supervision and technical services incurred for the exploratory operations. Do not include labor, supervision and technical services used for work performed under items (5) and (6).

Under Item (3) include the costs of material and supplies used in the project other than that used under items (5) and (6).

Under Item (4) appear the three types of operating equipment expenditures, that is, rental, purchase and depreciation. The expenditures made for renting equipment belonging to a third party will be reported under "Rental". The amount paid or duly obligated for payment for the purchase of equipment will be reported under "Purchase". The amount of expenditures due the Operator to reimburse him for depreciation of equipment owned will be reported under "Depreciation".

Item (5) comprises costs of labor, supervision, technical services, materials, etc., which are used in the initial rehabilitation and repair of existing buildings, installations, fixtures, and equipment. These costs, therefore, should not be reported under items (2) and (3).

Item (6) includes the labor, supervision, technical services, materials, etc., used in the installation or construction of new buildings, fixed improvements, etc., necessary for the project. These costs, therefore, should not be reported under items (2) and (3).

Item (7) covers miscellaneous types of expenditure such as payroll taxes, liability insurance, workmen's compensation insurance, repairs to equipment and sampling and analysis. Only that part of payroll taxes, liability insurance and workmen's compensation which are paid by the operator should be reported under item (7). The share paid by the employee as a payroll deduction is to be included under item (2) as labor costs.

Item (8) includes any unforeseen costs not included in the other seven categories.

The original of Form MF-104 when submitted for reimbursable expenses incurred under contract Form MF-200 must be supported by original documentation or by certified copies of purchase orders, payrolls or transcripts of payrolls, unless such documentation has been waived by the Regional Executive Officer. This certification may be stated thus, "Certified True Copy (or Transcript)", followed by appropriate signature. If the Executive Officer of the Region determines that a contract under Form MF-200 should have an "on-site" audit, that is, a Government auditor should make an audit of the Operator's books and records of account, the Operator need not support his monthly voucher with original or certified documents except in cases of equipment purchases whose individual costs exceed $50.00. In these cases the original or a certified copy of the purchase order or invoice should be attached to the Monthly Voucher. N. B.—Only the *original* of Form MF-104 is required to be documented. The four copies of Form MF-104 are not to be thus supported.

Form MF-104 submitted for reimbursement under fixed price contracts on Form MF-200 (A), however, are not required to be supported by documentation of any kind. The Operator will submit his claim under item (1) of Form MF-104 by deleting as stated above the word "Independent" and by showing the number of feet or other units immediately after the appropriate descriptive word, such as, drilling, bulldozing, crosscutting, drifting, etc., and giving the "Monthly Total" amount due. "Totals Previously Reported", and "Totals to Date" columns should also be filled in.

Form MF-104A
(April 1952)

Budget Bureau No. 42-R1151.2

UNITED STATES
DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION

OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of June 1957 Docket No. DMEA 431 Contract No. Jan-8 1952
Operator's Name National Lead Company Minerals Zinc
Address 111 Broadway, New York 6, N.Y.

OPERATION	UNIT	COSTS THIS MONTH	UNITS THIS MONTH	COSTS TO DATE	UNITS TO DATE	UNIT COSTS TO DATE	AUTHORIZED BY CONTRACT Units	AUTHORIZED BY CONTRACT Unit Costs
Drifting								
Crosscutting								
Raising								
Shafts								
Winzes				25263.00				
Drilling: Core	Feet	2334.00	778	25,254.00	8421	3.00	12,000	3.00
~~Churn~~ Loading	Feet	0	0	676.00	338	2.00	600	2.00
Assays	Ea.	0	0	76.50	71	1.00	140	1.50
Auger								
Stripping								
Trenching								
Test Pits								
Roads and Trails Incident-	Feet							
Gl. allowance 0 25/ft		202.25	778	2[illegible]0.46	8421	.26	12,000	.26
TOTAL DISTRIBUTED COSTS		2536.25		28404.96 20,395.96				TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS		~~2596.25~~		~~28,395.96~~				

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this report is correct and complete to the best of their knowledge and belief.

REMARKS Error made in May Voucher not corrected by operator.

Date _____ Operator National Lead Co.

Per G G Brown Title Supt.

NOTE.—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.

(Instructions on reverse)

(For Government use only)

RECEIVED AUG 1 1957 DALLAS

MINING ENGINEER
U. S. BUREAU OF MINES

INSTRUCTIONS

Preparation of Form MF-104A—Operator's Unit Cost and Progress Report.—Applicable places on Form 104A should be filled in by the Operator. The purpose of this form is twofold as follows: (1) to furnish the supervising engineers and other administrators with statistical information necessary to better determine the progress of the project; and (2) to furnish more permanent information on mining costs for future use. The more important phases of operation on which permanent information is desired have been outlined in the form. There are blank lines, however, for those unusual phases which may need to be reported for a particular project. It will be necessary for the Operator to distribute his costs among the applicable phases reported with the exception of three items the costs of which are not to be distributed by the Operator. These three items are: "Operating Equipment Purchased", "Initial Rehabilitation and Repairs", and "New Buildings, Improvements, etc." The reason for not distributing these items on a monthly basis is doubtless clear to the Operator, since such distribution might well overstate the cost for any one month or period short of the entire contract period.

Form MF-104A has been designed to tie in with Form MF-104 for both monthly and cumulative costs. The "Total Costs" on Form MF-104A for each month should equal the monthly "Total Costs" as reported on Form MF-104. This is also true of the "Total Costs To Date".

In preparing Form MF-104A, it will be necessary frequently to distribute certain costs over a number of items. For instance, supervisory and engineering costs may have to be distributed over several phases, such as, drifting, crosscutting, raising, etc., provided that these items were reported active for the month. Such distributions should be made on the basis of time spent on the various phases, on man days of labor charged to such phases, or on some other equitable basis. "Operating Equipment", "Initial Rehabilitation and Repairs", and "New Buildings Improvements, etc.", will be distributed to the several phases of the project by the Washington Office of DMEA at the close of the project if determined necessary. The last two columns headed "Authorized by Contract" will be filled in by the Operator if such information is found in the contract. This information is usually a part of Exhibit "A" of the contract. A space for remarks has been provided for the use of the Operator to call attention to any unusual circumstances causing excessive or disproportionate unit costs.

GPO 872894

JOY MANUFACTURING COMPANY

HENRY W. OLIVER BUILDING

PITTSBURGH 22, PENNSYLVANIA

CUSTOMER'S ORDER NO.	DATE	REQ. NO.	OUR ORDER NO.	DATE	AT REC. POINT	B.O. NO.
CONTRACT	CODE			DATE	AT SHIP POINT	

SOLD TO

National Lead Co.
Box 2047
Morristown, Tennessee

SHIPPED TO

Indian Creek, Tennessee

~~TERMS NET 30 DAYS~~
NO CASH DISCOUNT

PLEASE REMIT TO
PITTSBURGH, PA.

INVOICE NO. 96546

INVOICE DATE 7-8-57

DATE SHIPPED

SHIPPED VIA

P. O. ADDRESS

MARKS

REQUESTED ROUTING

SHIPPED FROM

ORIGINAL QUANTITY ORDERED	UNIT	PART NUMBER	DESCRIPTION	CODE	UNIT PRICE	QUANTITY BACK ORDERED	QUANTITY SHIPPED	AMOUNT
			To 778.' core drilling at Indian Creek, Tennessee for period ending June 30th as per agreement.					
			Prospect JW-4 From 0 to 778. Total 778.' @ $3.00 per ft.				Total	$2,334.00
			Cementing JW-4 - June 15th 6 hours @ $7.50 per hour					45.00
								$2,379.00

EXTRA COPY
D M E A
RECEIVED AUG 1 1957

DATE	INITIALS	CODE

F. O. B. SHIPPING POINT UNLESS OTHERWISE SPECIFIED

NO RETURNS ALLOWED UNLESS AUTHORIZED BY THIS OFFICE

GOODS COVERED BY THIS INVOICE WERE PRODUCED IN COMPLIANCE WITH THE REQUIREMENTS OF THE FAIR LABOR STANDARDS ACT OF 1938, AS AMENDED, INCLUDING SECTION 12(A).

FORM P133A

A PROGRESS REPORT ON THE
INDIAN CREEK PROJECT, GRAINGER
COUNTY, TENNESSEE FOR JUNE, 1957.

By: W.T. Hill

Docket No. 4381
Contract No. Idm-E 1002

Diamond drilling was resumed on the Indian Creek project on June 1st, 1957 on the John Wolfenbarger farm. J.W. #4 collared in the Mascot formation and was drilled to a depth of 778'. The results are summarized below:

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-3	Overburden	---	---	---
3-524'	Mascot fm.	CMss@ 524'	386-387 Est.1%ZnS	Light, med., and dark gray dolomite
524-727'	Kingsport fm.	Top of "R" @ 642, Top of "S" @ 687.	FeS shines @ 682, 684,685,686,690, 691,692,702,703, 705,708.	Dolomite, light, med. and dark gray dol. interbedded with recrystalline; some brecciation.
727-778'	Longview fm.	---	FeS shines@ 762,763; 1% FeS @ 765-767; 771½ 773.	Dolomite & recrystalline, in part brecciated.

Drilling is now underway 200 feet to the south of JW#4.

ACTION ON INTERIM
OR FINAL FIELD TEAM REPORT

Date 7/15

Referred to:

1. ~~Mr. Mattendorf~~
2. ~~Mr. Johnson~~
3. ~~Mr. Chambers~~
4. Docket Control Mails and Files
5. Division
6. ~~Docket Control Mails and Files~~
7. 500

Note comments in report regarding:

1. Total footage of completed
2. hole should be 9,284',
3. including 71' deepening of hole drilled prior to contract.
4. Talbert 7/15/57

and take appropriate action.

- - - - - - - - -

Action taken by Division:

Robert E. Adams

OFFICIAL FILE COPY
DMEA
RECEIVED JUL 1957
DATE | INITIALS | CODE
7/15 | P.K. | 220
15 | Com | 100
7/19 | WRB | 500

INTERIM REPORT

DMEA-4381, Idm-E1002 - Zinc

Operator: National Lead Company, New York, New York---assignee

Location: Indian Creek area, Grainger County, Tennessee

Diamond drilling on the National Lead Company's Indian Creek project in the Copper Ridge district completed to date and since the last inspection on June 26, 1957 is summarized as follows:

Drilling completed:

Footage in holes completed since last inspection . . .	863
Total footage in holes completed to date	9,286
Number of holes completed since last inspection . . .	1
Total number of holes completed to date	17
Number of holes showing commercial zinc ore	0
Number of holes showing non-commercial zinc mineralization	13
Number of barren holes	4

A summary of the one hole completed since the last inspection follows:

Hole no.	Property	Depth	Remarks
C-1	Coffey*	863	Abbreviated log: 0-611 Mascot dolomite (depth of overburden not available); 611-734 upper Kingsport dolomite member; 734-828 lower Kingsport limestone member; 828-863 Longview dolomite (T bed @ 828-839). Mineralization: Barren except for weak traces of sphalerite @ 836 and 843.

* A letter from the Operator dated July 3, 1957 requesting inclusion of the Coffey tract in the contract was received and the amendment so doing was forwarded to the Operator on July 5, 1957.

Hole LW-1 on the L. Wolfe property is located 200 feet down dip from Hole C-1. At the time of inspection it had reached a depth of 343 feet and was drilling in the Mascot dolomite. It will be bottomed at a depth of about 1100 feet.

Inspected: July 10, 1957

V. J. Lynch, Mining Engineer
U. S. Bureau of Mines

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey

ACTION ON INTERIM 4381
OR FINAL FIELD TEAM REPORT

Date 7/8

Referred to:

1. ~~Mr. Mittendorf~~
2. ~~Mr. Johnson~~
3. ~~Mr. Chambers~~
4. Docket Control Mails and Files
5. ~~Division~~
6. ~~Docket Control Mails and Files~~
7. 500

Note comments in report regarding:

1. Amendment required
2.
3.
4.

and take appropriate action.

- - - - - - - - -

Action taken by Division:

none

WPY

Robert E. Adams

OFFICIAL FILE COPY
DMEA
RECEIVED JUL 8 1957

DATE	INITIALS	CODE
7/8	C	220
7/8	CBM	100
7/9	WRB	500

INTERIM REPORT

DMEA-4381, Idm-E1002 - Zinc

Operator: National Lead Company, New York, N. Y.---assignee

Location: Indian Creek area, Grainger County, Tennessee

Diamond drilling on the Indian Creek project of the National Lead Company in the Copper Ridge district completed to date and since the last inspection on June 12, 1957 is summarized as follows:

Footage in holes completed since last inspection . . .	778
Total footage in holes completed to date	8,423*
Number of holes completed since last inspection . . .	1
Total number of holes completed to date	16
Number of holes showing commercial zinc ore	0
Number of holes showing non-commercial zinc mineralization	12
Number of barren holes	4

* Includes Hole D-8 bottomed at a depth of 370 feet (see Operator's Monthly Report for May 1957.

A summary of the one hole completed since the last inspection follows:

Hole No.	Property	Depth	Remarks
JW-4	Wolfenbarger	778	Abbreviated log: 0-524 Mascot dolomite (thickness of overburden not available); 524-642 upper Kingsport dolomite member; 642-776 lower Kingsport limestone member; 776-778 Longview dolomite. Mineralization: No trace of zinc mineralization; 2 % pyrite @ 685-687, 1 % pyrite @ 765-767, and 5 % pyrite @ 771-772.

One hole was currently drilling at the time of inspection. Available data on this hole follow:

Hole no.	Property	Depth	Est. depth	Remarks
C-1	Coffey	569	870	Collared and drilling in Mascot dolomite at site 200 ft S. 20° E. of Hole JW-4.

Review of drill-hole sites since the resumption of drilling on the Indian Creek project has shown that Hole C-1 (currently drilling) is outside of the current project area on the Coffey tract, a small unnamed 7-8 acre plot south of the Wolfenbarger property (see property map in Operator's application). The Operator's representatives indicate that a lease is held on this property, but that it had not been included in the original application because ownership of mineral rights had not been clearly established at that time.

The Operator was requested to submit a letter asking that the Coffey property be amended into the contract under the Special Agreement Concerning Land and to furnish the data required to prepare such an amendment.

Inspected: June 26, 1957

W. A. Beck, Mining Engineer
U. S. Bureau of Mines

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey

OFFICIAL FILE COPY
DMEA
RECEIVED
DATE CODE
6/17 C 220
18 Com 100
6/19 500

INTERIM REPORT

DMEA-4381, Idm-E1002 - Zinc

Operator: The National Lead Company, New York, N. Y. - assignee

Location: Indian Creek area, Grainger County, Tennessee

Diamond drilling on the Indian Creek project was resumed on June 1, 1957 with the start of Hole JW-4 on the Wolfenbarger property near the southwest end of the project area. Hole JW-4 is located about 500 feet S. 45° E. of Hole LH-3 and is to be the first of three holes in a dip fence with a bearing of about S. 20° E. It is planned that the three holes will be spaced at intervals of about 200 feet. Hole JW-4 was collared in the Mascot dolomite, penetrated the chert-matrix sandstone at a depth of 524 feet, and is currently drilling in the upper part of the Kingsport formation at a depth of 631 feet. The anticipated bottoming depth of this hole is about 800 feet.

Inspected: June 12, 1957

V. J. Lynch, Mining Engineer
U. S. Bureau of Mines

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey

INTERIM REPORT

DMEA-4381, Idm-E1002 - Zinc

Operator: National Lead Company, New York, New York, assignee

Location: Indian Creek area, Grainger County, Tennessee

Diamond drilling on the subject project continues recessed but is currently expected to be resumed before the end of May 1957.

Inspected: May 24, 1957

V. J. Lynch, Mining Engineer
U. S. Bureau of Mines

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey

OFFICIAL FILE COPY
DMEA
RECEIVED JUN 3 1957

DATE	INITIALS	CODE
6/3	C	220
4	Com	100
6/14	~~to Pb~~	500.

Form MF-104 (Rev.)
(April 1952)

Budget Bureau No. 42-R1036.5

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

PAID ON VOUCHER & SCHEDULE OF PAYMENTS K- 77

OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of May 1957 Docket No. DMEA 4381 Contract No. Idm-E 1002
Operator's Name National Lead Co. Minerals Zinc
Address 111 Broadway, New York 6, New York
Contract Amount, $40,530.00 Government Participation: 50 % Amount, $20,265.00

ITEMS OF COSTS	FOR OPERATOR'S USE: Monthly Total	Totals Previously Reported	Totals To Date	FOR GOVERNMENT USE ONLY: Approved Monthly Total	Approved Totals Previously Reported	Approved Totals To Date
(1) Independent Short Form Contracts:				8/9/57 WPK		
Drilling	279.00	22,650.00	22,929.00	279.00	22,650.00	22,929.00
Bulldozing						
Crosscutting						
Drifting						
Cousing	0	876.00	876.00		876.00	876.00
(2) Labor and Supervision:						
Labor						Approved
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis						
Payroll Taxes						
Liability Insurance						
Assays	0	76.50	76.50		76.50	76.50
(8) Contingencies (specify): Incidental allowance @ .20/ft.	24.18	1963.00	1987.18	24.18	1963.00	1987.18
TOTALS	303.18	25,565.50	25,868.68	303.18	25,565.50	25,868.68

RECEIVED JUN 21 1957 D.M.E.A.

I certify that the above bill is correct and just and that payment therefor has not been received.
Date May, 1957 *Payee National Lead Company
Per [signature] Title Supt.

*When a voucher is signed or receipted in the name of a company or corporation, the name of the person writing the company or corporate name, as well as the capacity in which he signs, must appear. For example: "John Doe Company, per John Smith, Secretary," or "Treasurer," as the case may be.

NOTE.—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.

(Instructions on reverse)

Pursuant to authority vested in me, I certify that this account is correct and proper for payment in the amount of:
$ 151.59
Signature Helen R. Mellen
(Authorized Certifying Officer)
Date JUN 19 1957 Vou. No. 207
(See other side)

151.59

(For Government use only)

CERTIFICATION BY GOVERNMENT REPRESENTATIVE:

I certify that to the best of my knowledge and belief the contractor submitting this voucher is operating a Defense Minerals Exploration Administration project under Contract No. E-1002 in accordance with the terms of the contract.

Signature W. J. Lynch Title MINING ENGINEER U. S. BUREAU OF MINES Date JUN 18 1957

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert A. Lawson Title EXECUTIVE OFFICER DMEA FIELD TEAM REGION V Date JUN 18 1957

MONTHLY REPORT OF OPERATOR

The Operator (Contractor) of an exploration project is required to make a monthly report to the Government through the Regional Executive Officer. This report consists of three parts as follows:

(a) *Form MF-104—Operator's Monthly Report and Voucher.*—This form details expenditures and constitutes a voucher for reimbursing the Operator for the Government's share of costs;

(b) *Form MF-104A—Operator's Unit Cost and Progress Report.*—This is a statistical report of expenditures which shows costs for the various types of operation; and

(c) *Narrative.*—A concise narrative description of progress made, results accomplished, and any unusual difficulties encountered must be furnished as an attachment to this Report and Voucher. Wherever possible, the narrative is to be illustrated with maps or sketches showing formations penetrated and location and assays of samples taken as well as advances in workings. In the case of diamond drilling or churn drilling, the location and inclination of holes is to be shown on a map; logs and assays also are to be submitted.

The Monthly Report of Operator should be prepared in an original and four copies all of which must be sent to the Executive Officer of the Region not later than the 15th of the month following.

Preparation of Form MF-104—Operator's Monthly Report and Voucher.—All the applicable spaces in Form MF-104 should be filled in by the Operator, and the Operator or his agent should sign the certification in the lower left corner of the form.

The items of costs are arranged in the order they appear in Article 6 (a) of Form MF-200 (Revised February 1952), however, this form is readily adaptable for use in reporting activities under other contract forms.

Under Item (1) delete words "Short Form" if the contract is a sub-contract under Form MF-200; and delete word "Independent" if the contract reported is on Form MF-200 (A). Also, report work paid for on a unit basis under contract Form MF-200 as though it were performed under an independent contract.

Under Item (2) include labor, supervision and technical services incurred for the exploratory operations. Do not include labor, supervision and technical services used for work performed under items (5) and (6).

Under Item (3) include the costs of material and supplies used in the project other than that used under items (5) and (6).

Under Item (4) appear the three types of operating equipment expenditures, that is, rental, purchase and depreciation. The expenditures made for renting equipment belonging to a third party will be reported under "Rental". The amount paid or duly obligated for payment for the purchase of equipment will be reported under "Purchase". The amount of expenditures due the Operator to reimburse him for depreciation of equipment owned will be reported under "Depreciation".

Item (5) comprises costs of labor, supervision, technical services, materials, etc., which are used in the initial rehabilitation and repair of existing buildings, installations, fixtures, and equipment. These costs, therefore, should not be reported under items (2) and (3).

Item (6) includes the labor, supervision, technical services, materials, etc., used in the installation or construction of new buildings, fixed improvements, etc., necessary for the project. These costs, therefore, should not be reported under items (2) and (3).

Item (7) covers miscellaneous types of expenditure such as payroll taxes, liability insurance, workmen's compensation insurance, repairs to equipment and sampling and analysis. Only that part of payroll taxes, liability insurance and workmen's compensation which are paid by the operator should be reported under item (7). The share paid by the employee as a payroll deduction is to be included under item (2) as labor costs.

Item (8) includes any unforeseen costs not included in the other seven categories.

The original of Form MF-104 when submitted for reimbursable expenses incurred under contract Form MF-200 must be supported by original documentation or by certified copies of purchase orders, payrolls or transcripts of payrolls, unless such documentation has been waived by the Regional Executive Officer. This certification may be stated thus, "Certified True Copy (or Transcript)", followed by appropriate signature. If the Executive Officer of the Region determines that a contract under Form MF-200 should have an "on-site" audit, that is, a Government auditor should make an audit of the Operator's books and records of account, the Operator need not support his monthly voucher with original or certified documents except in cases of equipment purchases whose individual costs exceed $50.00. In these cases the original or a certified copy of the purchase order or invoice should be attached to the Monthly Voucher. N. B.—Only the *original* of Form MF-104 is required to be documented. The four copies of Form MF-104 are not to be thus supported.

Form MF-104 submitted for reimbursement under fixed price contracts on Form MF-200 (A), however, are not required to be supported by documentation of any kind. The Operator will submit his claim under item (1) of Form MF-104 by deleting as stated above the word "Independent" and by showing the number of feet or other units immediately after the appropriate descriptive word, such as, drilling, bulldozing, crosscutting, drifting, etc., and giving the "Monthly Total" amount due. "Totals Previously Reported", and "Totals to Date" columns should also be filled in.

Form MF-104A
(April 1952)

Budget Bureau No. 42-R1151.2

UNITED STATES
DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION

OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of May 1957 Docket No. DMEA 4361 Contract No. Ida-S 1002
Operator's Name National Lead Company Minerals Zinc
Address 111 Broadway, New York, 6, New York

OPERATION	Unit	Costs This Month	Units This Month	Costs to Date	Units to Date	Unit Costs to Date	Authorized by Contract: Units	Authorized by Contract: Unit Costs
Drifting								
Crosscutting								
Raising								
Shafts								
Winzes								
Drilling: Core	Feet	279.00	93	22,920.00	7643	3.00	12000	3.00
Churn ~~Reaming~~	Feet	0	0	876.00	438	2.00	600	2.00
Auger ~~Anchor~~	Ea.	0	0	76.50	71	1.08	140	1.50
Stripping								
Trenching								
Test Pits								
Roads and Trails Incident	Feet	24.18	93	1987.18	7643	.26	12000	.26
al allowance @ .26/ft								
Total Distributed Costs		303.18		25,859.68				Total Costs Authorized by Contract
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
Total Costs								

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this report is correct and complete to the best of their knowledge and belief.

Date May, 1957 Operator National Lead Co.

Per [signature] Title Supt.

NOTE.—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.

Remarks:

(Instructions on reverse)

(For Government use only)

RECEIVED JUN 17 1957

[signature]
GEOLOGIST, U. S. G. S.

JUN 17 '57

INSTRUCTIONS

Preparation of Form MF-104A—Operator's Unit Cost and Progress Report.—Applicable places on Form 104A should be filled in by the Operator. The purpose of this form is twofold as follows: (1) to furnish the supervising engineers and other administrators with statistical information necessary to better determine the progress of the project; and (2) to furnish more permanent information on mining costs for future use. The more important phases of operation on which permanent information is desired have been outlined in the form. There are blank lines, however, for those unusual phases which may need to be reported for a particular project. It will be necessary for the Operator to distribute his costs among the applicable phases reported with the exception of three items the costs of which are not to be distributed by the Operator. These three items are: "Operating Equipment Purchased", "Initial Rehabilitation and Repairs", and "New Buildings, Improvements, etc." The reason for not distributing these items on a monthly basis is doubtless clear to the Operator, since such distribution might well overstate the cost for any one month or period short of the entire contract period.

Form MF-104A has been designed to tie in with Form MF-104 for both monthly and cumulative costs. The "Total Costs" on Form MF-104A for each month should equal the monthly "Total Costs" as reported on Form MF-104. This is also true of the "Total Costs To Date".

In preparing Form MF-104A, it will be necessary frequently to distribute certain costs over a number of items. For instance, supervisory and engineering costs may have to be distributed over several phases, such as, drifting, crosscutting, raising, etc., provided that these items were reported active for the month. Such distributions should be made on the basis of time spent on the various phases, on man days of labor charged to such phases, or on some other equitable basis. "Operating Equipment", "Initial Rehabilitation and Repairs", and "New Buildings Improvements, etc.", will be distributed to the several phases of the project by the Washington Office of DMEA at the close of the project if determined necessary. The last two columns headed "Authorized by Contract" will be filled in by the Operator if such information is found in the contract. This information is usually a part of Exhibit "A" of the contract. A space for remarks has been provided for the use of the Operator to call attention to any unusual circumstances causing excessive or disproportionate unit costs.

GPO 872894

A PROGRESS REPORT ON THE
INDIAN CREEK PROJECT, GRAINGER COUNTY
TENNESSEE FOR MAY, 1957.

By: W.T. Hill

Docket No. 4381
Contract No. Idm-E 1002

During the month of May, hole Dalton #8 was completed. Drilling was resumed at 277 feet and the hole was drilled to a total depth of 370'. The results are summarized below:

Depth	Formation or Member	Key Horizon	Zinc Mineralization	Remarks
277-370	Kingsport	"R" & "S" beds.	Shine @ 293, Est. ½% ZnS @ 333-334	brecciated recrystalline and dolomite.

Drilling is now underway on the John Wolfenbarger farm.

EXTRA DOCK
DMEA
RECEIVED JUN 21 1957
DATE | INITIALS | CODE

INVOICE

MARIETTA, OHIO

EXTRA COPY
OMEA

TO: D.H. PUTNAM
512 Third St.
Marietta, Ohio

May 31, 1957

IN ACCOUNT WITH
PUTNAM DRILLING COMPANY

512 Third Street P.O. Box 647 Phone Fr. 4-6761

Statement for drilling Indian Creek Project
DMEA Contract No. 4361 for May.

Core Hole Dalton No. 2

Drilled 93' @ 3.00 $279.00

I hereby certify that to the best of my knowledge and belief, the above invoice is correct and just, and in accordance with the bid submitted by Putnam Drilling Company.

D.H. Putnam, Operator
By: William T. Kill
William T. Kill
General Superintendent

OFFICIAL FILE COPY
DMEA
RECEIVED MAY 1 1957

DATE		CODE
5/1	C	220
1	Com	100
5/3	~~[illegible]~~	500

INTERIM REPORT

DMEA-4381, Idm-E1002 - Zinc

Operator: B. H. Putnam, Chicago, Illinois

Location: Indian Creek area, Grainger County, Tennessee

Diamond drilling on the Indian Creek project will be resumed approximately April 29, 1957. Final review of newly acquired geologic, geophysical, and geochemical data will be made at a conference of field representatives of both the National Lead Company and B. H. Putnam on April 25-27, 1957. The DMEA Field Team has been asked to participate in this conference and plans to have Wedow attend for at least part of the meeting on April 26.

"Assignment of Contract" forms, assigning this project to the National Lead Company, have been received by the Field Team and were forwarded to the Operating Committee on April 22, 1957.

Inspected: April 24, 1957

V. J. Lynch, Mining Engineer
U. S. Bureau of Mines

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey

A PROGRESS REPORT ON THE
INDIAN CREEK PROJECT, GRAINGER COUNTY,
TENNESSEE FOR APRIL, 1957.

EXTRA COPY
RECEIVED 1957
DATE CODE
5/20 110
500

By: W.T. HILL

Docket No. 4381
Contract No. Idm-E 1002

During the month of April, the core drilling was discontinued in order to properly evaluate the drilling results and study the geology of the area.

A program of detailed geologic mapping was undertaken and has been completed. The mapping consisted of:

(1) Remapping the Chickamauga, Mascot-Kingsport and Longview contacts.
(2) Mapping and studying in detail the shearing and jointing that occurs in the surface exposure.

A geophysical survey using "electrical resistivity methods" was undertaken and completed. The results of this survey are now being studied and evaluated.

Since the drilling was temporarily halted, the "Operators unit Cost and Progress Report" is not being submitted with this report.

RECEIVED
MAY 13 1957
U. S. BUREAU OF MINES
DEF. MIN. ADM.
Knoxville, Tennessee

Form MF-104 (Rev.)
(April 1952)

Budget Bureau No. 42-R1036.5

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

PAID ON VOUCHER & SCHEDULE OF PAYMENTS K- 62

OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of March, 1957 Docket No. DMEA 4381 Contract No. Idm-B 1002
Operator's Name D.H. Putnam Minerals Zinc
Address 512 Third Street, Marietta, Ohio
Contract Amount, $ 40,530.00 Government Participation: 50 % Amount, $ 20,265.00

ITEMS OF COSTS	FOR OPERATOR'S USE: Monthly Total	Totals Previously Reported	Totals To Date	FOR GOVERNMENT USE ONLY: Approved Monthly Total	Approved Totals Previously Reported	Approved Totals To Date
(1) Independent Short Form Contracts:				5/28/57 W.P.K.		
Drilling						
Bulldozing	831.00	21,819.00	22,650.00	831.00	21819.00	22650.00
Crosscutting						
Drifting						
Reaming	108.00	768.00	876.00	108.00	768.00	876.00
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis						
Payroll Taxes	51.00	25.50	76.50	51.00	25.50	76.50
Liability Insurance						
Incidental Allowance 8.0.26 /57						
(8) Contingencies (specify):	216.06	1890.98	2107.04	72.02	1890.98	1963.00
Totals	1215.82	24,503.48	25,719.54	1062.02	24,503.48	25,565.50

I certify that the above bill is correct and just and that payment therefor has not been received.

Date March 28, '57 *Payee D.H. Putnam

Per [signature] Title Owner

*When a voucher is signed or receipted in the name of a company or corporation, the name of the person writing the company or corporate name, as well as the capacity in which he signs, must appear. For example: "John Doe Company, per John Smith, Secretary," or "Treasurer," as the case may be.

NOTE.—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.

(Instructions on reverse)

Pursuant to authority vested in me, I certify that this account is correct and proper for payment in the amount of:

$ 531.04

Signature [signature]
(Authorized Certifying Officer)

Date APR 11 1957 Vou. No. 169
(See other side)

531.04

(For Government use only)

CERTIFICATION BY GOVERNMENT REPRESENTATIVE:

I certify that to the best of my knowledge and belief the contractor submitting this voucher is operating a Defense Minerals Exploration Administration project under Contract No. E-1002 in accordance with the terms of the contract.

Signature V. J. Lynch Title MINING ENGINEER U. S. BUREAU OF MINES Date APR 3 1957

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert A. Lawrence Title EXECUTIVE OFFICER DMEA REGION V Date APR 8 1957

MONTHLY REPORT OF OPERATOR

The Operator (Contractor) of an exploration project is required to make a monthly report to the Government through the Regional Executive Officer. This report consists of three parts as follows:

(a) *Form MF-104—Operator's Monthly Report and Voucher.*—This form details expenditures and constitutes a voucher for reimbursing the Operator for the Government's share of costs;

(b) *Form MF-104A—Operator's Unit Cost and Progress Report.*—This is a statistical report of expenditures which shows costs for the various types of operation; and

(c) *Narrative.*—A concise narrative description of progress made, results accomplished, and any unusual difficulties encountered must be furnished as an attachment to this Report and Voucher. Wherever possible, the narrative is to be illustrated with maps or sketches showing formations penetrated and location and assays of samples taken as well as advances in workings. In the case of diamond drilling or churn drilling, the location and inclination of holes is to be shown on a map; logs and assays also are to be submitted.

The Monthly Report of Operator should be prepared in an original and four copies all of which must be sent to the Executive Officer of the Region not later than the 15th of the month following.

Preparation of Form MF-104—Operator's Monthly Report and Voucher.—All the applicable spaces in Form MF-104 should be filled in by the Operator, and the Operator or his agent should sign the certification in the lower left corner of the form.

The items of costs are arranged in the order they appear in Article 6 (a) of Form MF-200 (Revised February 1952); however, this form is readily adaptable for use in reporting activities under other contract forms.

Under Item (1) delete words "Short Form" if the contract is a sub-contract under Form MF-200; and delete word "Independent" if the contract reported is on Form MF-200 (A). Also, report work paid for on a unit basis under contract Form MF-200 as though it were performed under an independent contract.

Under Item (2) include labor, supervision and technical services incurred for the exploratory operations. Do not include labor, supervision and technical services used for work performed under items (5) and (6).

Under Item (3) include the costs of material and supplies used in the project other than that used under items (5) and (6).

Under Item (4) appear the three types of operating equipment expenditures, that is, rental, purchase and depreciation. The expenditures made for renting equipment belonging to a third party will be reported under "Rental". The amount paid or duly obligated for payment for the purchase of equipment will be reported under "Purchase". The amount of expenditures due the Operator to reimburse him for depreciation of equipment owned will be reported under "Depreciation".

Item (5) comprises costs of labor, supervision, technical services, materials, etc., which are used in the initial rehabilitation and repair of existing buildings, installations, fixtures, and equipment. These costs, therefore, should not be reported under items (2) and (3).

Item (6) includes the labor, supervision, technical services, materials, etc., used in the installation or construction of new buildings, fixed improvements, etc., necessary for the project. These costs, therefore, should not be reported under items (2) and (3).

Item (7) covers miscellaneous types of expenditure such as payroll taxes, liability insurance, workmen's compensation insurance, repairs to equipment and sampling and analysis. Only that part of payroll taxes, liability insurance and workmen's compensation which are paid by the operator should be reported under item (7). The share paid by the employee as a payroll deduction is to be included under item (2) as labor costs.

Item (8) includes any unforeseen costs not included in the other seven categories.

The original of Form MF-104 when submitted for reimbursable expenses incurred under contract Form MF-200 must be supported by original documentation or by certified copies of purchase orders, payrolls or transcripts of payrolls, unless such documentation has been waived by the Regional Executive Officer. This certification may be stated thus, "Certified True Copy (or Transcript)", followed by appropriate signature. If the Executive Officer of the Region determines that a contract under Form MF-200 should have an "on-site" audit, that is, a Government auditor should make an audit of the Operator's books and records of account, the Operator need not support his monthly voucher with original or certified documents except in cases of equipment purchases whose individual costs exceed $50.00. In these cases the original or a certified copy of the purchase order or invoice should be attached to the Monthly Voucher. N. B.—Only the *original* of Form MF-104 is required to be documented. The four copies of Form MF-104 are not to be thus supported.

Form MF-104 submitted for reimbursement under fixed price contracts on Form MF-200 (A), however, are not required to be supported by documentation of any kind. The Operator will submit his claim under item (1) of Form MF-104 by deleting as stated above the word "Independent" and by showing the number of feet or other units immediately after the appropriate descriptive word, such as, drilling, bulldozing, crosscutting, drifting, etc., and giving the "Monthly Total" amount due. "Totals Previously Reported", and "Totals to Date" columns should also be filled in.

Form MF-104A
(April 1952)

Budget Bureau No. 42-R1151.2

UNITED STATES
DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION

OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of March 195 7 Docket No. DMEA 430 Contract No. Idm-E 1002

Operator's Name D.H. Putnam Minerals Zinc

Address 512 Third St., Marietta, Ohio

OPERATION	Unit	Costs This Month	Units This Month	Costs to Date	Units to Date	Unit Costs to Date	Authorized by Contract: Units	Authorized by Contract: Unit Costs
Drifting								
Crosscutting								
Raising								
Shafts								
Winzes	Feet	831.00	277	22,650.00	7750	3.00	12,000	3.00
Drilling: Core	Feet	108.00	54	876.00	438	2.00	600	2.00
Churn	Ea.	51.00	51	76.50	71	1.08	140	1.50
Auger								
Stripping								
Trenching								
Test Pits								
Roads and Trails								
Incidental Allowance @ .26/ft.	Foot	216.06	831	2107.04	7750	.26	12,000	.26
Total Distributed Costs								Total Costs Authorized by Contract
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
Total Costs		1215.02		25,709.54				

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this report is correct and complete to the best of their knowledge and belief.

Date March 31, 1957 Operator D.H. Putnam

Per [signature] Title Geologist

NOTE.—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.

Remarks:

(Instructions on reverse)

(For Government use only)

RECEIVED APR 10 1957 DMEA

Helmuth Wedow Jr.
GEOLOGIST U.S.G.S.
APRIL 5, 1957

INSTRUCTIONS

Preparation of Form MF-104A—Operator's Unit Cost and Progress Report.—Applicable places on Form 104A should be filled in by the Operator. The purpose of this form is twofold as follows: (1) to furnish the supervising engineers and other administrators with statistical information necessary to better determine the progress of the project; and (2) to furnish more permanent information on mining costs for future use. The more important phases of operation on which permanent information is desired have been outlined in the form. There are blank lines, however, for those unusual phases which may need to be reported for a particular project. It will be necessary for the Operator to distribute his costs among the applicable phases reported with the exception of three items the costs of which are not to be distributed by the Operator. These three items are: "Operating Equipment Purchased", "Initial Rehabilitation and Repairs", and "New Buildings, Improvements, etc." The reason for not distributing these items on a monthly basis is doubtless clear to the Operator, since such distribution might well overstate the cost for any one month or period short of the entire contract period.

Form MF-104A has been designed to tie in with Form MF-104 for both monthly and cumulative costs. The "Total Costs" on Form MF-104A for each month should equal the monthly "Total Costs" as reported on Form MF-104. This is also true of the "Total Costs To Date".

In preparing Form MF-104A, it will be necessary frequently to distribute certain costs over a number of items. For instance, supervisory and engineering costs may have to be distributed over several phases, such as, drifting, crosscutting, raising, etc., provided that these items were reported active for the month. Such distributions should be made on the basis of time spent on the various phases, on man days of labor charged to such phases, or on some other equitable basis. "Operating Equipment", "Initial Rehabilitation and Repairs", and "New Buildings Improvements, etc.", will be distributed to the several phases of the project by the Washington Office of DMEA at the close of the project if determined necessary. The last two columns headed "Authorized by Contract" will be filled in by the Operator if such information is found in the contract. This information is usually a part of Exhibit "A" of the contract. A space for remarks has been provided for the use of the Operator to call attention to any unusual circumstances causing excessive or disproportionate unit costs.

GPO 872894

INVOICE

MARIETTA, OHIO

To: B.H. Putnam
512 Third Street
Marietta, Ohio

March 31, 1957

IN ACCOUNT WITH

PUTNAM DRILLING COMPANY

512 Third Street P.O. Box 647 Phone Pr. 4-6761

Statement for drilling Indian Creek Project DMEA Contract No. 4381 for March.

Core Hole Dalton No.8

Drilled	277' @ 3.00	831.00
Reaming	54' @ 2.00	108.00
		$ 939.00

I hereby certify that to the best of my knowledge and belief, the a ove invoice is correct and just, and in accordance with the bid submitted by Putnam Drilling Company.

B.H. Putnam, Operator
By: William T. Hill
William T. Hill
General Superintendent

EXTRA COPY
DMEA
RECEIVED APR 15 1957

DATE	INITIALS	CODE

Hand Sample Serial 10075-80

TELEPHONE 3-3302

ASSAY REPORT

UNION ASSAY OFFICE, Inc.

J. V. SADLER, President
A. C. SELBY, Vice-Pres. & Treas.
A. C. SELBY, JR., Secretary

Salt Lake City 10, Utah

Mine B. H. Putnam Operator

Jan. 30, 1957

RESULTS PER TON OF 2000 POUNDS

NO.	GOLD Ozs. per Ton	SILVER Ozs. per Ton	LEAD Per Cent Wet	COPPER Per Cent	INSOL. Per Cent	ZINC Per Cent	SULPHUR Per Cent	IRON Per Cent	LIME Per Cent	Per Cent	Per Cent	VALUE GOLD
Dolica 25				1'								
372-373				1½'		0.4						
373-374½						Trace						
375-377				2'		1.3						
377-378				1'		0.4						
390½-392½				2'		0.3						
394-396				2'		0.3						

Remarks

A. C. Selby

Charges $ 6.00

Telephone 3-3302

Hand Sample Serial 9961-83

ASSAY REPORT

UNION ASSAY OFFICE, Inc.

J. V. SADLER, President
A. C. SELBY, Vice-Pres. & Treas.
Lily M. Hottinger, Secretary
Salt Lake City 10, Utah

Mine B. H. Putnam Operator

RESULTS PER TON OF 2000 POUNDS

Jan. 29, 1957

NUMBER	GOLD Ozs. per Ton	SILVER Ozs. per Ton	LEAD Wet on Oro	COPPER Per Cent	INSOL. Per Cent	ZINC Per Cent	SULPHUR Per Cent	IRON Per Cent	LIME Per Cent	Per Cent	Per Cent
Fulton											
#1 200½-202½	2'										
3 110-111	1'					0.9					
3 126-127	1'					0.1					
3 204-206	2'					0.1					
3 206-208	2'					0.3					
						1.4					
4 133½-135	1½'										
4 135-137	2'					0.3					
4 139-141	2'					0.9					
4 141-143	2'					0.3					
4 143-145	2'					1.0					
						0.4					
4 145-147	2'										
4 147-149	2'					Trace					
4 149-151	2'					0.8					
4 151-153	2'					0.5					
4 153-155	2'					0.8					
						1.4					
4 155-156	1'										
4 160-161½	1½'					0.7					
4 162-164	2'					1.1					
4 164-166	2'					1.1					
4 166-167½	1½'					1.5					
						1.0					
4 198-200½	2½'										
4 331-333	2'					0.4					
5 243-245	2'					1.7					
5 245-247	2'					0.3					
5 247-249	2'					2.3					
						1.8					
5 249-251	2'										
5 251-251½	1½'					0.9					
5 254½-256½	2'					1.45					
5 259-261	2'					0.55					
5 262-264	2'					0.2					
						0.4					
5 265½-267½	2'										
5 267½-269½	2'					1.15					
5 272½-274½	2'					0.4					
5 285-285½	1½'					0.8					
5 287½-289½	2'					0.6					
						0.45					
5 289½-290½	1'										
5 328-329	1'					0.4					
5 332½-333	½'					0.45					
5 334½-335½	1'					1.35					
5 337½-338½	1'					1.05					
						0.7					
Seaver											
#2 492½-494½	2'										
2 498-498 3/4	3/4'					0.4					
2 500-501½	1½'					0.7					
2 502-504	2'					0.3					
2 505-506½	1½'					0.1					
						0.2					

Remarks

Charges $ 45.00

A. C. Selby

A PROGRESS REPORT ON
THE INDIAN CREEK PROJECT,
GRAINGER COUNTY, TENNESSEE
MARCH, 1957

By: W.T. Hill

Docket No. 4381
Contract No. Idm-E 1002

During the month of March, one hole was drilled on the Indian Creek Project. D#8 was drilled 150' southwest of D#4. The hole collared in the top of the Kingsport formation. The results are summarized below:

Depth	Formation or Member	Key Horizon Markers	Zinc Mineralization	Remarks
0-52	Overburden	—	—	—
52-214	Kingsport dolomite	—	186-188 @ .25%	light, medium gray dolomite
214-277	Kingsport limestone	— —	223-225 @ .75% 225-227 @1.00% 227-229½ @ 1.00% 235½-237½ @ .50% 257-259 @ 2.00% 259-261 @ .75% 261-263 @ 1.00% 263-264½ @ .75% 264½-266½ @ 2.50% 269-271 @ 2.25%	—

This hole has not been completed.

RECEIVED

OFFICIAL FILE COPY
DMEA
RECEIVED APR 10 1957

DATE	INITIALS	CODE
4/10	C	220
17	COM	100
4/18	WRH	500

INTERIM REPORT

DMEA-4381, Idm-E1002 - Zinc

Operator: B. H. Putnam, Chicago, Illinois

Location: Indian Creek area, Grainger County, Tennessee

Diamond drilling on the Indian Creek project continues recessed pending a review of all available data and the completion of additional geologic, geochemical, and geophysical studies by representatives of the Operator and the National Lead Company. This work is being conducted while final negotiations are being completed to transfer the contract to National Lead. It is anticipated that drilling will be resumed in three to four weeks.

Inspected: April 3, 1957

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey

Form MF-104 (Rev.)
(April 1952)

Budget Bureau No. 42-R1036.5

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

PAID ON VOUCHER & SCHEDULE OF PAYMENTS K- 55

OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of February, 1957 Docket No. DMEA 4381 Contract No. Idm-E 1002
Operator's Name B.H. Putnam Minerals Zinc
Address 512 Third Street, Marietta, Ohio
Contract Amount, $ 40,530.00 Government Participation: 50 % Amount, $ 20,265.00

ITEMS OF COSTS	FOR OPERATOR'S USE			FOR GOVERNMENT USE ONLY		
	Monthly Total	Totals Previously Reported	Totals To Date	Approved Monthly Total	Approved Totals Previously Reported	Approved Totals To Date
(1) Independent Short Form Contracts:						
Drilling	4629.00	17,190.00	21,819.00	5/6/57	WPK	Boswell
Bulldozing						Klug
Crosscutting						
Drifting						Beth
Roaming	—	768.00	768.00			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis	—	25.50	25.50			
Payroll Taxes						
Liability Insurance						
Incidental Allowance @ 0.26 /ft.	401.18	1489.80	1890.98			
(8) Contingencies (specify):						
TOTALS	5030.18	19,473.30	24,503.48	5,030.18	19,473.30	24,503.48

RECEIVED MAR 11 1957 D.M.E.A.

I certify that the above bill is correct and just and that payment therefor has not been received.

Date Feb. 28, 1957 *Payee B.H. Putnam

Per William T. Kelly Title Gen. Supt.

*When a voucher is signed or receipted in the name of a company or corporation, the name of the person writing the company or corporate name, as well as the capacity in which he signs, must appear. For example: "John Doe Company, per John Smith, Secretary," or "Treasurer," as the case may be.

NOTE.—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.

(Instructions on reverse)

2515.09

Pursuant to authority vested in me, I certify that this account is correct and proper for payment in the amount of:

$2,515.09

Signature Helen R. Miller
(Authorized Certifying Officer)

Date MAR 7 1957 Vou. No. 140
(See other side)

(For Government use only)

CERTIFICATION BY GOVERNMENT REPRESENTATIVE:

I certify that to the best of my knowledge and belief the contractor submitting this voucher is operating a Defense Minerals Exploration Administration project under Contract No. E1002 in accordance with the terms of the contract.

Signature [illegible] Title GEOLOGIST, U. S. G. S. Date MAR - 5 1957

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature [illegible] Title EXECUTIVE OFFICER DMEA REGION V Date MAR 5 1957

MONTHLY REPORT OF OPERATOR

The Operator (Contractor) of an exploration project is required to make a monthly report to the Government through the Regional Executive Officer. This report consists of three parts as follows:

(a) *Form MF-104—Operator's Monthly Report and Voucher.*—This form details expenditures and constitutes a voucher for reimbursing the Operator for the Government's share of costs;

(b) *Form MF-104A—Operator's Unit Cost and Progress Report.*—This is a statistical report of expenditures which shows costs for the various types of operation; and

(c) *Narrative.*—A concise narrative description of progress made, results accomplished, and any unusual difficulties encountered must be furnished as an attachment to this Report and Voucher. Wherever possible, the narrative is to be illustrated with maps or sketches showing formations penetrated and location and assays of samples taken as well as advances in workings. In the case of diamond drilling or churn drilling, the location and inclination of holes is to be shown on a map; logs and assays also are to be submitted.

The Monthly Report of Operator should be prepared in an original and four copies all of which must be sent to the Executive Officer of the Region not later than the 15th of the month following.

Preparation of Form MF-104—Operator's Monthly Report and Voucher.—All the applicable spaces in Form MF-104 should be filled in by the Operator, and the Operator or his agent should sign the certification in the lower left corner of the form.

The items of costs are arranged in the order they appear in Article 6 (a) of Form MF-200 (Revised February 1952), however, this form is readily adaptable for use in reporting activities under other contract forms.

Under Item (1) delete words "Short Form" if the contract is a sub-contract under Form MF-200; and delete word "Independent" if the contract reported is on Form MF-200 (A). Also, report work paid for on a unit basis under contract Form MF-200 as though it were performed under an independent contract.

Under Item (2) include labor, supervision and technical services incurred for the exploratory operations. Do not include labor, supervision and technical services used for work performed under items (5) and (6).

Under Item (3) include the costs of material and supplies used in the project other than that used under items (5) and (6).

Under Item (4) appear the three types of operating equipment expenditures, that is, rental, purchase and depreciation. The expenditures made for renting equipment belonging to a third party will be reported under "Rental". The amount paid or duly obligated for payment for the purchase of equipment will be reported under "Purchase". The amount of expenditures due the Operator to reimburse him for depreciation of equipment owned will be reported under "Depreciation".

Item (5) comprises costs of labor, supervision, technical services, materials, etc., which are used in the initial rehabilitation and repair of existing buildings, installations, fixtures, and equipment. These costs, therefore, should not be reported under items (2) and (3).

Item (6) includes the labor, supervision, technical services, materials, etc., used in the installation or construction of new buildings, fixed improvements, etc., necessary for the project. These costs, therefore, should not be reported under items (2) and (3).

Item (7) covers miscellaneous types of expenditure such as payroll taxes, liability insurance, workmen's compensation insurance, repairs to equipment and sampling and analysis. Only that part of payroll taxes, liability insurance and workmen's compensation which are paid by the operator should be reported under item (7). The share paid by the employee as a payroll deduction is to be included under item (2) as labor costs.

Item (8) includes any unforeseen costs not included in the other seven categories.

The original of Form MF-104 when submitted for reimbursable expenses incurred under contract Form MF-200 must be supported by original documentation or by certified copies of purchase orders, payrolls or transcripts of payrolls, unless such documentation has been waived by the Regional Executive Officer. This certification may be stated thus, "Certified True Copy (or Transcript)", followed by appropriate signature. If the Executive Officer of the Region determines that a contract under Form MF-200 should have an "on-site" audit, that is, a Government auditor should make an audit of the Operator's books and records of account, the Operator need not support his monthly voucher with original or certified documents except in cases of equipment purchases whose individual costs exceed $50.00. In these cases the original or a certified copy of the purchase order or invoice should be attached to the Monthly Voucher. N. B.—Only the *original* of Form MF-104 is required to be documented. The four copies of Form MF-104 are not to be thus supported.

Form MF-104 submitted for reimbursement under fixed price contracts on Form MF-200 (A), however, are not required to be supported by documentation of any kind. The Operator will submit his claim under item (1) of Form MF-104 by deleting as stated above the word "Independent" and by showing the number of feet or other units immediately after the appropriate descriptive word, such as, drilling, bulldozing, crosscutting, drifting, etc., and giving the "Monthly Total" amount due. "Totals Previously Reported", and "Totals to Date" columns should also be filled in.

Form MF-104A
(April 1952)

Budget Bureau No. 42-R1151.2

RECEIVED MAR 11 1957 D.M.E.A.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of February 1957 Docket No. DMEA 4381 Contract No. Idm-E 1002
Operator's Name B.H. Putnam Minerals Zinc
Address 512 Third Street, Marietta, Ohio.

OPERATION	UNIT	COSTS THIS MONTH	UNITS THIS MONTH	COSTS TO DATE	UNITS TO DATE	UNIT COSTS TO DATE	AUTHORIZED BY CONTRACT	
							Units	Unit Costs
Drifting								
Crosscutting								
Raising								
Shafts								
Winzes								
Drilling: Core	Foot	462900	1543	21,819.00	7273	3.00	12.000	3.00
~~Churn~~ Reaming	Foot	—	—	768.00	384	2.00	600	2.00
~~Auger~~ Assays	Ea.	—	—	25.50	20	1.275	140	1.50
Stripping								
Trenching								
Test Pits								
Roads and Trails								
Incidental Allowance @ .26/ft.	Foot	401.18	1543	1890.98	7273	.26	12000	.26
TOTAL DISTRIBUTED COSTS								TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS		5030.18		24,503.48				

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this report is correct and complete to the best of their knowledge and belief.

REMARKS:

Date Feb. 28, 1957 Operator B.H. Putnam

Per William T. Neff Title Gen. Supt.

NOTE.—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.

(Instructions on reverse)

(For Government use only)

Hermann Lindner
GEOLOGIST, U. S. G. S.
MAR - 5 1957

Invoice

Marietta, Ohio

To: B.H. Putnam
512 Third Street,
Marietta, Ohio

Feb. 28, 1957

In Account With

Putnam Drilling Company

512 Third St. P.O. Box 647 Phone Fr. 4-6761

Statement for drilling Indian Creek
Project DMEA Contract No. 4381
for February.

Core Hole Mallicoat No. 2

Drilled	500' @ $3.00	$1500.00

I hereby certify that to the best of my knowledge and belief the above invoice is correct and just, and in accordance with the bid submitted by Putnam Drilling Company.

EXTRA COPY
D M E A
RECEIVED MAR 1 1957

DATE	INITIALS	CODE

B.H. Putnam, Operator

By: William T. Hill

William T. Hill
General Superintendant.

E... COPY
DMEA
RECEIVED MAR 11

DATE	INITIALS	CO

INVOICE

Marietta, Ohio

To: B.H. Putnam
512 Third Street,
Marietta, Ohio

Feb. 28, 1957

In Account With

Putnam Drilling Company

512 Third St. P.O. Box 647 Phone Fr. 4-6761

Statement for drilling Indian Creek
Project DMEA Contract No. 4381
for February.

Core Hole A.B. Dalton #6

Drilled	497' @ $3.00	$1491.00

I hereby certify that to the best of my knowledge and belief the above invoice is correct and just, and in accordance with the bid submitted by Putnam Drilling Company.

B.H. Putnam, Operator

By: William T. Hill

William T. Hill
General Superintendant

INVOICE

Marietta, Ohio

EXTRA COPY
DMEA
MAR 1
FILE | INITIALS

To: B.H. Putnam
512 Third Street,
Marietta, Ohio

Feb. 28, 1957

In Account With

Putnam Drilling Company

512 Third Street P.O. Box 647 Phone Fr. 4-6761

Statement for drilling Indian Creek
Project DMEA Contract No. 4381
for February.

Core Hole Scearce #1

Drilled	71' @ $3.00	$213.00

I hereby certify that to the best of my knowledge and belief the above incoice is correct and just, and in accordance with the bid submitted by Putnam Drilling Company.

B.H. Putnam, Operator

By: William T. Hill

William T. Hill
General Superintendant

INVOICE

Marietta, Ohio

To: B.H. Putnam
512 Third Street,
Marietta, Ohio

Feb. 28, 1957

In Account With

Putnam Drilling Company

512 Third Street P.O. Box 647 Phone Fr. 4-6761

Statement for drilling Indian Creek
Project DMEA Contract No. 4381
for February.

Core Hole A.B. Dalton #7

Drilled	475' @ $3.00	$1425.00

I hereby certify that to the best of my knowledge and belief the above invoice is correct and just, and in accordance with the bid submitted by Putnam Drilling Company.

B.H. Putnam, Operator

By: William T. Hill

William T. Hill
General Superintendant

EXTRA-COPY

~~OFFICIAL FILE COPY~~

DMEA

RECEIVED MAR 11 1957

DATE	INITIALS	CODE

A Progress Report on the
Indian Creek Project, Grainger County,
Tennessee for February, 1957.

DATA COPY
DMEA
RECEIVED MAR 11 1957
DATE | INITIALS | CODE

By: W.T. Hill

Docket No. 4381
Contract No. Idm-E 1002

During the month of February, three holes were drilled and one was deepened on the Indian Creek Project. D#1 was drilled 300 feet northeast of D#5. The hole collared in the Kingsport formation and was drilled to a depth of 500 feet. The results are summarized below:

Depth	Formation or Member	Key Horizon Markers	Zinc Mineralization ESTIMATED	Remarks
0'-86'	Overburden	—	—	—
86'-256'	Kingsport dolomite	K.P. oolite @ 119'	—	dolomite; some crackle breccia
256-404'	Kingsport limestone	—	322-333,11' @ .25% Zn.	dolomite, recrystalline, limestone; well brecciated. Mainly limestone from 347-404.
404-500'	Longview formation	404-466 Lv. recrystalline bed.	—	Siliceous recrystalline, sandy; some dolomite.

D#6 was drilled 150' northeast of D#5. The hole collared in the Mascot formation and was drilled to a depth of 497'. The results are summarized below:

Depth	Formation or Member	Key Horizon Markers	Zinc Mineralization ESTIMATED	Remarks
0-55'	Overburden	---	---	---
55-78	Mascot formation	CMss @ 78'	---	dolomite; many cavitys.
78-281'	Kingsport dolomite	KP oolite @ 129½'	TR. @ 215,217, 242-243, 1' @ 1.5% 254-259, 5' @ .25%	dolomite; heavily faulted; mainly crackle breccia.
281-435'	Kingsport limestone	---	286-287, 1' @.25% 287-288½, 1½ @ 2.5% 288½-289½,1'@.50% Tr. @ 292,303. 329-330,1'@ .50% 332-335, 3'@ .2% 336½-337½, 1' @ 1.% 339-340, 1'@ .50% 341-342, 1'@ 1%	Recrystalline and dolomite; fair brecciated.
435-497	Longview formation	435-487 Lv recrystalline bed.	---	Sandy recrystalline and dolomite.

A cross-section of holes which included Sc#1 and #2 revealed that Sc#1 had been bottomed short of a mineralized zone that occured in Sc#2. As a result of this study, it was decided to deepen Sc#1. The results of the deepening are summarized below:

Depth	Formation or Member	Key Horizon Markers	Zinc Mineralization	Remarks
650-675	Kingsport limestone	---	---	dolomite and recrystalline
675-721	Longview formation	675-720 Lv recrystalline bed	---	Sandy recrystalline.

D#7 was drilled 150' southwest of D#5. The hole collared in the Mascot formation and was drilled to a depth of 475'. The results are summarized below:

Depth	Formation or Member	Key Horizon Markers	Zinc Mineralization ESTIMATED.	Remarks
0-43'	Overburden	—	—	—
43-66½	Mascot formation	Chas @ 66½'	—	dolomite.
66½-256'	Kingsport dolomite	KP oolite @ 120'	240½-242½,2' @.25% 245-246,1' @ .50	dolomite; lower part brecciated.
256-416'	Kingsport limestone	—	shines @ 312,320 321. 364½-365½, 1' @ 1.%. 374-375, 1' @ 1.%.	dolomite and recrystalline, well brecciated.
416-475	Longview formation	416-467 Lv recrystalline bed.	—	Recrystalline, sandy.

Form MF-104 (Rev.)
(April 1952)

Budget Bureau No. 42-R1036.5

PAID ON VOUCHER & SCHEDULE OF PAYMENTS K-3 50

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of January, 1957 Docket No. DMEA 4391 Contract No. Idm-I 1002
Operator's Name D.H. Putnam Minerals Zinc
Address 512 Third Street, Marietta, Ohio.
Contract Amount, $ 40,530.00 Government Participation: 50 % Amount, $ 20,265.00

ITEMS OF COSTS	FOR OPERATOR'S USE: Monthly Total	Totals Previously Reported	Totals To Date	FOR GOVERNMENT USE ONLY: Approved Monthly Total	Approved Totals Previously Reported	Approved Totals To Date
(1) Independent Short Form Contracts:				5/6/57 WPK		
Drilling	$4533.00	$12,687.00	$17,190.00	4503.00	12687.00	17,190.00
Bulldozing						
Crosscutting						
Drifting						
Reaming	—	768.00	768.00	—	768.00	768.00
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis	3.00	22.50	25.50	3.00	22.50	25.50
Payroll Taxes						
Liability Insurance						
Incidental Allowance @ .264/ft.	390.26	1,099.54	1,489.80	390.26	1099.54	1489.80
(8) Contingencies (specify):						
TOTALS	$4926.26	$14,577.04	$19,503.30	4896.26	14577.04	19473.30

RECEIVED FEB 25 1957 D.M.E.A.

I certify that the above bill is correct and just and that payment therefor has not been received.
Date Jan. 31, 1957 *Payee D.H. Putnam
Per William Tolf Title General Supt.

*When a voucher is signed or receipted in the name of a company or corporation, the name of the person writing the company or corporate name, as well as the capacity in which he signs, must appear. For example: "John Doe Company, per John Smith, Secretary," or "Treasurer," as the case may be.

NOTE.—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.

(Instructions on reverse)

Pursuant to authority vested in me, I certify that this account is correct and proper for payment in the amount of:
$ 2448.13
Signature Helen R. Miller (Authorized Certifying Officer)
Date FEB 20 1957 Vou. No. 135
(See other side)

2448.13

(For Government use only)

CERTIFICATION BY GOVERNMENT REPRESENTATIVE:

I certify that to the best of my knowledge and belief the contractor submitting this voucher is operating a Defense Minerals Exploration Administration project under Contract No. E-1002 in accordance with the terms of the contract.

Signature Delmar Lucas, Jr. Title GEOLOGIST, U. S. G. S. Date FEB 19 1957

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature V. J. Lynch Title ACTING EXECUTIVE OFFICER DMEA - REGION V Date FEB 19 1957

MONTHLY REPORT OF OPERATOR

The Operator (Contractor) of an exploration project is required to make a monthly report to the Government through the Regional Executive Officer. This report consists of three parts as follows:

(a) *Form MF-104—Operator's Monthly Report and Voucher.*—This form details expenditures and constitutes a voucher for reimbursing the Operator for the Government's share of costs;

(b) *Form MF-104A—Operator's Unit Cost and Progress Report.*—This is a statistical report of expenditures which shows costs for the various types of operation; and

(c) *Narrative.*—A concise narrative description of progress made, results accomplished, and any unusual difficulties encountered must be furnished as an attachment to this Report and Voucher. Wherever possible, the narrative is to be illustrated with maps or sketches showing formations penetrated and location and assays of samples taken as well as advances in workings. In the case of diamond drilling or churn drilling, the location and inclination of holes is to be shown on a map; logs and assays also are to be submitted.

The Monthly Report of Operator should be prepared in an original and four copies all of which must be sent to the Executive Officer of the Region not later than the 15th of the month following.

Preparation of Form MF-104—Operator's Monthly Report and Voucher.—All the applicable spaces in Form MF-104 should be filled in by the Operator, and the Operator or his agent should sign the certification in the lower left corner of the form.

The items of costs are arranged in the order they appear in Article 6 (a) of Form MF-200 (Revised February 1952), however, this form is readily adaptable for use in reporting activities under other contract forms.

Under Item (1) delete words "Short Form" if the contract is a sub-contract under Form MF-200; and delete word "Independent" if the contract reported is on Form MF-200 (A). Also, report work paid for on a unit basis under contract Form MF-200 as though it were performed under an independent contract.

Under Item (2) include labor, supervision and technical services incurred for the exploratory operations. Do not include labor, supervision and technical services used for work performed under items (5) and (6).

Under Item (3) include the costs of material and supplies used in the project other than that used under items (5) and (6).

Under Item (4) appear the three types of operating equipment expenditures, that is, rental, purchase and depreciation. The expenditures made for renting equipment belonging to a third party will be reported under "Rental". The amount paid or duly obligated for payment for the purchase of equipment will be reported under "Purchase". The amount of expenditures due the Operator to reimburse him for depreciation of equipment owned will be reported under "Depreciation".

Item (5) comprises costs of labor, supervision, technical services, materials, etc., which are used in the initial rehabilitation and repair of existing buildings, installations, fixtures, and equipment. These costs, therefore, should not be reported under items (2) and (3).

Item (6) includes the labor, supervision, technical services, materials, etc., used in the installation or construction of new buildings, fixed improvements, etc., necessary for the project. These costs, therefore, should not be reported under items (2) and (3).

Item (7) covers miscellaneous types of expenditure such as payroll taxes, liability insurance, workmen's compensation insurance, repairs to equipment and sampling and analysis. Only that part of payroll taxes, liability insurance and workmen's compensation which are paid by the operator should be reported under item (7). The share paid by the employee as a payroll deduction is to be included under item (2) as labor costs.

Item (8) includes any unforeseen costs not included in the other seven categories.

The original of Form MF-104 when submitted for reimbursable expenses incurred under contract Form MF-200 must be supported by original documentation or by certified copies of purchase orders, payrolls or transcripts of payrolls, unless such documentation has been waived by the Regional Executive Officer. This certification may be stated thus, "Certified True Copy (or Transcript)", followed by appropriate signature. If the Executive Officer of the Region determines that a contract under Form MF-200 should have an "on-site" audit, that is, a Government auditor should make an audit of the Operator's books and records of account, the Operator need not support his monthly voucher with original or certified documents except in cases of equipment purchases whose individual costs exceed $50.00. In these cases the original or a certified copy of the purchase order or invoice should be attached to the Monthly Voucher. N. B.—Only the *original* of Form MF-104 is required to be documented. The four copies of Form MF-104 are not to be thus supported.

Form MF-104 submitted for reimbursement under fixed price contracts on Form MF-200 (A), however, are not required to be supported by documentation of any kind. The Operator will submit his claim under item (1) of Form MF-104 by deleting as stated above the word "Independent" and by showing the number of feet or other units immediately after the appropriate descriptive word, such as, drilling, bulldozing, crosscutting, drifting, etc., and giving the "Monthly Total" amount due. "Totals Previously Reported", and "Totals to Date" columns should also be filled in.

Form MF-104A
(April 1952)

Budget Bureau No. 42-R1151.2

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

RECEIVED FEB 25 1957 D.M.E.A.

OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of January 1957 Docket No. DMEA 4381 Contract No. Idm-E 1002
Operator's Name B. H. Putnam Minerals Zinc
Address 512 Third Street Marietta, Ohio

OPERATION	Unit	Costs This Month	Units This Month	Costs to Date	Units to Date	Unit Costs to Date	Authorized by Contract: Units	Authorized by Contract: Unit Costs
Drifting								
Crosscutting								
Raising								
Shafts								
Winzes								
Drilling: Core	foot	$4533.00	1501	$17,220.00	5730	$3.00	12,000	$3.00
Churn								
Auger								
Stripping								
Trenching								
Test Pits								
Roads and Trails								
Total Distributed Costs		$4533.00		$17,220.00				Total Costs Authorized by Contract
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
Total Costs		$4533.00		$17,220.00				$17,220.00

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this report is correct and complete to the best of their knowledge and belief.

Date Jan. 31, 1957 Operator B. H. Putnam

Per William Thuf Title General Sup.

NOTE.—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.

Remarks:

(Instructions on reverse)

(For Government use only)

$30.00 claimed for cementing was disallowed.
V.J.L.

Clemente Lucas Jr.
GEOLOGIST, U. S. G. S.
FEB 19 1957

INSTRUCTIONS

Preparation of Form MF-104A—Operator's Unit Cost and Progress Report.—Applicable places on Form 104A should be filled in by the Operator. The purpose of this form is twofold as follows: (1) to furnish the supervising engineers and other administrators with statistical information necessary to better determine the progress of the project; and (2) to furnish more permanent information on mining costs for future use. The more important phases of operation on which permanent information is desired have been outlined in the form. There are blank lines, however, for those unusual phases which may need to be reported for a particular project. It will be necessary for the Operator to distribute his costs among the applicable phases reported with the exception of three items the costs of which are not to be distributed by the Operator. These three items are: "Operating Equipment Purchased", "Initial Rehabilitation and Repairs", and "New Buildings, Improvements, etc." The reason for not distributing these items on a monthly basis is doubtless clear to the Operator, since such distribution might well overstate the cost for any one month or period short of the entire contract period.

Form MF-104A has been designed to tie in with Form MF-104 for both monthly and cumulative costs. The "Total Costs" on Form MF-104A for each month should equal the monthly "Total Costs" as reported on Form MF-104. This is also true of the "Total Costs To Date".

In preparing Form MF-104A, it will be necessary frequently to distribute certain costs over a number of items. For instance, supervisory and engineering costs may have to be distributed over several phases, such as, drifting, crosscutting, raising, etc., provided that these items were reported active for the month. Such distributions should be made on the basis of time spent on the various phases, on man days of labor charged to such phases, or on some other equitable basis. "Operating Equipment", "Initial Rehabilitation and Repairs", and "New Buildings Improvements, etc.", will be distributed to the several phases of the project by the Washington Office of DMEA at the close of the project if determined necessary. The last two columns headed "Authorized by Contract" will be filled in by the Operator if such information is found in the contract. This information is usually a part of Exhibit "A" of the contract. A space for remarks has been provided for the use of the Operator to call attention to any unusual circumstances causing excessive or disproportionate unit costs.

GPO 872894

Invoice

Marietta, Ohio

OFFICIAL FILE COPY
DMEA
RECEIVED FEB 25 1957

DATE	INITIALS	CODE

To B. H. Putnam
512 Third Street
Marietta, Ohio

January 31, 1957

In Account With

PUTNAM DRILLING COMPANY

512 Third Street

P. O. Box 647

Phone FR 4-6761

Statement for drilling Indian Creek Project DMEA Contract No. 4381 for January.

Core Hole No. A. B. Dalton #5

Footage Drilled	475'	@ $3.00	$1425.00
Cementing Hole			15.00
			$1440.00

I hereby certify that to the best of my knowledge and belief that the above invoice is correct and just and in accordance with the bid submitted by Putnam Drilling Company.

B. H. Putnam, Operator

By: William T. Hill
William T. Hill
General Superintendent

Invoice

Marietta, Ohio

To B. H. Putnam, Appre
512 Third Street
Marietta, Ohio

January 31, 1957

In Account With

PUTNAM DRILLING COMPANY

512 Third Street | P. O. Box 647 | Phone FR 4-6761

Statement ~~fro~~ For drilling Indian Creek Project DMEA Contract No. 4381 for January.

Core Hole No. A. B. Dalton #4

Footage Drilled	356 @	$3.00	$1068.00
Cementing Hole			15.00
			$1083.00

I hereby certify that to the best of my knowledge and belief the above invoice is correct and just and in accordance with the bid submitted by Putnam Drilling Company.

B. H. Putnam, Operator

By: William T. Hill
William T. Hill
General Superintendant

Invoice

Marietta, Ohio

To B. M. Putnam, Appro
512 Third Street
Marietta, Ohio

January 31, 1957

In Account With

PUTNAM DRILLING COMPANY

512 Third Street | P. O. Box 647 | Phone FR 4-6761

Statement for drilling Indian Creek Project RMEA Contract No. 4381 for January.

Core Hole No. A. B. Dalton #3

Footage Drilled	386'	@ $3.00	$1158.00

I hereby certify that to the best of my knowledge and belief the above invoice is correct and just and in accordance with the bid submitted by Putnam Drilling Company.

B. M. Putnam, Operator

By: William T. Hill
William T. Hill
General Superintendent

Invoice

Marietta, Ohio

To B. H. Putnam, Appro
512 Third Street
Marietta, Ohio

January 31, 1957

In Account With

PUTNAM DRILLING COMPANY

512 Third Street | P. O. Box 647 | Phone FR 4-6761

Statement for drilling Indian Creek Project DMEA Contract No. 4381 for January.

Core Hole No. L. J. Mallicoat #1

Footage Drilled	284'	@ $3.00/ft.	$852.00

I hereby certify that to the best of my knowledge and belief the above invoice is correct and just and in accordance with the bid submitted by Putnam Drilling Company.

B. H. Putnam, Operator

By: William T. Hill
William T. Hill
General Superintendent

Telephone EMpire 3-3302

Hand Sample Serial 9001-3

ASSAY REPORT

UNION ASSAY OFFICE, Inc.

J. V. SADLER, President
A. C. SELBY, Vice-Pres. & Treas.
LILY M. HOTTINGER, Secretary
Salt Lake City 10, Utah

Mine B. H. Putman, Operator

Jan. 3, 1957

RESULTS PER TON OF 2000 POUNDS

NO.	GOLD Ozs. per Ton	SILVER Ozs. per Ton	LEAD Per Cent Wet	COPPER Per Cent	INSOL. Per Cent	ZINC Per Cent	SULPHUR Per Cent	IRON Per Cent	LIME Per Cent	Per Cent	Per Cent	VALUE GOLD
A.B. Dalton #1 489' 490½			1½'			2.2						
A.B. Dalton #1 491¼-491 3/4			½'			3.1						
A.B. Dalton #1 494-496			2'			1.9						

Remarks

Charges $ 3.00

J V Sadler

OFFICIAL FILE COPY
DMEA
RECEIVED FEB 25 1957

DATE	INITIALS	CODE

A PROGRESS REPORT ON THE INDIAN CREEK PROJECT, GRAINGER COUNTY, TENNESSEE FOR JANUARY, 1957

By: W.T. Hill

Docket No. 4381
Contract No. Idm-E 1002

During the month of January, four holes were drilled on the Indian Creek Project. D#3 was drilled 300' northeast of D#2. The hole collared in the Kingsport formation and was drilled to a depth of 386 feet. The results are summarized below:

Depth	Formation or Member	Key Horizon Markers	Zinc Mineralization	Remarks
0'-20'	Overburden	—	—	—
20'-133'	Kingsport dolomite	—	110-111@.9% Zn.	Medium gray dolomite, occassional crackle breccia.
		—	Tr.@119',123' 126-127 @1.00% Zn.	
133'-265'	Kingsport Limestone	—	Tr.@ 149	Recrystalline and dolomite; brecciated.
			204-208 @.85 Zn.	
265-386	Longview	base of re-xl unit @ 334'		Recrystalline, sandy; and fine dolomites near base.

D#4 was drilled 300' northeast of D#3. The hole collared in the Kingsport and was drilled to a depth of 356 feet. The results are summarized below:

Depth	Formation or Member	Key Horizon Markers	Zinc Mineralization	Remarks
0-115'	Overburded	—	—	—

115'-146'	Kingsport dolomite	—	133½-156' @.97% Zn.	dolomite in part brecciated.
146'-280'	Kingsport Limestone	—— ——	160-167½ @ 1.05% Zn. 198-200½ @ .4% Zn.	brecciated dolomite and recrystalline; very siliceous.
280-356	Longview dolomite	Base of re-xl unit 350'	331-333 @ 1.7% Zn.	Sand recrystalline and dolomite.

D#5 was drilled south 300' of D#4. The hole collared in the Mascot formation and was drilled to a depth of 475 feet. The results are summarized below:

Depth	Formation or Member	Key Horizon Markers	Zinc Mineralization	Remarks
0'-56'	Overburden	—	—	—
56'-86½'	Mascot fm.	CMMS @ 86½	—	crackled dolomite
86½'-300'	Kingsport dolomite	Kingsport oolite @ 143'	245-256½@1.04%Zn. 259-274½ @.38% Zn. 285-290½ @ .3% Zn.	Brecciated dolomite
300'-427'	Kingsport limestone	—	328-338½ @ .27% Zn. 272-277 @ .56% 390½-396 @ .032% Zn.	Recrystalline brecciated.
427-475	Longview fm.	—	—	Recrystalline, sandy, semi fine grained dolomite.

M#1 (Mallicoat farm) was drilled 300 feet northeast of D#4. The hole collared in the Kingsport dolomite and was drilled to a depth of 254 feet. The results are summarized below:

Depth	Formation or Member	Key Horizon Markers	Zinc Mineralization	Remarks
0'-49'	Overburden	---	---	---
49'-112'	Kingsport dolomite	--- ---	--- ---	Unbrecciated dolomite.
112'-249'	Kingsport limestone	--- ---	--- ---	Limestone, recrystalline & dolomite
249'-254'	Longview fm.	---	---	Recrystalline & dolomite.

Drilling is now underway 300 feet southwest of M#1.

OFFICIAL FILE COPY
DMEA
RECEIVED MAR 25 1957

DATE	INITIALS	CODE
3/25	C	220
25	COM	100

INTERIM REPORT

DMEA-4381, Idm-E1002-Zinc

Operator: B. H. Putnam, Chicago, Illinois

Location: Indian Creek area, Grainger County, Tennessee

Diamond drilling on the Indian Creek project has been briefly recessed since the last inspection because of repairs to the drilling rig. No holes were completed in the biweekly period herein reported. Additional data on the hole in progress are given below:

Hole No.	Property	Depth	Esti.Depth	Remarks
D-8	Dalton	277	400	Drilling in the Kingsport fm at time of breakdown; estimated zinc as follows: 186-188; 2 ft @ 1/4% 218-219½ ; 1½ ft @ 1/4% 223-229 ; 6 ft @ 1/4% 234-236 ; 2 ft @ 1/4% 258-267 ; 9 ft @ 1% 269-271 ; 2 ft @ 1%

On repair of the drilling equipment Hole D-8 will be completed. On completion of this hole drilling will be recessed temporarily for 4 to 6 weeks as in the Thorn Hill project in order to reassess the results obtained to date(see transmittal memorandum).

Inspected: March 20, 1957

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey

z

CENTRAL FILE COPY
DMEA
RECEIVED MAR 20 1957
DATE | INITIALS | CODE
3 20 | C | 220
20 | COW | 100
3/22 | WRH | 50

INTERIM REPORT

DMEA-4381, Idm-E1002 - Zinc

Operator: B. H. Putnam, Chicago, Illinois

Location: Indian Creek area, Grainger County, Tennessee

Diamond drilling on the Indian Creek project completed to date and since the last inspection on February 20, 1957 is summarized as follows:

Footage in holes completed since last inspection	546*
Total footage in holes completed to date	7,275*
Number of holes completed since last inspection	1
Total number of holes completed to date	14
Number of holes showing commercial zinc ore	0 ✓
Number of holes showing non-commercial zinc mineralization	11
Number of barren holes	3

*Includes 71 feet for deepening Hole SC-1 from 650 to 721 feet (see below)

Data on the one hole completed since the last inspection are given below:

Hole No.	Property	Depth	Remarks
D-7	Dalton	475	Location: 150 ft SW of Hole D-5 Summary log: 0-66 Mascot dolomite 66-256 Kingsport dolomite member 256-378 Kingsport limestone member 378-475 Longview dolomite Zinc: 240½-242½; ¼% est 245 -246 ; ½% est Sphalerite shines @ 312, 320, and 321 364½-365½; 1% est 374 -375 ; 1% est

Since the last inspection review by the Operator of data obtained from Holes SC-1 (pre-contract drilling) and SC-2 indicated that Hole SC-1 was bottomed short of a mineralized zone that occurs in Hole SC-2. Consequently Hole SC-1 was deepened from a depth of 650 feet to a depth of 721 feet in order to penetrate the projected zone of mineralization. The base of the Kingsport limestone member was encountered at a depth of 675 feet but no occurrence of zinc mineralization was noted.

Hole D-8 on the Dalton property, located midway between Holes D-4 and D-5 was in progress at the time inspection. It was collared in the Mascot dolomite and at a depth of 152 feet was drilling in the Kingsport formation; the chert-matrix sandstone at the base of the Mascot was not recognized. Hole D-8 will be bottomed at a depth of about 400 feet.

Inspected: March 6, 1957

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey

OFFICIAL FILE COPY
DMEA
RECEIVED MAR 4 1957

DATE	INITIALS	CODE
3/5	Com	100
3-5	C	220

INTERIM REPORT

DMEA-4381, Idm-E1002-Zinc

Operator: Benjamin H. Putnam, Chicago, Illinois

Location: Indian Creek Area, Grainger County, Tennessee

Diamond drilling on the subject project completed to date and since the last inspection on February 6, 1957 is summarized below:

Footage in holes completed since last inspection...	497
Total footage in holes completed to date.....	6,729
Number of holes completed since last inspection....	1
Total number of holes completed to date.....	13
Number of holes showing commercial zinc ore.....	0
Number of holes showing non-commercial zinc mineralization.....	10
Number of barren holes.....	3

Data on the hole completed since the last inspection are summarized as follows:

Hole No.	Property	Depth	Remarks
D-6	Dalton	497	Collared in Mascot dol and bottomed in Longview fm; estimated zinc as follows: Traces @ 215 and 217 242-243; 1 ft @ 1½% 254-258; 4 ft @ 1/4% 258½-259; ½ ft @ 1/4% 286-287; 1 ft @ 1/4% 287-288½; 1½ ft @ 2½% 288½-289½ 1 ft @ ½% Traces @ 292 and 304 329-330; 1 ft @ ½% 332-335; 3 ft @ 2% 336½-337½; 1 ft @ 1% 339-340; 1 ft @ ½% 341-342; 1 ft @ 1%

Hole D-7 was drilling at a depth of 75 feet at the time of inspection. It is located on the A. B. Dalton property 150 feet S 70° W of Hole D-6. It was collared and is currently drilling in the Mascot dolomite.

Inspected: February 20, 1957

Helmuth Wedow, Jr.
Geologist
U. S. Geological Survey

RECEIVED
FEB 14 1957
D.M.E.A.

INTERIM REPORT

DMEA-4381, Idm-E1002 (Zinc)

Operator: Benjamin H. Putnam, Chicago, Illinois

Location: Indian Creek area, Grainger County, Tennessee

The diamond drilling on B. H. Putnam's Indian Creek project completed to date and since the last inspection on January 23, 1957 is summarized as follows:

Footage in holes completed since last inspection	784
Total footage in holes completed to date	6,232
Number of holes completed since last inspection	2
Total number of holes completed to date	12
Number of holes showing commercial zinc mineralization .	0
Number of holes showing non-commercial zinc mineralization	9
Number of barren holes	3

Data on the two holes completed since the last inspection are as follows:

Hole no.	Property	Depth	Remarks
M-1	Mallicoat	284	Collared and bottomed in Kingsport fm. barren hole.
M-2	Mallicoat	500	Collared in Mascot fm; bottomed in Kingsport (?) fm; traces of zinc 322-333; located about 600 ft NE of Hole D-5 and about 300 ft SSW of Hole M-1.

Hole D-6, located on the A. B. Dalton property, is one-half way between Holes M-2 and D-5. At the time of inspection it was drilling in overburden and will be bottomed at about 475 feet.

Inspected: February 6, 1957

V. J. Lynch, Mining Engineer
U. S. Bureau of Mines

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey

g

INTERIM REPORT

DMEA-4381, Idm-E1002 (Zinc)

RECEIVED FEB 4 1957 D.M.E.A.

Operator: Benjamin H. Putnam, Chicago, Illinois

Location: Indian Creek area, Grainger County, Tennessee

The diamond drilling on the Indian Creek project of B. H. Putnam to date and since the last inspection on January 9, 1957, is summarized as follows:

Drilling completed:

Footage in holes completed since last inspection	831
Total footage in holes completed to date	5,448
Number of holes completed since last inspection	2
Number of holes completed to date	10
Number of holes showing commercial zinc ore	0
Number of holes showing non-commercial zinc mineralization	8
Number of barren holes	2

Drilling in progress:

Number of holes in progress	1
Footage drilled since last inspection	155
Total footage drilled in incompleted holes	155

Pertinent information, in addition to that given in previous interim reports, on the holes completed since the last inspection follows:

Hole No.	Property	Depth	Remarks
D-4	A.B.Dalton	356	Bottomed in Longview fm; 2 ft estimated @ 1% Zn, 331-333; shine hole.
D-5	A.B.Dalton	475	Located 300 ft south of Hole D-4; collared in Mascot fm; chert-matrix ss @ 86½; bottomed in Longview fm. Zinc (estimated) as follows: 241 -251½; 10½ ft @ 2% 254½-256½; 2 ft @ ½% Traces @ 257, 258, and 259 261½-263½; 2 ft @ 1% 265 -269 ; 4 ft @ 1% Traces @ 269½, 270½, and 271 274 -277 ; 3 ft @ ½% Trace @ 283 284 -290½; 6½ ft @ ½% Traces @ 297, 305, and 307 328 -329 ; 1 ft @ 3/4% 332½-338½; 6 ft @ 2% Traces @ 342 and 369 373½-377 ; 3½ ft @ 1% 390½-397 ; 6½ ft @ ½% 416 -417 ; 1 ft @ ½%

One hole is currently drilling. Data on this hole follow:

Hole No.	Property	Depth	Est. depth	Remarks
M-1	L. F. Mallicoat	155	300	Collared and drilling in Kingsport fm.

Inspected: January 23, 1957

V. J. Lynch, Mining Engineer
U. S. Bureau of Mines

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey

RECEIVED JAN 22 1957 D.M.E.A.

INTERIM REPORT

DMEA-4381, Idm-E1002 - Zinc

Operator: B. H. Putnam, Chicago, Illinois

Location: Indian Creek Area, Grainger County, Tennessee

A summary of the diamond drilling completed on the Indian Creek project of B. H. Putnam follows:

Footage in holes completed since last inspection ---	788
Total footage completed to date ----------	4,617
Number of holes completed since last inspection ---	2
Total number of holes completed to date----------	8
Number of holes showing commercial zinc ore -------	0
Number of holes showing non-commercial zinc mineralization ----------	6
Number of barren holes ----------	2

Pertinent data on the two holes completed since the last inspection on December 17, 1956 are given below:

Hole No.	Property	Depth	Remarks
D-2	Dalton	402	Collared in Kingsport fm and bottomed approximately at the Kingsport-Longview contact on 12/22/56 Trace hole; traces of ZnS @ 281 and 294
D-3	Dalton	386	Collared in Kingsport fm; bottomed in Longview fm on 1/1/57 Zinc (estimated) as follows: 110-111; 1 ft @ 1.0 % Shines @ 119, 123, 124, 127, 149, 160 204-208; 4 ft @ 1.0 % 208-212; 4 ft shines (with over 50% core loss)

Hole D-4, also on the Dalton property, started drilling on January 3, 1957. To date it has shown considerable zinc mineralization and will probably be classed at least as a strong shine hole or possibly as an ore hole. Data on this hole are summarized below:

Hole No.	Depth	Estimated depth	Remarks
D-4	280	355	Collared in Kingsport fm. Estimated percent zinc as follows: 134 - 135 ; 1 ft @ 0.50 135 - 137 ; 2 ft @ 0.25 139 - 141½; 2½ ft @ 1.0 141½-143½ ; 2 ft @ 2.5 143½- 145½; 2 ft @ 0.75 145½- 153 ; 7½ ft @ 1.5 153 - 156 ; 3 ft @ 2.0 Shines @ 158 and 158½ 160 - 160½; ½ ft @ 2.5 162 - 162½; ½ ft @ 1.0 162½- 166½; 4 ft @ 3.0 Shine @ 198 199½- 203½; 4 ft @ 0.75

Holes D-3 and D-4 are located about 600 feet and 1200 feet respectively northeast of Hole D-2 along a grid line approximately parallel to the strike of bedrock.

Inspected: January 9, 1957

Helmuth Wedow, Jr.
Geologist
U. S. Geological Survey

Budget Bureau No. 42-R1036.5

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

ON VOUCHER & SCHEDULE OF PAYMENTS K-

OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of December, 1956 Docket No. DMEA 4381 Contract No. Idm-E 1002

Operator's Name B. H. Putnam Minerals Zinc

Address 512 Third Street Marietta, Ohio

Contract Amount, $40,530.00 Government Participation: 50 % Amount, $20,265.00

ITEMS OF COSTS	FOR OPERATOR'S USE			FOR GOVERNMENT USE ONLY		
	Monthly Total	Totals Previously Reported	Totals To Date	Approved Monthly Total	Approved Totals Previously Reported	Approved Totals To Date
(1) Independent Short Form Contracts:						
Drilling	$3009.00	$9678.00	$12,687.00	1/31/57		
Bulldozing						
Crosscutting						
Drifting						
Reaming	158.00	610.00	768.00			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis	---	22.50	22.50			
Payroll Taxes						
Liability Insurance						
Incidental Allowance @ 26¢/ft.	260.78	838.76	1,099.54			
(8) Contingencies (specify):						
TOTALS	$3427.78	$11149.26	$14,577.04	3427.78	11,149.26	14,577.04

RECEIVED JAN 18 1957 D.M.E.A.

I certify that the above bill is correct and just and that payment therefor has not been received.

Date 12-31-56 *Payee B. H. Putnam

Per William [illegible] Title General Superintendent

*When a voucher is signed or receipted in the name of a company or corporation, the name of the person writing the company or corporate name, as well as the capacity in which he signs, must appear. For example: "John Doe Company, per John Smith, Secretary," or "Treasurer," as the case may be.

NOTE.—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.

(Instructions on reverse)

Pursuant to authority vested in me, I certify that this account is correct and proper for payment in the amount of:

$ 1713.89

Signature Helen R. Miller (Authorized Certifying Officer)

Date JAN 16 1957 Vou. No. 10

(See other side)

1713.89

(For Government use only)

CERTIFICATION BY GOVERNMENT REPRESENTATIVE:

I certify that to the best of my knowledge and belief the contractor submitting this voucher is operating a Defense Minerals Exploration Administration project under Contract No. E-7002 in accordance with the terms of the contract.

Signature T. J. Lynch Title MINING ENGINEER U. S. BUREAU OF MINES Date JAN 15 1957

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert A. Lawrence Title EXECUTIVE OFFICER DMEA REGION V Date JAN 15 1957

MONTHLY REPORT OF OPERATOR

The Operator (Contractor) of an exploration project is required to make a monthly report to the Government through the Regional Executive Officer. This report consists of three parts as follows:

(a) *Form MF-104—Operator's Monthly Report and Voucher.*—This form details expenditures and constitutes a voucher for reimbursing the Operator for the Government's share of costs;

(b) *Form MF-104A—Operator's Unit Cost and Progress Report.*—This is a statistical report of expenditures which shows costs for the various types of operation; and

(c) *Narrative.*—A concise narrative description of progress made, results accomplished, and any unusual difficulties encountered must be furnished as an attachment to this Report and Voucher. Wherever possible, the narrative is to be illustrated with maps or sketches showing formations penetrated and location and assays of samples taken as well as advances in workings. In the case of diamond drilling or churn drilling, the location and inclination of holes is to be shown on a map; logs and assays also are to be submitted.

The Monthly Report of Operator should be prepared in an original and four copies all of which must be sent to the Executive Officer of the Region not later than the 15th of the month following.

Preparation of Form MF-104—Operator's Monthly Report and Voucher.—All the applicable spaces in Form MF-104 should be filled in by the Operator, and the Operator or his agent should sign the certification in the lower left corner of the form.

The items of costs are arranged in the order they appear in Article 6 (a) of Form MF-200 (Revised February 1952), however, this form is readily adaptable for use in reporting activities under other contract forms.

Under Item (1) delete words "Short Form" if the contract is a sub-contract under Form MF-200; and delete word "Independent" if the contract reported is on Form MF-200 (A). Also, report work paid for on a unit basis under contract Form MF-200 as though it were performed under an independent contract.

Under Item (2) include labor, supervision and technical services incurred for the exploratory operations. Do not include labor, supervision and technical services used for work performed under items (5) and (6).

Under Item (3) include the costs of material and supplies used in the project other than that used under items (5) and (6).

Under Item (4) appear the three types of operating equipment expenditures, that is, rental, purchase and depreciation. The expenditures made for renting equipment belonging to a third party will be reported under "Rental". The amount paid or duly obligated for payment for the purchase of equipment will be reported under "Purchase". The amount of expenditures due the Operator to reimburse him for depreciation of equipment owned will be reported under "Depreciation".

Item (5) comprises costs of labor, supervision, technical services, materials, etc., which are used in the initial rehabilitation and repair of existing buildings, installations, fixtures, and equipment. These costs, therefore, should not be reported under items (2) and (3).

Item (6) includes the labor, supervision, technical services, materials, etc., used in the installation or construction of new buildings, fixed improvements, etc., necessary for the project. These costs, therefore, should not be reported under items (2) and (3).

Item (7) covers miscellaneous types of expenditure such as payroll taxes, liability insurance, workmen's compensation insurance, repairs to equipment and sampling and analysis. Only that part of payroll taxes, liability insurance and workmen's compensation which are paid by the operator should be reported under item (7). The share paid by the employee as a payroll deduction is to be included under item (2) as labor costs.

Item (8) includes any unforeseen costs not included in the other seven categories.

The original of Form MF-104 when submitted for reimbursable expenses incurred under contract Form MF-200 must be supported by original documentation or by certified copies of purchase orders, payrolls or transcripts of payrolls, unless such documentation has been waived by the Regional Executive Officer. This certification may be stated thus, "Certified True Copy (or Transcript)", followed by appropriate signature. If the Executive Officer of the Region determines that a contract under Form MF-200 should have an "on-site" audit, that is, a Government auditor should make an audit of the Operator's books and records of account, the Operator need not support his monthly voucher with original or certified documents except in cases of equipment purchases whose individual costs exceed $50.00. In these cases the original or a certified copy of the purchase order or invoice should be attached to the Monthly Voucher. N. B.—Only the *original* of Form MF-104 is required to be documented. The four copies of Form MF-104 are not to be thus supported.

Form MF-104 submitted for reimbursement under fixed price contracts on Form MF-200 (A), however, are not required to be supported by documentation of any kind. The Operator will submit his claim under item (1) of Form MF-104 by deleting as stated above the word "Independent" and by showing the number of feet or other units immediately after the appropriate descriptive word, such as, drilling, bulldozing, crosscutting, drifting, etc., and giving the "Monthly Total" amount due. "Totals Previously Reported", and "Totals to Date" columns should also be filled in.

Budget Bureau No. 42-R1151.2

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of December 1956 Docket No. DMEA 4381 Contract No. Idm-E-1002
Operator's Name B. H. Putnam Minerals Zinc
Address 512 Third Street Marietta, Ohio

OPERATION	UNIT	COSTS THIS MONTH	UNITS THIS MONTH	COSTS TO DATE	UNITS TO DATE	UNIT COSTS TO DATE	AUTHORIZED BY CONTRACT	
							Units	Unit Costs
Drifting								
Crosscutting								
Raising								
Shafts								
Winzes								
Drilling: Core	Foot	$3009.00	1003	$12687.00	4229	$3.00	12,000	$3.00
Churn								
Auger								
Stripping								
Trenching								
Test Pits								
Roads and Trails								
Reaming	Foot	158.00	79	768.00	384	$2.00	600	$2.00
TOTAL DISTRIBUTED COSTS		$3167.00		$13455.00				TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS		$3167.00		$13455.00				$13,455.00

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this report is correct and complete to the best of their knowledge and belief.

Date Dec. 31, 1956 Operator B. H. Putnam

Per William T. Bish Title General Superintendent

NOTE.—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.

REMARKS:

(Instructions on reverse)

(For Government use only)

V. J. Lynch
MINING ENGINEER
U. S. BUREAU OF MINES

INSTRUCTIONS

Preparation of Form MF-104A—Operator's Unit Cost and Progress Report.—Applicable places on Form 104A should be filled in by the Operator. The purpose of this form is twofold as follows: (1) to furnish the supervising engineers and other administrators with statistical information necessary to better determine the progress of the project; and (2) to furnish more permanent information on mining costs for future use. The more important phases of operation on which permanent information is desired have been outlined in the form. There are blank lines, however, for those unusual phases which may need to be reported for a particular project. It will be necessary for the Operator to distribute his costs among the applicable phases reported with the exception of three items the costs of which are not to be distributed by the Operator. These three items are: "Operating Equipment Purchased", "Initial Rehabilitation and Repairs", and "New Buildings, Improvements, etc." The reason for not distributing these items on a monthly basis is doubtless clear to the Operator, since such distribution might well overstate the cost for any one month or period short of the entire contract period.

Form MF-104A has been designed to tie in with Form MF-104 for both monthly and cumulative costs. The "Total Costs" on Form MF-104A for each month should equal the monthly "Total Costs" as reported on Form MF-104. This is also true of the "Total Costs To Date".

In preparing Form MF-104A, it will be necessary frequently to distribute certain costs over a number of items. For instance, supervisory and engineering costs may have to be distributed over several phases, such as, drifting, crosscutting, raising, etc., provided that these items were reported active for the month. Such distributions should be made on the basis of time spent on the various phases, on man days of labor charged to such phases, or on some other equitable basis. "Operating Equipment", "Initial Rehabilitation and Repairs", and "New Buildings Improvements, etc.", will be distributed to the several phases of the project by the Washington Office of DMEA at the close of the project if determined necessary. The last two columns headed "Authorized by Contract" will be filled in by the Operator if such information is found in the contract. This information is usually a part of Exhibit "A" of the contract. A space for remarks has been provided for the use of the Operator to call attention to any unusual circumstances causing excessive or disproportionate unit costs.

GPO 872894

Invoice

Marietta, Ohio

To B. H. Putnam, Appre
512 Third Street
Marietta, Ohio

December 31, 1956

In Account With

PUTNAM DRILLING COMPANY

512 Third Street | P. O. Box 647 | Phone FR 4-6761

Statement for drilling Indian Creek Project DMEA Contract No. 4381 for December

Core Hole No. A. B. Dalton #1

Footage Drilled	601'	@ $3.00	$1803.00
Footage Reamed	79'	@ $2.00	158.00
Cementing Hole			15.00
			$1976.00

I hereby certify that to the best of my knowledge and belief the above invoice is correct and just and in accordance with the bid submitted by Putnam Drilling Company.

B. H. Putnam, Operator

By: William T. Hill
William T. Hill
General Superintendent

Invoice

Marietta, Ohio

To B. H. Putnam, Appro
512 Third Street
Marietta, Ohio

December 31, 1956

In Account With

PUTNAM DRILLING COMPANY

512 Third Street | P.O. Box 647 | Phone FR 4-6761

Statement for drilling Indian Creek Project DMEA Contract No. 4381 for December.

Core Hole No. A. B. Delton #2

Footage Drilled	402'	@ $3.00/ft.	$1206.00

I hereby certify that to the best of my knowledge and belief the above invoice is correct and just and in accordance with the bid submitted by Putnam Drilling Company.

B. H. Putnam, Operator

By: William T. Hill
William T. Hill
General Superintendent

A PROGRESS REPORT ON THE
INDIAN CREEK PROJECT, GRAINGER COUNTY,
TENNESSEE FOR DECEMBER, 1956

By: W. T. Hill

RECEIVED
JAN 18 1957
D.M.E.A.

Docket No. 4381
Contract No. Idm-E 1002

During the month of December, two holes were drilled on the Indian Creek Project. D#1 (Dalton farm) was drilled 600' northeast of SC#2. The hole collared in the Mascot formation and was drilled to a depth of 601 feet. The results are summarized below:

Depth	Formation or Member	Key Horizon Markers	Zinc Mineralization	Remarks
0'-17'	Overburden	—	—	—
17'-211½'	Mascot fm.	Upper CM as @ 30'; Double oolite zone @ 170' & 182'. The "CM" @ 211½'.	Trace Zns. @ 101'	Light to medium gray dolomite with some dark gray beds. Some "crackle breccia."
211½'-394'	Kingsport dolomite	Kingsport oolite @ 265'.	Est. 1% Zns. from 241½'-242'; Zns. shines @ 251', 259'.	Light, medium, and dark gray dolomite with some semi-recrystalline. Very little brecciation.
394'-540'	Kingsport limestone	"S" bed from 470'-506', "T" bed from 506'-525', "U" bed from 525'-540'.	7' of 1.24% Zns. 489'-496', trace Zns. @ 499½'.	Alternate beds of limestone, dolomite and recrystalline, with secondary chert. Some "crackle" and rubble breccia.

540'-601'	Longview dolomite	—	—	Dolomite, recrystalline and chert.

Dalton hole #2 (D-2) was drilled 600 feet southwest of D#1. The hole collared in the Kingsport formation and was drilled to a depth of 402 feet. The results are summarized below:

Depth	Formation or Member	Key Horizon Markers	Zinc Mineralization	Remarks
0'-88'	Overburden	—	—	—
88'-187'	Kingsport dolomite	—	—	Light, medium and dark gray dolomite.
187'-335'	Kingsport limestone	—	ns. shines @ 280', 295½', 296'.	Dolomite and recrystalline.
225'-402'	Longview dolomite	—	—	Mostly recrystalline with beds of chert and dolomite.

The mineralization in D#2 appears to be equivalent stratigraphically to that in D#1. Drilling is now underway 300 feet northeast of D#2.

INTERIM REPORT
DMEA-4381, Idm-1002 - Zinc

RECEIVED DEC 21 1956 D.M.E.A.

Operator: Benj. H. Putnam, Chicago, Illinois

Location: Indian Creek area, Grainger County, Tennessee

The drilling on the Putnam Indian Creek project is summarized as follows:

Drilling completed:

Footage in holes completed since last inspection	1,310
Total footage completed to date	3,829
No. of holes completed since last inspection	2
Total no. of holes completed to date	6
No. of holes showing commercial zinc ore	0
No. of holes showing non-commercial zinc mineralization	4
No. of barren holes	2

Drilling in progress:

No. of holes in progress	1
Total footage in holes in progress	0*
Footage drilled since last inspection	0*

* See below.

Data on the two completed holes are summarized below:

Hole No.	Property	Depth	Remarks
SC-2	Scearse	709	Bottomed in Longview fm.; shine hole
D-1	A. B. Dalton	601	Located about 600 ft. NE of Hole SC-2; collared in Mascot fm. and bottomed in Longview fm. Zinc as follows: 1 ft. 3% (est); 489½ to 490½ ½ ft. 3% (est); 491-1/4 to 491-3/4 2 ft. 1% (est); 494 to 496

Hole D-2 on the A. B. Dalton property started drilling on December 17, collaring in the Kingsport formation. It is located about 610 feet northwest of Hole D-1 and will probably be bottomed at about 350 feet.

Inspected: December 17, 1956

Helmuth Wedow, Geologist
U. S. Geological Survey

g

INTERIM REPORT

DMEA-4381, Idm-E1002 - Zinc

RECEIVED DEC 10 1956 D.M.E.A.

Operator: B. H. Putnam, Chicago, Illinois

Location: Indian Creek area, Grainger County, Tennessee

DRILLING COMPLETED

A summary of the diamond drilling in completed holes on the Putnam Indian Creek project follows:

	This report	Last report
Date of inspection:	11/28/56	11/14/56
Total holes completed:	4	3
Footage in holes completed:	2,519	1,798

A summary of the completed hole is given below:

Hole No. and Property	Depth	Remarks
LH-5, Leffew Heirs	721	Completed 11/15/56; collared in upper Mascot formation; base of Mascot at 316; bottomed in Longview (?). Blank hole.

Of the 4 completed holes, 2 were blank and 2 showed non-commercial zinc mineralization.

DRILLING IN PROGRESS

One hole is now in progress and has reached a depth of 641 feet. Pertinent data are summarized below:

Hole No, and Property	Depth	Estimated Depth	Remarks
SC-2, Scearse	641	750	Located 600 feet SE of SC-1. Collared in Mascot; currently in Longview (?). Zinc mineralization as follows: 14½' shine; 492-596½; with 1½' est at 1.0 pct Zn at 500-501½.

Inspected: November 28, 1956

Helmuth Wedow, Jr.
Geologist
U. S. Geological Survey

g

Form MF-104 (Rev.)
(April 1952)

Budget Bureau No. 42-R1036.5

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

PAID ON VOUCHER & SCHEDULE OF PAYMENTS K-

OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of November, 1956 Docket No. DMEA 4381 Contract No. Idm-E 1002
Operator's Name B. H. Putnam Minerals Zinc
Address 512 Third Street Marietta, Ohio
Contract Amount, $ 40,530.00 Government Participation: 50 % Amount, $ 20,265.00

ITEMS OF COSTS	FOR OPERATOR'S USE			FOR GOVERNMENT USE ONLY		
	Monthly Total	Totals Previously Reported	Totals To Date	Approved Monthly Total	Approved Totals Previously Reported	Approved Totals To Date
(1) Independent Short Form Contracts:						
Drilling	$4284.00	$5394.00	$9678.00	12/18/56	O.K.	
Bulldozing						
Crosscutting						
Drifting						
Reaming	366.00	244.00	610.00			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis	6.00	16.50	22.50			
Payroll Taxes						
Liability Insurance						
Incidental Allowance @ 26¢/ft.	371.28	467.48	838.76			
(8) Contingencies (specify):						
TOTALS	$5027.28	$6121.98	$11,149.26	5027.28	6121.98	11,149.26

RECEIVED DEC 14 1956 D.M.E.A.

I certify that the above bill is correct and just and that payment therefor has not been received.

Date Nov. 30, 1956 *Payee B. H. Putnam

Per [signature] Title General Sup.

*When a voucher is signed or receipted in the name of a company or corporation, the name of the person writing the company or corporate name, as well as the capacity in which he signs, must appear. For example: "John Doe Company, per John Smith, Secretary," or "Treasurer," as the case may be.

NOTE.—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.

(Instructions on reverse)

Pursuant to authority vested in me, I certify that this account is correct and proper for payment in the amount of:

$ 2513.64

Signature [signature]
(Authorized Certifying Officer)

Date DEC 11 1956 Vou. No. 81
(See other side)

2513.64

(For Government use only)

CERTIFICATION BY GOVERNMENT REPRESENTATIVE:

I certify that to the best of my knowledge and belief the contractor submitting this voucher is operating a Defense Minerals Exploration Administration project under Contract No. E 1002 in accordance with the terms of the contract.

Signature N. J. Lynch Title MINING ENGINEER U.S. BUREAU OF MINES Date DEC 10 1956

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert A. Lawrence Title EXECUTIVE OFFICER DMEA REGION V Date DEC 11 1956

MONTHLY REPORT OF OPERATOR

The Operator (Contractor) of an exploration project is required to make a monthly report to the Government through the Regional Executive Officer. This report consists of three parts as follows:

(a) *Form MF-104—Operator's Monthly Report and Voucher.*—This form details expenditures and constitutes a voucher for reimbursing the Operator for the Government's share of costs;

(b) *Form MF-104A—Operator's Unit Cost and Progress Report.*—This is a statistical report of expenditures which shows costs for the various types of operation; and

(c) *Narrative.*—A concise narrative description of progress made, results accomplished, and any unusual difficulties encountered must be furnished as an attachment to this Report and Voucher. Wherever possible, the narrative is to be illustrated with maps or sketches showing formations penetrated and location and assays of samples taken as well as advances in workings. In the case of diamond drilling or churn drilling, the location and inclination of holes is to be shown on a map; logs and assays also are to be submitted.

The Monthly Report of Operator should be prepared in an original and four copies all of which must be sent to the Executive Officer of the Region not later than the 15th of the month following.

Preparation of Form MF-104—Operator's Monthly Report and Voucher.—All the applicable spaces in Form MF-104 should be filled in by the Operator, and the Operator or his agent should sign the certification in the lower left corner of the form.

The items of costs are arranged in the order they appear in Article 6 (a) of Form MF-200 (Revised February 1952), however, this form is readily adaptable for use in reporting activities under other contract forms.

Under Item (1) delete words "Short Form" if the contract is a sub-contract under Form MF-200; and delete word "Independent" if the contract reported is on Form MF-200 (A). Also, report work paid for on a unit basis under contract Form MF-200 as though it were performed under an independent contract.

Under Item (2) include labor, supervision and technical services incurred for the exploratory operations. Do not include labor, supervision and technical services used for work performed under items (5) and (6).

Under Item (3) include the costs of material and supplies used in the project other than that used under items (5) and (6).

Under Item (4) appear the three types of operating equipment expenditures, that is, rental, purchase and depreciation. The expenditures made for renting equipment belonging to a third party will be reported under "Rental". The amount paid or duly obligated for payment for the purchase of equipment will be reported under "Purchase". The amount of expenditures due the Operator to reimburse him for depreciation of equipment owned will be reported under "Depreciation".

Item (5) comprises costs of labor, supervision, technical services, materials, etc., which are used in the initial rehabilitation and repair of existing buildings, installations, fixtures, and equipment. These costs, therefore, should not be reported under items (2) and (3).

Item (6) includes the labor, supervision, technical services, materials, etc., used in the installation or construction of new buildings, fixed improvements, etc., necessary for the project. These costs, therefore, should not be reported under items (2) and (3).

Item (7) covers miscellaneous types of expenditure such as payroll taxes, liability insurance, workmen's compensation insurance, repairs to equipment and sampling and analysis. Only that part of payroll taxes, liability insurance and workmen's compensation which are paid by the operator should be reported under item (7). The share paid by the employee as a payroll deduction is to be included under item (2) as labor costs.

Item (8) includes any unforeseen costs not included in the other seven categories.

The original of Form MF-104 when submitted for reimbursable expenses incurred under contract Form MF-200 must be supported by original documentation or by certified copies of purchase orders, payrolls or transcripts of payrolls, unless such documentation has been waived by the Regional Executive Officer. This certification may be stated thus, "Certified True Copy (or Transcript)", followed by appropriate signature. If the Executive Officer of the Region determines that a contract under Form MF-200 should have an "on-site" audit, that is, a Government auditor should make an audit of the Operator's books and records of account, the Operator need not support his monthly voucher with original or certified documents except in cases of equipment purchases whose individual costs exceed $50.00. In these cases the original or a certified copy of the purchase order or invoice should be attached to the Monthly Voucher. N. B.—Only the *original* of Form MF-104 is required to be documented. The four copies of Form MF-104 are not to be thus supported.

Form MF-104 submitted for reimbursement under fixed price contracts on Form MF-200 (A), however, are not required to be supported by documentation of any kind. The Operator will submit his claim under item (1) of Form MF-104 by deleting as stated above the word "Independent" and by showing the number of feet or other units immediately after the appropriate descriptive word, such as, drilling, bulldozing, crosscutting, drifting, etc., and giving the "Monthly Total" amount due. "Totals Previously Reported", and "Totals to Date" columns should also be filled in.

Form MF-104A
(April 1952)

Budget Bureau No. 42-R1151.2

RECEIVED
DEC 14 1956
D.M.E.A.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of November 1956 Docket No. DMEA 4381 Contract No. Idm-E 1002
Operator's Name B. H. Putnam Minerals Zinc
Address 512 Third Street, Marietta, Ohio

OPERATION	UNIT	COSTS THIS MONTH	UNITS THIS MONTH	COSTS TO DATE	UNITS TO DATE	UNIT COSTS TO DATE	AUTHORIZED BY CONTRACT	
							Units	Unit Costs
Drifting								
Crosscutting								
Raising								
Shafts								
Winzes								
Drilling: Core	Foot	$4284.00	1428	$9678.00	3226	$3.00	12,000	$3.00
Churn								
Auger								
Stripping								
Trenching								
Test Pits								
Roads and Trails								
Reaming	Foot	366.00	183	610.00	427	$2.00	600	$2.00
TOTAL DISTRIBUTED COSTS		$4650.00		$10288.00				TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS		$4650.00		$10288.00				$10,288.00

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this report is correct and complete to the best of their knowledge and belief.

Date Nov. 30, 1956 Operator B. H. Putnam

Per [signature] Title General Sup.

NOTE.—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.

REMARKS:

(Instructions on reverse)

(For Government use only)

[signature]
MINING ENGINEER
U. S. BUREAU OF MINES

INSTRUCTIONS

Preparation of Form MF-104A—Operator's Unit Cost and Progress Report.—Applicable places on Form 104A should be filled in by the Operator. The purpose of this form is twofold as follows: (1) to furnish the supervising engineers and other administrators with statistical information necessary to better determine the progress of the project; and (2) to furnish more permanent information on mining costs for future use. The more important phases of operation on which permanent information is desired have been outlined in the form. There are blank lines, however, for those unusual phases which may need to be reported for a particular project. It will be necessary for the Operator to distribute his costs among the applicable phases reported with the exception of three items the costs of which are not to be distributed by the Operator. These three items are: "Operating Equipment Purchased", "Initial Rehabilitation and Repairs", and "New Buildings, Improvements, etc." The reason for not distributing these items on a monthly basis is doubtless clear to the Operator, since such distribution might well overstate the cost for any one month or period short of the entire contract period.

Form MF-104A has been designed to tie in with Form MF-104 for both monthly and cumulative costs. The "Total Costs" on Form MF-104A for each month should equal the monthly "Total Costs" as reported on Form MF-104. This is also true of the "Total Costs To Date".

In preparing Form MF-104A, it will be necessary frequently to distribute certain costs over a number of items. For instance, supervisory and engineering costs may have to be distributed over several phases, such as, drifting, crosscutting, raising, etc., provided that these items were reported active for the month. Such distributions should be made on the basis of time spent on the various phases, on man days of labor charged to such phases, or on some other equitable basis. "Operating Equipment", "Initial Rehabilitation and Repairs", and "New Buildings Improvements, etc.", will be distributed to the several phases of the project by the Washington Office of DMEA at the close of the project if determined necessary. The last two columns headed "Authorized by Contract" will be filled in by the Operator if such information is found in the contract. This information is usually a part of Exhibit "A" of the contract. A space for remarks has been provided for the use of the Operator to call attention to any unusual circumstances causing excessive or disproportionate unit costs.

GPO 872894

Invoice

Marietta, Ohio

To B. H. Putnam, Appro
512 Third Street
Marietta, Ohio

November 30, 1956

In Account With

PUTNAM DRILLING COMPANY

512 Third Street | P.O. Box 647 | Phone FR 4-6761

Statement for drilling Indian Creek Project DMEA Contract No. 4381 for November, 1956.

Core Hole No. LH#5

Footage Drilled	721'	@ $3.00	$2,163.00
Footage Reamed	183'	@ $2.00	366.00
			$2,529.00

I hereby certify that to the best of my knowledge and belief the above invoice is correct and just and in accordance with the bid submitted by Putnam Drilling Company.

B. H. Putnam, Operator

By: William T. Hill
William T. Hill
General Supertindient

Invoice

Marietta, Ohio

RECEIVED DEC 14 1956 DMEA

To B. H. Putnam, Appro
512 Third Street
Marietta, Ohio

November 30, 1956

In Account With

PUTNAM DRILLING COMPANY

512 Third Street | P.O. Box 647 | Phone FR 4-6761

Statement for drilling Indian Creek Project DMEA Contract No. 4381 for November.

Core Hole No. SC#2

Footage Drilled	707'	@ $3.00	$2121.00

I hereby certify that to the best of my knowledge and belief the above invoice is correct and just and in accordance with the bid submitted by Putnam Drilling Company.

B. H. Putnam, Operator

By: William T. Hill
William T. Hill
General Superintendent

RECEIVED
DEC 14 1956
D.M.E.A.

Telephone EMpire 3-3302

Hand Sample Serial 7049-54

ASSAY REPORT

UNION ASSAY OFFICE, Inc.

J. V. SADLER, President
A. C. SELBY, Vice-Pres. & Treas.
LILY M. HOTTINGER, Secretary
Salt Lake City 10, Utah

Mine E. H. Putnam

Nov. 20, 1956

RESULTS PER TON OF 2000 POUNDS

NO.	GOLD Ozs. per Ton	SILVER Ozs. per Ton	LEAD Per Cent Wet	COPPER Per Cent	INSOL. Per Cent	ZINC Per Cent	SULPHUR Per Cent	IRON Per Cent	LIME Per Cent	Per Cent	Per Cent	VALUE GOLD
LH-1-34-35		1'				1.1						
LH-4-118½-119½		1'				1.1						
LH-4-127-128		1'				0.9						
LH-4-139-142		2'				1.5						
LH-4-254-255		1'				1.9						
LH-4-680½-681		½'				1.6						

Remarks

Charges $ 6.00

A PROGRESS REPORT ON THE
INDIAN CREEK PROJECT, GRAINGER COUNTY,
TENNESSEE FOR NOVEMBER, 1956

By: W. T. Hill

RECEIVED DEC 14 1956 D.M.E.A.

Docket No. 4381
Contract No. Idm-E 1002

During the month of November, two holes were drilled on the Indian Creek Project.

LH#5 was drilled 300 feet southwest of LH#4. The hole was collared stratigraphically in the Mascot formation and was drilled to a depth of 721 feet. The results are summarized below:

Depth	Formation or Member	Key Horizon Markers	Zinc Mineralization	Remarks
0-14	Overburden	—	—	—
14-315	Mascot dolomite	Upper CM type sand @ 132, 144, 153.	Trace Zns @ 57'	Unbrecciated dolomite. Some faulting.
315-570	Kingsport dolomite	Base Kingsport dolomite @ 570'	—	Heavy brecciation from 500-570. Breccia mineralized with pyrite.
570-721	Kingsport limestone	Top Kingsport @ 570	—	Recrystalline interbedded with dolomite breccia

Due to the interesting occurrences of mineralization in SC#1 (Stearling Scearce property) and the large soil anomaly, a hole was drilled approximately 400' northeast of SC#1. The hole collared in the Mascot formation and was drilled to a depth of 707 feet. The results are summarized below:

Depth	Formation or Member	Key Stratigraphic Horizons	Zinc Mineralization	Remarks
0-42	Overburden	—	—	—
42-250	Mascot dolomite	Upper CM 55 @ 69, 83, 90	—	Unbrecciated dolomite. Some secondary chert seams.
250-476	Kingsport dolomite	Base of the Kingsport dolomite @ 476	Trace Zns. @ 357'	Fes shines from 266-476. Heavy breccia from 452-476.
476-675	Kingsport limestone	—	492-492½ ½% Zn. Traces @ 493, 494, 498, 499, 500-501½ 1% Zn. 502-503½ ½%. Traces 505, 506½.	Recrystalline and dolomite. Very siliceous.
675-709	Longview dolomite	—	—	Dolomite, interbedded with recrystalline & semi-recrystalline. Some oolite chert.

The mineralization encountered in Sc#2 is not stratigraphically the same as that which occurs in SC#1.

Drilling is now underway on the Dalton farm. The drilling site is located 600 feet northeast of SC#2.

C

RECEIVED

INTERIM REPORT

DMEA-4381, Idm-E1002 -Zinc

Operator: B. H. Putnam, Chicago, Illinois

Location: Indian Creek Area, Grainger County, Tennessee

Three holes totaling 1,798 feet have been completed to date. One hole was finished since the last interim report. A summary of the hole is given below:

Property & Hole No.	Depth	Remarks
Leffew Heirs - LH-4	710	118-119 ft.-1 ft. 2% Zn(esti)
		127-128 ft.-1 ft. 1% Zn (")
		132-134 ft- 2 ft. 1% Zn (")
		254-255 ft- 1 ft. 1% Zn "
		680-681 ft- 1 ft. 1% Zn "

Of the 3 completed holes 2 revealed non-commercial zinc mineralization and one was a blank hole.

Inspected: November 14, 1956

V. J. Lynch, Mining Engineer
U. S. Bureau of Mines

Helmuth Wedow, Geologist
U. S. Geological Survey

z

NOV 1 1956
D.M.E.A.

INTERIM REPORT

DMEA-4381, Idm-E1002-Zinc

Operator: B. H. Putnam, Chicago, Illinois

Location: Indian Creek, Grainger County, Tennessee

A total of 1088 feet of diamond drilling has been completed in two holes at this project. Hole No. LH-3 was completed since the last interim report. A summary of this hole follows:

Hole No. & Prop.	Depth	Remarks
LH-3, Leffew Heirs	725	Mineralized from 155' to 239' 204.5 to 206.5ft, 2 ft @ 0.72% Zn 208.5 to 210.5 ft, 2 ft @ 0.72% Zn 221.5 to 222.5 ft, 1 ft @ 1.8% Zn 222.5 to 224.5 ft, 2 ft @ 7.38% Zn 225.0 to 226.0 ft, 1 ft @ 1.0 % Zn 227.5 to 228.5 ft, 1 ft @ 1.0 % Zn

Hole No.LH-4, now being drilled has reached a depth of 396 feet. A summary of the hole follows:

Hole No. & Prop.	Depth	Esti. depth	Remarks
LH-No.4 Leffew Heirs	396	700	Kingsport fm. Started @ 343 feet

In the interim report of October 9, the summary is for hole No. LH-3 and not for No. LH-2 as shown.

Inspected: October 25, 1956

V. J. Lynch, Mining Engineer
U. S. Bureau of Mines

z

4381

ACTION ON INTER
OR FINAL FIELD TEAM REPORT
Date 10-12

Referred to:

1. ~~Mr. Mittendorf~~
2. ~~Mr. Johnson~~
3. ~~Mr. Chambers~~
4. ~~Docket Control Mails and Files~~
5. Division
6. Docket Control Mails and Files

Note comments in report regarding:

1.

2.

3.

4.

and take appropriate action.

- - - - - - - -

Action taken by Division:

Robert E. Adams

INTERIM REPORT

DMEA-4381, Idm-E1002 - Zinc

Operator: B. H. Putnam, Chicago, Illinois

Location: Indian Creek Area, Grainter County, Tennessee

The first hole on this project, L. H. No2. on the Leffew Heirs Property, bottomed at a depth of 363 feet and did not show any zinc mineralization.

One hole is currently in progress. A summary of this hole is as follows:

Hole No. & Property	Depth	Esti.depth	Remarks
L.H. No.2, ?, Leffew Heirs	392	700	In Kingsport fm Chert Matrix @ 315 ft Shines 155-239 1/2 ft.

Inspected: October 9, 1956

V. J. Lynch & Wm. A. Beck, Mining Engrs.
U. S. Bureau of Mines

z

Form MF-104 (Rev.)
(April 1952)

Budget Bureau No. 42-R1036.5

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

PAID ON VOUCHER & SCHEDULE OF PAYMENTS K- 29

OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of September & Oct., 1956 Docket No. DMEA 4381 Contract No. Idm-E 1002
Operator's Name B. H. Putnam Minerals Zinc
Address 512 Third St. Marietta, Ohio
Contract Amount, $40,530.00 Government Participation: 50 % Amount, $20,265.00

ITEMS OF COSTS	FOR OPERATOR'S USE			FOR GOVERNMENT USE ONLY		
	Monthly Total	Totals Previously Reported	Totals To Date	Approved Monthly Total	Approved Totals Previously Reported	Approved Totals To Date
(1) Independent Short Form Contracts:						
Drilling	$5394.00	0	$5394.00	6/12/56. WPK		
Bulldozing						
Crosscutting						
Drifting						
Reaming	244.00	0	244.00			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis	16.50	0	16.50			
Payroll Taxes						
Liability Insurance						
Incidental Allowance @ 26¢/ft.	467.48	-	467.48			
(8) Contingencies (specify):						
TOTALS	$6121.98	0	$6121.98			

I certify that the above bill is correct and just and that payment therefor has not been received.

Date Nov. 9, 56 *Payee B. H. Putnam

Per [signature] Title Gen. Supt.

*When a voucher is signed or receipted in the name of a company or corporation, the name of the person writing the company or corporate name, as well as the capacity in which he signs, must appear. For example: "John Doe Company, per John Smith, Secretary," or "Treasurer," as the case may be.

NOTE.—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.

(Instructions on reverse)

Pursuant to authority vested in me, I certify that this account is correct and proper for payment in the amount of:

$ 3060.99

Signature [signature]
(Authorized Certifying Officer)

Date NOV 21 1956 Vou. No. 79
(See other side)

(For Government use only)

CERTIFICATION BY GOVERNMENT REPRESENTATIVE:

I certify that to the best of my knowledge and belief the contractor submitting this voucher is operating a Defense Minerals Exploration Administration project under Contract No. E1002 in accordance with the terms of the contract.

Signature Seemuth Lerson Title GEOLOGIST, U. S. G. S. Date NOV 15 1956

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert A. Lawrence Title EXECUTIVE OFFICER DMEA REGION V Date NOV 15 1956

MONTHLY REPORT OF OPERATOR

The Operator (Contractor) of an exploration project is required to make a monthly report to the Government through the Regional Executive Officer. This report consists of three parts as follows:

(a) *Form MF-104—Operator's Monthly Report and Voucher.*—This form details expenditures and constitutes a voucher for reimbursing the Operator for the Government's share of costs;

(b) *Form MF-104A—Operator's Unit Cost and Progress Report.*—This is a statistical report of expenditures which shows costs for the various types of operation; and

(c) *Narrative.*—A concise narrative description of progress made, results accomplished, and any unusual difficulties encountered must be furnished as an attachment to this Report and Voucher. Wherever possible, the narrative is to be illustrated with maps or sketches showing formations penetrated and location and assays of samples taken as well as advances in workings. In the case of diamond drilling or churn drilling, the location and inclination of holes is to be shown on a map; logs and assays also are to be submitted.

The Monthly Report of Operator should be prepared in an original and four copies all of which must be sent to the Executive Officer of the Region not later than the 15th of the month following.

Preparation of Form MF-104—Operator's Monthly Report and Voucher.—All the applicable spaces in Form MF-104 should be filled in by the Operator, and the Operator or his agent should sign the certification in the lower left corner of the form.

The items of costs are arranged in the order they appear in Article 6 (a) of Form MF-200 (Revised February 1952), however, this form is readily adaptable for use in reporting activities under other contract forms.

Under Item (1) delete words "Short Form" if the contract is a sub-contract under Form MF-200; and delete word "Independent" if the contract reported is on Form MF-200 (A). Also, report work paid for on a unit basis under contract Form MF-200 as though it were performed under an independent contract.

Under Item (2) include labor, supervision and technical services incurred for the exploratory operations. Do not include labor, supervision and technical services used for work performed under items (5) and (6).

Under Item (3) include the costs of material and supplies used in the project other than that used under items (5) and (6).

Under Item (4) appear the three types of operating equipment expenditures, that is, rental, purchase and depreciation. The expenditures made for renting equipment belonging to a third party will be reported under "Rental". The amount paid or duly obligated for payment for the purchase of equipment will be reported under "Purchase". The amount of expenditures due the Operator to reimburse him for depreciation of equipment owned will be reported under "Depreciation".

Item (5) comprises costs of labor, supervision, technical services, materials, etc., which are used in the initial rehabilitation and repair of existing buildings, installations, fixtures, and equipment. These costs, therefore, should not be reported under items (2) and (3).

Item (6) includes the labor, supervision, technical services, materials, etc., used in the installation or construction of new buildings, fixed improvements, etc., necessary for the project. These costs, therefore, should not be reported under items (2) and (3).

Item (7) covers miscellaneous types of expenditure such as payroll taxes, liability insurance, workmen's compensation insurance, repairs to equipment and sampling and analysis. Only that part of payroll taxes, liability insurance and workmen's compensation which are paid by the operator should be reported under item (7). The share paid by the employee as a payroll deduction is to be included under item (2) as labor costs.

Item (8) includes any unforeseen costs not included in the other seven categories.

The original of Form MF-104 when submitted for reimbursable expenses incurred under contract Form MF-200 must be supported by original documentation or by certified copies of purchase orders, payrolls or transcripts of payrolls, unless such documentation has been waived by the Regional Executive Officer. This certification may be stated thus, "Certified True Copy (or Transcript)", followed by appropriate signature. If the Executive Officer of the Region determines that a contract under Form MF-200 should have an "on-site" audit, that is, a Government auditor should make an audit of the Operator's books and records of account, the Operator need not support his monthly voucher with original or certified documents except in cases of equipment purchases whose individual costs exceed $50.00. In these cases the original or a certified copy of the purchase order or invoice should be attached to the Monthly Voucher. N. B.—Only the *original* of Form MF-104 is required to be documented. The four copies of Form MF-104 are not to be thus supported.

Form MF-104 submitted for reimbursement under fixed price contracts on Form MF-200 (A), however, are not required to be supported by documentation of any kind. The Operator will submit his claim under item (1) of Form MF-104 by deleting as stated above the word "Independent" and by showing the number of feet or other units immediately after the appropriate descriptive word, such as, drilling, bulldozing, crosscutting, drifting, etc., and giving the "Monthly Total" amount due. "Totals Previously Reported", and "Totals to Date" columns should also be filled in.

Form MF-104A
(April 1952)

Budget Bureau No. 42-R1151.2

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

RECEIVED JUL 23 1956 D.M.E.A.

OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of Sept. & Oct. 1956 Docket No. DMEA 4381 Contract No. DMEA 1002
Operator's Name B. H. Putnam Minerals Inc
Address 512 Third Street Marietta, Ohio

OPERATION	UNIT	COSTS THIS MONTH	UNITS THIS MONTH	COSTS TO DATE	UNITS TO DATE	UNIT COSTS TO DATE	AUTHORIZED BY CONTRACT	
							Units	Unit Costs
Drifting								
Crosscutting								
Raising								
Shafts								
Winzes								
Drilling: Core	Foot	$5394.00	1798 ✓	$5394.00	1798	$3.00	12,000'	$3.00
Churn								
Auger								
Stripping								
Trenching								
Test Pits								
Roads and Trails								
Reaming	Foot	244.00	122 ✓	244.00	122	$2.00	600'	$2.00
TOTAL DISTRIBUTED COSTS		$5638.00		$5638.00				TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc								
TOTAL COSTS		$5638.00		$5638.00				$5638.00

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this report is correct and complete to the best of their knowledge and belief.

Date Oct. 30, 1956 Operator B. H. Putnam

Per [signature] Title General Sup.

→ NOTE.—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.

REMARKS:

(Instructions on reverse)

(For Government use only)

[signature]

GEOLOGIST, U. S. G. S.

INSTRUCTIONS

Preparation of Form MF-104A—Operator's Unit Cost and Progress Report.—Applicable places on Form 104A should be filled in by the Operator. The purpose of this form is twofold as follows: (1) to furnish the supervising engineers and other administrators with statistical information necessary to better determine the progress of the project; and (2) to furnish more permanent information on mining costs for future use. The more important phases of operation on which permanent information is desired have been outlined in the form. There are blank lines, however, for those unusual phases which may need to be reported for a particular project. It will be necessary for the Operator to distribute his costs among the applicable phases reported with the exception of three items the costs of which are not to be distributed by the Operator. These three items are: "Operating Equipment Purchased", "Initial Rehabilitation and Repairs", and "New Buildings, Improvements, etc." The reason for not distributing these items on a monthly basis is doubtless clear to the Operator, since such distribution might well overstate the cost for any one month or period short of the entire contract period.

Form MF-104A has been designed to tie in with Form MF-104 for both monthly and cumulative costs. The "Total Costs" on Form MF-104A for each month should equal the monthly "Total Costs" as reported on Form MF-104. This is also true of the "Total Costs To Date".

In preparing Form MF-104A, it will be necessary frequently to distribute certain costs over a number of items. For instance, supervisory and engineering costs may have to be distributed over several phases, such as, drifting, crosscutting, raising, etc., provided that these items were reported active for the month. Such distributions should be made on the basis of time spent on the various phases, on man days of labor charged to such phases, or on some other equitable basis. "Operating Equipment", "Initial Rehabilitation and Repairs", and "New Buildings Improvements, etc.", will be distributed to the several phases of the project by the Washington Office of DMEA at the close of the project if determined necessary. The last two columns headed "Authorized by Contract" will be filled in by the Operator if such information is found in the contract. This information is usually a part of Exhibit "A" of the contract. A space for remarks has been provided for the use of the Operator to call attention to any unusual circumstances causing excessive or disproportionate unit costs.

GPO 872894

Invoice

Marietta, Ohio

To B. H. Putnam, Appro
512 Third Street
Marietta, Ohio

October 30, 1956

In Account With

PUTNAM DRILLING COMPANY

512 Third Street | P.O. Box 647 | Phone FR 4-6761

Statement for drilling Indian Creek Project DMEA Contract No. 4381 for September and October, 1956.

Core Hole No. LH#2

Footage Drilled	363'	@ $3.00	$1,089.00

I herby certify that to the best of my knowledge and belief the above invoice is correct and just and in accordance with the bid submitted by Putnam Drilling Company.

B. H. Putnam, Operator

By: William T. Hill
William T. Hill
General Supertindent

Invoice

Marietta, Ohio

RECEIVED NOV 23 1956 D.M.E.A.

To B. H. Putnam, Appro
512 Third Street
Marietta, Ohio

October 30, 1956

In Account With

PUTNAM DRILLING COMPANY

512 Third Street | P.O. Box 647 | Phone FR 4-6761

Statement for drilling Indian Creek Project DMEA Contract No. 4381 for October.

Core Hole No. LH#3

Footage Drilled	725'	@ $3.00	$ 2,175.00
Footage Reamed	122'	@ $2.00	244.00
			$ 2,419.00

I hereby certify that to the best of my knowledge and belief the above invoice is correct and just and in accordance with the bid submitted by Putnam Drilling Company.

B. H. Putnam, Operator

By: William T. Hill
William T. Hill
General Supertindent

Invoice

Marietta, Ohio

To B. H. Putnam, Appro
512 Third Street
Marietta, Ohio

October 30, 1956

In Account With

PUTNAM DRILLING COMPANY

512 Third Street | P.O. Box 647 | Phone FR 4-6761

Statement for drilling Indian Creek Project DMEA Contract No. 4381 for October.

Core Hole No. LH#4

Footage Cored	710'	@ $3.00/ft.	$2,130.00

I hereby certify that to the best of my knowledge and belief the above invoice is correct and just and in accordance with the bid submitted by Putnam Drilling Company.

B. H. Putnam, Operator

By: William T. Hill
General Supertindent

RECEIVED

A PROGRESS REPORT ON THE
INDIAN CREEK PROJECT, GRAINGER COUNTY,
TENNESSEE FOR SEPTEMBER AND OCTOBER, 1956

By: W. T. Hill

Docket No. DMEA 4381
Contract No. Idm-E 1002

Drilling began on the Indain Creek Project on September 17, 1956 on the Leffew Heirs tract. Detailed logs and a map showing the hole locations are submitted with this report.

The first hole drilled was LH#2, which is located approximately 300' north of LH#1. The hole was collared stratigraphically near the top of the Kingsport dolomite and was drilled to a depth of 363'. The results are summarized below:

Depth	Formation or Member	Key Horizon Markers	Remarks
0'-80'	Overburden	—	—
80'-248'	Kingsport dolomite	A type CM sand @ 13'. Base of the Kingsport dolomite @ 248'.	Some scattered brecciation filled with gangue dolomite and occasional pyrite.
248'-355½'	Kingsport limestone	Probable Kingsport limestone base @ 355½'.	Mostly recrystalline and dolomite with a bed of limestone @ 346½'-354'. Dolomite heavily brecciated and sealed with white gangue dolomite or chert.
355½'-363'	Longview dolomite	Top of Longview dolomite @ 355½'?	Medium-gray siliceous dolomite.

The second drilling site (LH#3) is located approximately 300' south-south-west of LH#1. The hole was collared in the Mascot dolomite and was drilled to a depth of 725'. The results are summarized below:

Depth	Formation or Member	Key Stratigraphic Horizons	Zinc Mineralization	Remarks
0'-16'	Overburden	---	---	---
16'-280'	Mascot dolomite	Upper CM sands @ 96', 97', 98', 107'. Lower CM sands @ 242', 279'. The "CM" sand @ 279'.	Sporatic zinc mineralization from 155'-299'; 11' of .79% Zn. from 202'-213½'; 8' @ 2.76% Zn. from 218'-226'.	Numerous oxidized shears from 100'-155'. Breccia in the mineralized zone is mostly the "crackle" type with occasional zones of "rubble" breccia.
280'-512'	Kingsport dolomite	Top of Kingsport dolomite @ 280'. CM type sand @ 314½' Kingsport oolite zone @ 267' & 279'.	---	Pyrite mineralization from 305'-390'; steep angled faults from 410'-565'.
512'-725'	Kingsport limestone	Top Kingsport limestone @ 512'.	---	Recrystalline and dolomite are occasionally brecciated. Mainly dolomite from 512' to 572'. A mixture of dolomite & recrystalline from 572-645'. Mostly recrystalline from 645'-725'

LH#4 was located 300' southwest of LH#3 in order to investigate the extent of the ore in LH#3. The hole was collared in the Mascot dolomite and was drilled to a depth of 710'. The results are summarized below:

Depth	Formation or Member	Key Stratigraphic Horizons	Zinc Mineralization	Remarks
0'-4	Overburden	—	—	—
4'-310'	Mascot dolomite	Upper CM type sands @ 125½', 145'. Lower CM type sands @ 256', 298', 311'. The "CM" sand @ 311'.	Scattered Zns. shines from 113'-163'. Shines from 254'-255'.	Brecciation is randomly distributed with both "crackle", and "rubble" types present.
310'-543'	Kingsport dolomite	Kingsport "oolite" zone @ 398', 406'.	—	Brecciation strong from 395'-543'. Breccia heavily mineralized with pyrite.
543'-710'	Kingsport limestone	—	Zns. shines from 680½'-681'.	543'-664' a mixture of dolomite and recrystalline from 542-664'. Mostly recrystalline from 665'-710'.

The mineralization encountered in LH#4 from 113'-163' does not appear to be stratigraphically the same as that which occurs in LH#3 from 155'-239'. The mineralized zone in LH#4 from 254'-255' appears to be an extension of the ore encountered in LH#3 from 218'-230'.

Drilling is now underway 300' southwest of LH#4 as indicated on the accompanying map. The present program is to continue drilling at the proposed drill sites until more can be learned of the nature and the extent of the mineralization.

THE BROWN LABORATORY

2263 Broadway
GRAND JUNCTION, COLORADO

ANALYTICAL DEPARTMENT

PHONE 1543-W

CERTIFICATE OF ANALYSIS

TO

B. H. Putnam - Operator
P. O. Box 550
Maryville, Tenn.

Date 10-24-56
Order No. 8029-S

Material: Ore Samples - 7
Received: 10-23-56
For: Analysis

Lab. No.	Your No.	Description		% Zn	%U_3O_8	%V_2O_5	%$CaCO_3$
8029-1	LH # 3	202-204	2'	1.00			
8029-2	"	211-213	2'	1.95			
8029-3	"	218-221.5	3½'	0.82			
8029-4	"	225.25-226	3/4'	3.48 ✓			
8029-5	"	227.5-228.5	1'	1.48			
8029-6	"	229-230	1'	1.20			
8029-7	"	236-238	2'	0.68			

Analyst.

P. O. Box 566

Phone 3-6449

THE NICHOLS LABORATORY

ANALYTICAL AND INDUSTRIAL CHEMISTS

SINCE 1900

KNOXVILLE (1) TENNESSEE

October 17, 1956

Received: 10-11-56
Sample: Ore
From: Putnam Mining Company

Marks			Zinc
LH #3	204 1/2 - 206 1/2	2'	.72
LH #3	208 1/2 - 210 1/2	2'	.72
LH #3	221 1/2 - 222 1/2	1'	1.84
LH #3	222 1/2 - 224 1/2	2'	7.38

THE NICHOLS LABORATORY

W. M. Nichols

W. M. NICHOLS

4381

ACTION ON INITIAL
OR FINAL FIELD TEAM REPORT
Date 10-3

Referred to:

1. ~~Mr. Mittendorf~~
2. ~~Mr. Johnson~~
3. ~~Mr. Chambers~~
4. ~~Docket Control Mails and Files~~
5. Division
6. Docket Control Mails and Files

Note comments in report regarding:

1.

2.

3.

4.

and take appropriate action.

- - - - - - - -

Action taken by Division:

Robert E. Adams

RECEIVED
OCT - 3 1956

INTERIM REPORT

DMEA-4381, Idm-21002 - Zinc

Operator: B. H. Putnam, Chicago, Illinois

Location: Indian Creek Area, Grainger County, Tennessee

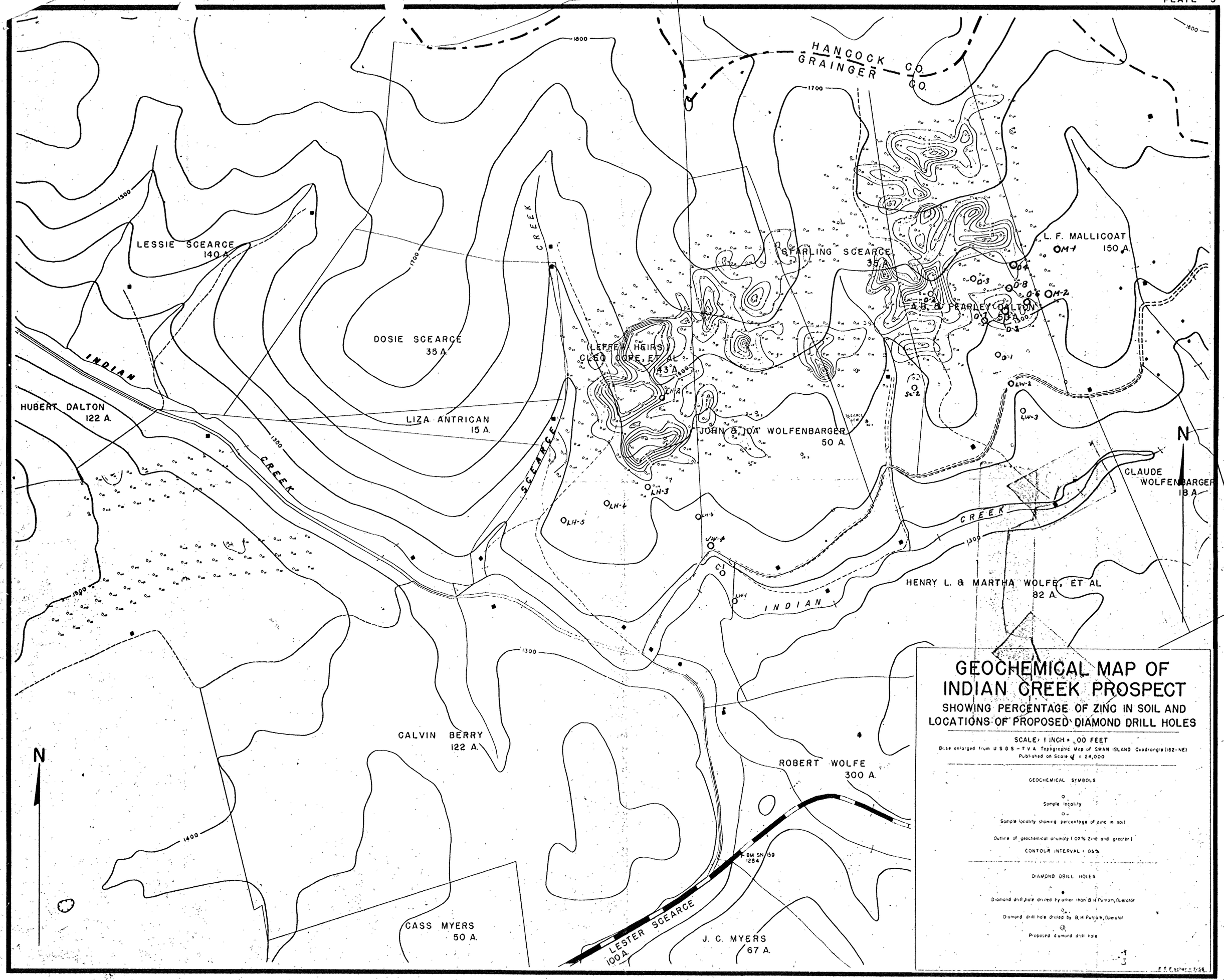
Drilling started on this project September 21, 1956. Presently one drill is in operation and practically 100 percent core recovery is being obtained. A summary of the first hole is as follows:

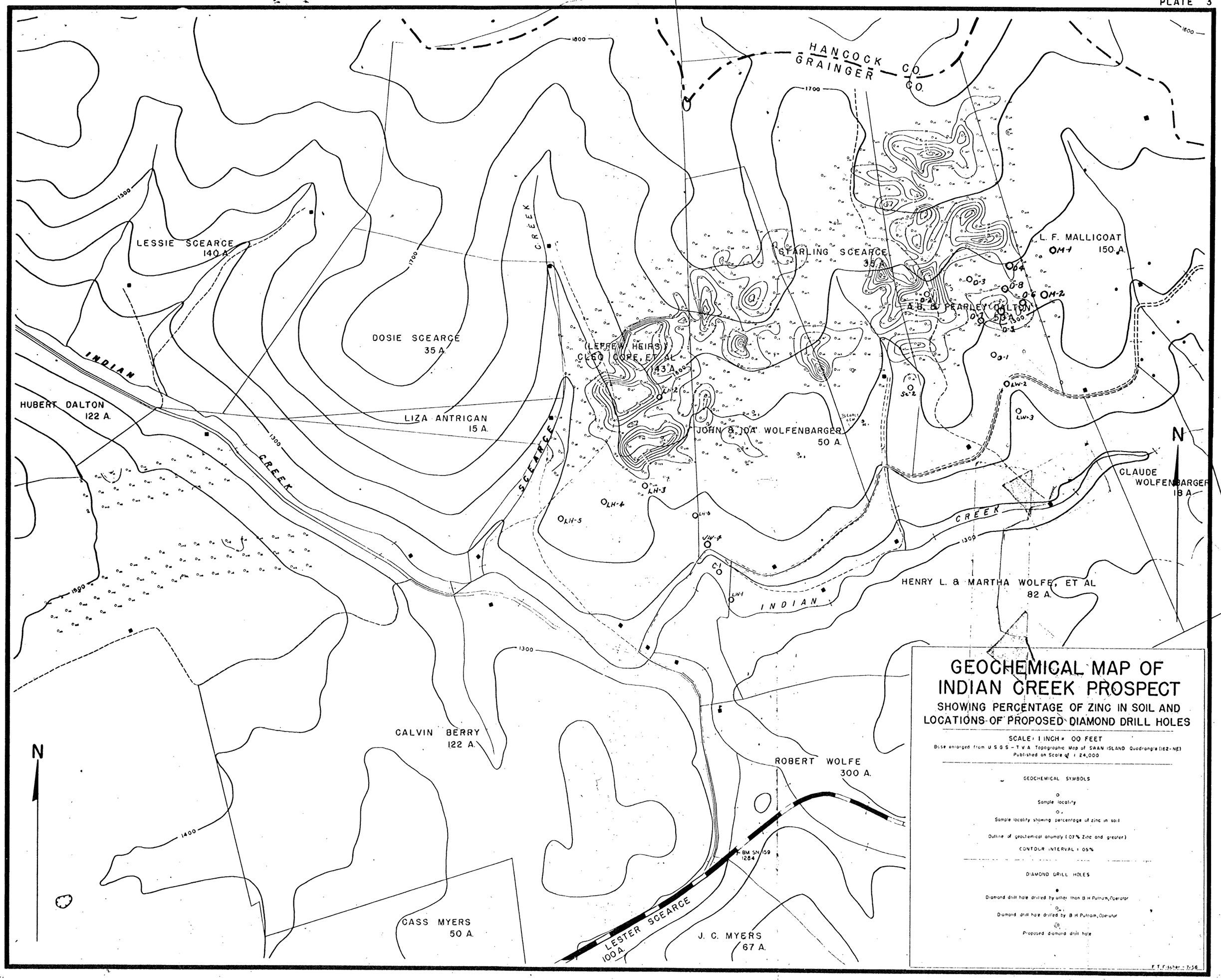
Hole No. & Property.	Depth	Esti. Depth	Remarks
L.H.-2 Leffew Heirs (Cleo Cope, et al)	253	500	In Mascot fm

Inspected: September 27, 1956

Wm. A. Beck, Mining Engineer
U. S. Bureau of Mines

z


GEOCHEMICAL MAP OF
INDIAN CREEK PROSPECT
SHOWING PERCENTAGE OF ZINC IN SOIL AND
LOCATIONS OF PROPOSED DIAMOND DRILL HOLES
SCALE: 1 INCH = 200 FEET
Base enlarged from U S G S – T V A Topographic Map of SWAN ISLAND Quadrangle (162-NE)
Published on Scale of 1:24,000
GEOCHEMICAL SYMBOLS
Sample locality
Sample locality showing percentage of zinc in soil
Outline of geochemical anomaly (.07% Zinc and greater)
CONTOUR INTERVAL = .05%
DIAMOND DRILL HOLES
Diamond drill hole drilled by other than B. H. Putnam, Operator
Diamond drill hole drilled by B. H. Putnam, Operator
Proposed diamond drill hole
F. T. F. scher - 7/56
HANCOCK CO.
GRAINGER CO.
LESSIE SCEARCE 140 A.
DOSIE SCEARCE 35 A.
HUBERT DALTON 122 A.
LIZA ANTRICAN 15 A.
INDIAN CREEK
SCEARCE CREEK
(LEFFEW HEIRS) CLEO COPE, ET AL 43 A.
STARLING SCEARCE 35 A.
A. B. & PEARLEY DALTON 50 A.
L. F. MALLICOAT 150 A.
JOHN & JOA WOLFENBARGER 50 A.
CLAUDE WOLFENBARGER 18 A.
HENRY L. & MARTHA WOLFE, ET AL 82 A.
CALVIN BERRY 122 A.
ROBERT WOLFE 300 A.
CASS MYERS 50 A.
LESTER SCEARCE 100 A.
J. C. MYERS 67 A.
BM SN 159 1284
N
1800
1700
1600
1500
1300
1400


GEOCHEMICAL MAP OF
INDIAN CREEK PROSPECT
SHOWING PERCENTAGE OF ZINC IN SOIL AND
LOCATIONS OF PROPOSED DIAMOND DRILL HOLES
SCALE: 1 INCH = 00 FEET
Base enlarged from U S G S – T V A Topographic Map of SWAN ISLAND Quadrangle (162-NE)
Published on Scale of 1 24,000
GEOCHEMICAL SYMBOLS
Sample locality
Sample locality showing percentage of zinc in soil
Outline of geochemical anomaly (.07% Zinc and greater)
CONTOUR INTERVAL = 05%
DIAMOND DRILL HOLES
Diamond drill hole drilled by other than B H Putnam, Operator
Diamond drill hole drilled by B H Putnam, Operator
Proposed diamond drill hole
F T Fischer - 7-56
HANCOCK CO.
GRAINGER CO.
LESSIE SCEARCE 140 A.
DOSIE SCEARCE 35 A.
HUBERT DALTON 122 A.
LIZA ANTRICAN 15 A.
(LEPPEW HEIRS) CLEO COPE, ET AL 43 A.
JOHN & JOA WOLFENBARGER 50 A.
STARLING SCEARCE 35 A.
A.B. & PEARLEY DALTON 50 A.
L. F. MALLICOAT 150 A.
CLAUDE WOLFENBARGER 18 A.
HENRY L. & MARTHA WOLFE, ET AL 82 A.
CALVIN BERRY 122 A.
ROBERT WOLFE 300 A.
CASS MYERS 50 A.
J. C. MYERS 67 A.
LESTER SCEARCE 100 A.
BM SN 159 1284
INDIAN CREEK
SCEARCE CREEK
N
1600
1700
1800
1500
1300
1400

STATE Tennessee
COUNTY Grainger
BLOCK Indian Creek
SEC.
T. R.
ALTITUDE 1277
PRODUCTION

COMPANY National Lead Co.
FARM Lou Coffey HOLE NO. 1
SURVEY
TOTAL DEPTH 863
COMMENCED 6-18-57
COMPLETED 7-1-57
REMARKS Drilled by Joy Drlg. Co.
REAMING
CEMENT w/2 sacks

CASING RECORD

BX 2'
AX 20'

logged by J.W.S.

FORM 186 - In stock and for sale by Ross-Martin Co., Tulsa

Dip

35° 35° 35° 39° 36° 38° 38° 38° 36° 36° 37° 30° 38° 36° 35° 33° 32° 37° 34° 36° 37° 37° 35° 35° 34° 34° 37° 32° 36° 34° 33° 33° 30° 36° 32° 36° 36° 37° 37° 37° 36° 38° 37° 37° 37° 36° 35° 38° 37° 39° 39° 50° 54° 40° 35° 30° 31° 35° 35° 37° 35° 35° 40° 35° 32° 36° 35° 34° 35° 35° 35° 36° 40° 45° 38° 37° 35° 36° 37° 37° 40° 27° 38° 36° 36° 38° 34° 39° 32° 33° 30° 30° 31° 34° 35° 36° 35° 35° 37° 36° 38° 35° 35° 31° 33° 33° 34° 34° 33° 30° 32° 32° 30° 31°

31° Mascot Kingsport

30° 35° 34° 33° 35° 35° 31° 28° 32° 39° 30° 32° 31° 28° 36° 37° 37° 36° 39° 35°

Top "K"

36° 36° 41° 41° 39° 44° 47° 30° 38° 35° 36° 25° 39° 39°

Kingsport Longview

23°

Descriptions (in order down the log):

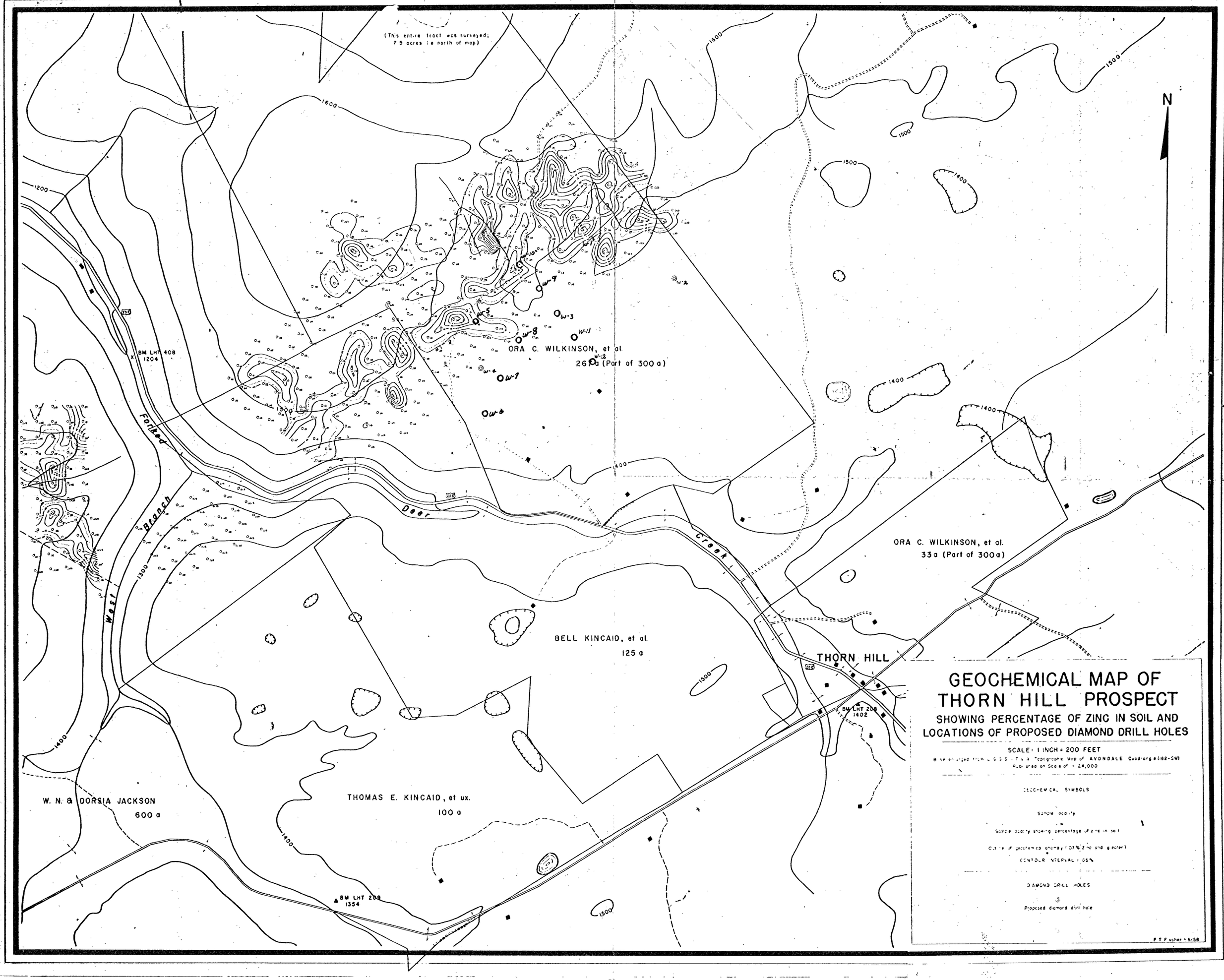
med. gr.
lt. med. gr.
lt. gr.
lt. med. gr.
med. gr.
lt. med. gr.
med. gr. semi xal.
med. gr. sugary
lt. med. gr.
lt. gr.
lt. med. gr.
med. dk. gr.
med. gr.
lt. med. gr.
med. gr.
lt. gr.
med. gr.
lt. med. gr.
med. gr.
lt. med. gr.
lt. gr. sugary
lt. med. gr.
med. gr.
dk. xal.
med. dk. gr.
dk. gr.
med. dk. gr.
dk. gr.
lt. med. gr.
lt. gr.
lt. med. gr.
med. gr.
lt. med. gr.
med. gr.
lt. med. gr.
lt. gr.
lt. med. gr.
lt. gr.
lt. med. gr.
med. gr.
lt. med. gr.
dk. gr.
lt. med. gr.
med. gr.
lt. med. gr.
lt. gr.
lt. med. gr.
med. dk. gr.
dk. gr.
med. gr.
dk. gr.
lt. gr.
med. dk. gr.
med. gr.
lt. med. gr.
dk. gr.
lt. gr.
med. gr.
lt. med. gr.
lt. gr.
med. gr.
lt. gr.
lt. semi xal.
med. gr.
lt. gr.
med. gr.
med. xal.
med. gr. sugary
lt. med. gr.
med. gr.
lt. gr. sugary
lt. med. gr.
dk. gr.
med. gr.
lt. gr.
med. gr.
lt. med. gr.
lt. xal.
lt. med. gr.
lt. semi xal.
med. xal.
med. gr. sugary
lt. med. gr.
med. gr.
lt. med. gr.
med. gr.
lt. med. gr.
lt. xal. semi xal.
med. gr.
lt. med. gr.
lt. med. gr.
lt. gr.
med. xal.
med. gr.
lt. med. gr.
lt. xal.
br. xal.
med. dk. gr.
dk. gr.
lt. med. gr.
med. dk. gr.
lt. med. gr.
dk. gr.
lt. med. gr.
med. gr.
lt. med. gr.
lt. semi xal.
lt. med. gr.
med. gr.
med. dk. gr.
med. gr.
lt. semi xal.
med. gr.
lt. med. gr.
med. dk. gr.
lt. med. gr.
med. gr.
lt. med. gr.
xal.
lt. gr.
lt. med. gr.
med. gr.
lt. med. gr.
lt. gr.
lt. xal. semi
lt. med. gr.
med. gr.
med. dk. gr.
lt. gr.
med. gr.
lt. gr.
med. gr.
lt. med. gr.
med. dk. gr.
med. gr.
lt. gr.
lt. med. gr.
dk. gr.
lt. med. gr.
lt. gr.
lt. med. gr.
lt. gr.
lt. med. gr.
med. gr.
lt. med. gr.
med. gr.
med. dk. gr.
lt. gr.
lt. med. gr.
med. gr.
med. dk. gr.
med. gr.
lt. med. gr.
lt. gr.
lt. med. gr.
dk. gr.
lt. med. gr.
lt. gr.
lt. med. gr.
lt. gr.
lt. med. gr.
med. gr.
lt. med. gr.
lt. med. gr.
med. gr.
lt. med. gr.
lt. gr.
lt. med. gr.
dk. gr.
lt. gr.
lt. med. gr.
lt. gr.
lt. med. gr.
lt. semi xal.
med. gr.
lt. med. gr.
lt. gr.
lt. gr.
lt. med. gr.
lt. gr.
lt. med. gr.
med. semi xal.
lt. gr.
lt. med. gr.
lt. gr.
lt. med. gr.
lt. med. gr.
lt. gr.
lt. med. gr.
med. gr.
lt. med. gr.
med. dk. gr. sugary
med. semi xal.
lt. med. gr.
gr. xal.
lt. med. gr.
gr. xal.
br. xal.
lt. med. gr.
lt. xal.
br. xal.
lt. fine xal.
lt. med. gr.
br. xal.
med. semi xal.
lt. xal.
med. gr. sugary
lt. med. gr.
xal.
med. dk. gr.
dry brecc.
med. gr. sugary
lt. gr.
br. xal.
gr. fine xal.
med. gr. sugary
lt. xal.
lt. gr.
lt. xal.
br. xal.
LS
lt. med. gr.

Operator	Shell Oil Co.
Lease	Lockhart Gas Unit
Well No.	1
Field	Wildcat
County	St. Clair
Section	
Block	
Survey	
Abstract No.	
Elevation	
Total Depth	7,000'
Date Started	3-2-53
Date Completed	3-26-53
Casing Record	8 5/8" @ 1,000' w/ 500 sx.
Contractor	Gulf Drilling Co.
Drilling Time	
Electric Log Run	
Remarks	

Prepared by: R. E. Gruber

Form 1000 (Rev. 10-52) Printed in U.S.A. Petroleum Info. Corp.

Depth	Formation
10'	sand
20'	
30'	
40'	
50'	
60'	
70'	
80'	
90'	
100'	
110'	
120'	
130'	
140'	
150'	
160'	
170'	
180'	
190'	
200'	
210'	
220'	
230'	
240'	
250'	
260'	
270'	
280'	
290'	
300'	
310'	
320'	
330'	
340'	
350'	
360'	
370'	
380'	
390'	
400'	
410'	
420'	
430'	
440'	
450'	
460'	
470'	
480'	
490'	
500'	
510'	
520'	
530'	
540'	
550'	
560'	
570'	
580'	
590'	
600'	
610'	
620'	
630'	
640'	
650'	
660'	
670'	
680'	
690'	
700'	
710'	
720'	
730'	
740'	
750'	
760'	
770'	
780'	
790'	
800'	
810'	
820'	
830'	
840'	
850'	
860'	
870'	
880'	
890'	
900'	
910'	
920'	
930'	
940'	
950'	
960'	
970'	
980'	
990'	
1000'	
1010'	
1020'	
1030'	
1040'	
1050'	
1060'	
1070'	
1080'	
1090'	
1100'	
1110'	
1120'	
1130'	
1140'	
1150'	
1160'	
1170'	
1180'	
1190'	
1200'	
1210'	
1220'	
1230'	
1240'	
1250'	
1260'	
1270'	
1280'	
1290'	
1300'	
1310'	
1320'	
1330'	
1340'	
1350'	
1360'	
1370'	
1380'	
1390'	
1400'	
1410'	
1420'	
1430'	
1440'	
1450'	
1460'	
1470'	
1480'	
1490'	
1500'	
1510'	
1520'	
1530'	
1540'	
1550'	
1560'	
1570'	
1580'	
1590'	
1600'	
1610'	
1620'	
1630'	
1640'	
1650'	
1660'	
1670'	
1680'	
1690'	
1700'	
1710'	
1720'	
1730'	
1740'	
1750'	
1760'	
1770'	
1780'	
1790'	
1800'	
1810'	
1820'	
1830'	
1840'	
1850'	
1860'	
1870'	
1880'	
1890'	
1900'	
1910'	
1920'	
1930'	
1940'	
1950'	
1960'	
1970'	
1980'	
1990'	
2000'	
2010'	
2020'	
2030'	
2040'	
2050'	
2060'	
2070'	
2080'	
2090'	
2100'	
2110'	
2120'	
2130'	
2140'	
2150'	
2160'	
2170'	
2180'	
2190'	
2200'	
2210'	
2220'	
2230'	
2240'	
2250'	
2260'	
2270'	
2280'	
2290'	
2300'	
2310'	
2320'	
2330'	
2340'	
2350'	
2360'	
2370'	
2380'	
2390'	
2400'	
2410'	
2420'	
2430'	
2440'	
2450'	
2460'	
2470'	
2480'	
2490'	
2500'	
2510'	
2520'	
2530'	
2540'	
2550'	
2560'	
2570'	
2580'	
2590'	
2600'	
2610'	
2620'	
2630'	
2640'	
2650'	
2660'	
2670'	
2680'	
2690'	
2700'	
2710'	
2720'	
2730'	
2740'	
2750'	
2760'	
2770'	
2780'	
2790'	
2800'	
2810'	
2820'	
2830'	
2840'	
2850'	
2860'	
2870'	
2880'	
2890'	
2900'	
2910'	
2920'	
2930'	
2940'	
2950'	
2960'	
2970'	
2980'	
2990'	
3000'	
3010'	
3020'	
3030'	
3040'	
3050'	
3060'	
3070'	
3080'	
3090'	
3100'	
3110'	
3120'	
3130'	
3140'	
3150'	
3160'	
3170'	
3180'	
3190'	
3200'	
3210'	
3220'	
3230'	
3240'	
3250'	
3260'	
3270'	
3280'	
3290'	
3300'	
3310'	
3320'	
3330'	
3340'	
3350'	
3360'	
3370'	
3380'	
3390'	
3400'	
3410'	
3420'	
3430'	
3440'	
3450'	
3460'	
3470'	
3480'	
3490'	
3500'	
3510'	
3520'	
3530'	
3540'	
3550'	
3560'	
3570'	
3580'	
3590'	
3600'	
3610'	
3620'	
3630'	
3640'	
3650'	
3660'	
3670'	
3680'	
3690'	
3700'	
3710'	
3720'	
3730'	
3740'	
3750'	
3760'	
3770'	
3780'	
3790'	
3800'	
3810'	
3820'	
3830'	
3840'	
3850'	
3860'	
3870'	
3880'	
3890'	
3900'	
3910'	
3920'	
3930'	
3940'	
3950'	
3960'	
3970'	
3980'	
3990'	
4000'	
4010'	
4020'	
4030'	
4040'	
4050'	
4060'	
4070'	
4080'	
4090'	
4100'	
4110'	
4120'	
4130'	
4140'	
4150'	
4160'	
4170'	
4180'	
4190'	
4200'	
4210'	
4220'	
4230'	
4240'	
4250'	
4260'	
4270'	
4280'	
4290'	
4300'	
4310'	
4320'	
4330'	
4340'	
4350'	
4360'	
4370'	
4380'	
4390'	
4400'	
4410'	
4420'	
4430'	
4440'	
4450'	
4460'	
4470'	
4480'	
4490'	
4500'	
4510'	
4520'	
4530'	
4540'	
4550'	
4560'	
4570'	
4580'	
4590'	
4600'	
4610'	
4620'	
4630'	
4640'	
4650'	
4660'	
4670'	
4680'	
4690'	
4700'	
4710'	
4720'	
4730'	
4740'	
4750'	
4760'	
4770'	
4780'	
4790'	
4800'	
4810'	
4820'	
4830'	
4840'	
4850'	
4860'	
4870'	
4880'	
4890'	
4900'	
4910'	
4920'	
4930'	
4940'	
4950'	
4960'	
4970'	
4980'	
4990'	
5000'	
5010'	
5020'	
5030'	
5040'	
5050'	
5060'	
5070'	
5080'	
5090'	
5100'	
5110'	
5120'	
5130'	
5140'	
5150'	
5160'	
5170'	
5180'	
5190'	
5200'	
5210'	
5220'	
5230'	
5240'	
5250'	
5260'	
5270'	
5280'	
5290'	
5300'	
5310'	
5320'	
5330'	
5340'	
5350'	
5360'	
5370'	
5380'	
5390'	
5400'	
5410'	
5420'	
5430'	
5440'	
5450'	
5460'	
5470'	
5480'	
5490'	
5500'	
5510'	
5520'	
5530'	
5540'	
5550'	
5560'	
5570'	
5580'	
5590'	
5600'	
5610'	
5620'	
5630'	
5640'	
5650'	
5660'	
5670'	
5680'	
5690'	
5700'	
5710'	
5720'	
5730'	
5740'	
5750'	
5760'	
5770'	
5780'	
5790'	
5800'	
5810'	
5820'	
5830'	
5840'	
5850'	
5860'	
5870'	
5880'	
5890'	
5900'	
5910'	
5920'	
5930'	
5940'	
5950'	
5960'	
5970'	
5980'	
5990'	
6000'	
6010'	
6020'	
6030'	
6040'	
6050'	
6060'	
6070'	
6080'	
6090'	
6100'	
6110'	
6120'	
6130'	
6140'	
6150'	
6160'	
6170'	
6180'	
6190'	
6200'	
6210'	
6220'	
6230'	
6240'	
6250'	
6260'	
6270'	
6280'	
6290'	
6300'	
6310'	
6320'	
6330'	
6340'	
6350'	
6360'	
6370'	
6380'	
6390'	
6400'	
6410'	
6420'	
6430'	
6440'	
6450'	
6460'	
6470'	
6480'	
6490'	
6500'	
6510'	
6520'	
6530'	
6540'	
6550'	
6560'	
6570'	
6580'	
6590'	
6600'	
6610'	
6620'	
6630'	
6640'	
6650'	
6660'	
6670'	
6680'	
6690'	
6700'	
6710'	
6720'	
6730'	
6740'	
6750'	
6760'	
6770'	
6780'	
6790'	
6800'	
6810'	
6820'	
6830'	
6840'	
6850'	
6860'	
6870'	
6880'	
6890'	
6900'	
6910'	
6920'	
6930'	
6940'	
6950'	
6960'	
6970'	
6980'	
6990'	
7000'	


(This entire tract was surveyed; 7.5 acres i.e. north of map)
N
1600
1500
1400
1300
1200
256
BM LHT 408
1204
Forked
West Branch
Deer Creek
W-1
W-2
W-3
W-4
W-5
W-6
W-7
W-8
W-9
W-10
W-11
W-12
ORA C. WILKINSON, et al.
26 a (Part of 300 a)
ORA C. WILKINSON, et al.
33 a (Part of 300 a)
BELL KINCAID, et al.
125 a
THORN HILL
BM LHT 208
1402
THOMAS E. KINCAID, et ux.
100 a
W. N. & DORSIA JACKSON
600 a
BM LHT 209
1354
GEOCHEMICAL MAP OF
THORN HILL PROSPECT
SHOWING PERCENTAGE OF ZINC IN SOIL AND
LOCATIONS OF PROPOSED DIAMOND DRILL HOLES
SCALE: 1 INCH = 200 FEET
Base enlarged from U.S.G.S. - T.V.A. Topographic Map of AVONDALE Quadrangle (162-SW)
Published on Scale of 1:24,000
GEOCHEMICAL SYMBOLS
Sample locality
Sample locality showing percentage of zinc in soil
Outline of geochemical anomaly (.07% Zinc and greater)
CONTOUR INTERVAL: .05%
DIAMOND DRILL HOLES
Proposed diamond drill hole
F.T. Fischer - 6/56

STATE
COUNTY
TOWN
Hillsboro
STREET
Hillsborough
No.
Patient Name
Age
Sex
Date
Occupation
Nationality
Married or Single
Religion
Date of Admission
Date of Discharge
Ward
Bed
Attending Physician
Consulting Physicians
Diagnosis
Operations
Complications
Results
Autopsy
Pathologist's Report

Date	Temperature	Pulse	Respiration	Urine	Stools	Medicine and Treatment
1st						
2nd						
3rd						
4th						
5th						
6th						
7th						
8th						
9th						
10th						
11th						
12th						
13th						
14th						
15th						
16th						
17th						
18th						
19th						
20th						
21st						
22nd						
23rd						
24th						
25th						
26th						
27th						
28th						
29th						
30th						
31st						

STATE: Tennessee	COMPANY: B. H. Putnam
COUNTY: Grainger	FARM: A. B. Dalton — HOLE NO.: 8
BLOCK: Indian Creek	SURVEY:
SEC.:	
T. / R.	TOTAL DEPTH: 370'
	COMMENCED:
	COMPLETED: 5-7-57
ALTITUDE: + 16.4	REMARKS: Drilled by Putnam Drlg. Co
PRODUCTION:	REAMING: 37', from 69' to 106'
	CEMENT:

CASING RECORD

BX 52'	
AX 106'	
	Leased by J. W. Spears

FORM 186 - In stock and for sale by Ross-Martin Co., Tulsa

STATE: Tennessee	COMPANY: B. H. Pedrain
COUNTY: Grainger	FARM: A. B. Dallas	HOLE NO. 8
BLOCK:	SURVEY:
Indian Creek	
SEC. T. R.	TOTAL DEPTH
	COMMENCED
	COMPLETED
ELEVATION	REMARKS: Drilled by Brown Oil Co.
LATITUDE	BEARING: 35° from 88 to 106'
PRODUCTION	CEMENT

CASING RECORD

8" x 52'
8" x 106'

FORM 1-6b - In stock and for sale by Ross-Martin Co., Tulsa

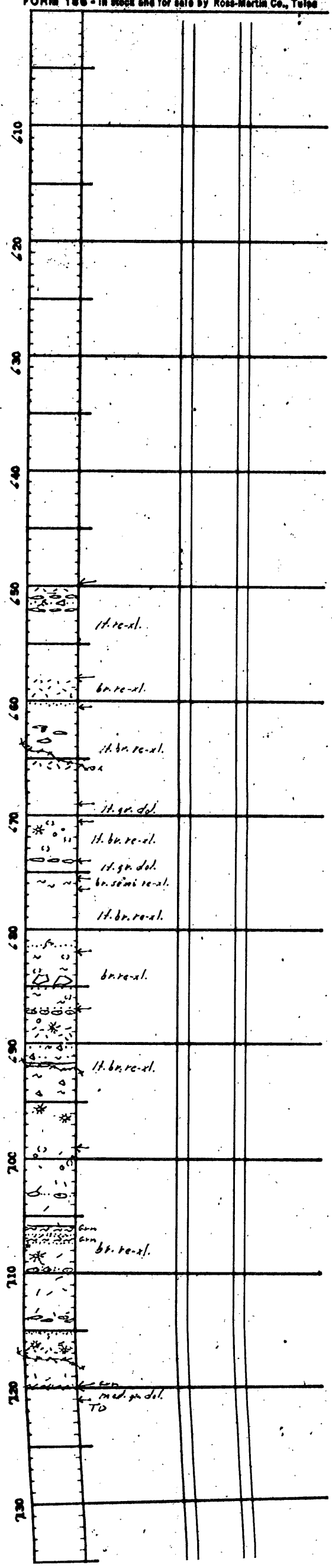
Operator

Depth	Description
10	
20	
30	
40	
50	
60	
70	lt. med gr.
	Shale
80	Shale
90	lt. gr.
	Shale
	med gr.
100	lt. med gr.
	Shale
110	med gr.
120	lt. gr.
130	lt. med gr.
	med gr.
140	lt. gr.
150	lt. med gr.
	lt. gr.
	lt. med gr.
	med gr.
160	lt. med gr.
170	med gr.
	lt. gr.
180	lt. gr.
	med gr.
190	lt. gr.
	med gr.
	lt. gr.
200	med gr.
210	lt. med gr.
	med gr.
	med lt. gr.
	med gr.
220	
230	
240	
250	
260	
270	
280	
290	
300	
310	
320	
330	
340	
350	
360	
370	
380	
390	

STATE Tennessee	COMPANY B. H. Putnam
COUNTY Grainger	FARM S. Scarce (O.D.) HOLE NO. #1
BLOCK Indian Creek	SURVEY
SEC.	
T. R.	TOTAL DEPTH 721
	COMMENCED 2-13-57
	COMPLETED 2-15-57
ALTITUDE	REMARKS
PRODUCTION	REAMING
	CEMENT

CASING RECORD

FORM 186 - In stock and for sale by Ross-Martin Co., Tulsa



STATE	Tennessee
COUNTY	Grainger
BLOCK	Indian Creek
SEC.	
T.	
R.	
ALTITUDE	
PRODUCTION	
COMPANY	B.H. Putnam
HOLE NO.	7
FARM	A.B. Dallon
SURVEY	
TOTAL DEPTH	475'
COMMENCED	2-19-57
COMPLETED	2-27-57
REMARKS	Drilled by Putnam Drlg. Co.
REAMING	
CEMENT	

CASING RECORD

BX 43'

AX 76'

Logged by J. Spears

FORM 186 - In stock and for sale by Ross-Martin Co., Tulsa

STATE	Tennessee
COUNTY	Grainger
BLOCK	Indian Creek
SEC.	
COMPANY	B. H. Putnam
FARM	A. B. Dalton
HOLE NO.	#6
SURVEY	
TOTAL DEPTH	497
COMMENCED	2-5-57
COMPLETED	2-13-57
REMARKS	Drilled by Putnam Drlg. Co.
REAMING	
CEMENT	
ALTITUDE	
PRODUCTION	

CASING RECORD

BX 55'
AX 81'

Logged by T. Spezus

FORM 186 - In stock and for sale by Ross-Martin Co., Tulsa

Overburden (0–55)

med. & lt. gr. w/many cavities
med. gr.
lt. gr.
cavity
med. gr.
med. dk. gr.
med. gr.
dk. gr.
med. gr.
lt. gr.
med. gr.
lt. gr.
med. gr.
lt. gr.
med. gr.
lt. gr.
med. gr.
lt. gr.
med. gr.
lt.-med.
lt. gr.
lt.-med. gr.
med. gr.
lt. gr.
med. gr.
med.-lt. gr.
Grn.
lt. gr.
lt.-med. gr.
med. gr.
lt. gr.
med. gr. — 198, 199, 2%
lt. gr. — 208, 209, 1/2%
med. gr. sugary
lt. gr.
med. gr.
Grn. dk. gr.
med. gr.
lt.-med. gr. — 236, 237, 1%
lt. gr.
med. gr. — 242, 243, 1.5% cal.; 3%
lt. gr.
med. gr.
lt. gr.
med. gr. — 254, 257, 258, 258 1/2, 272 1/2
dk. gr. sugary
Grn.
med. gr.
lt. gr.
med. gr. sugary
Grn.
mix of lt. & med. dol. & re-xl. & some
dk. gr. sugary
med. gr. sugary
br. re-xl.
Grn.
lt. gr. .25% — 286, 287
med. gr. .5% — 288 1/2, 289 1/2
mix. of lt. med. & dk. gr. dols. & re-xl. & some chert & green shale
med. gr.
Grn.
lt. re-xl.
lt. sugary dol.
med. gr.
Grn.
br. re-xl.
med. gr.
br. re-xl.
dk. gr.
Grn. shale w/ LS
LS
dk. re-xl.
dk. gr. dol.
med. dk. gr. .5% — 329, 330
med. gr. — 332, 335
gr. re-xl. .5% — 336 1/2, 337 1/2, 339, 340
med. gr.
lt. br. re-xl.
dk. gr.
Grn.
lt. gr.
med. gr.
br. re-xl.
lt. br. re-xl.
dk. gr.
lt. gr. sugary dol.
med. gr.
br. re-xl.
Grn.
LS
dk. gr. dol.
dk. re-xl.
lt. gr.
Grn.
lt. br. re-xl.
med. gr.
Grn.
lt. br. re-xl.
dk. re-xl.
gr. re-xl.
med. gr.
lt. br. re-xl.
med. gr.
lt. br. re-xl.
dk. gr. dol.
med. gr.
dk. re-xl.
Grn.
br. re-xl.
med. gr.
lt. re-xl.
med. gr.
dk. semi re-xl.
med. gr. dol.
Grn.
lt. re-xl.
br. re-xl.
LS
dk. re-xl.
lt. re-xl.
med. gr. dol.
lt. br. re-xl.
lt. gr. sugary dol.
lt. br. re-xl.
lt. gr. dol.
Grn.
br. re-xl.
med. gr. dol.
br. re-xl.
br. sugary dol.
lt. gr. re-xl.
br. re-xl.
lt. br. re-xl.
br. re-xl.
lt. gr. dol.
lt. re-xl.
lt. sugary dol.
lt. br. re-xl.
br. re-xl.
br. semi re-xl.
br. re-xl.
med. gr. sug. dol.
lt. br. re-xl.
dk. br. re-xl.
br. re-xl.
lt. br. sugary dol.
Grn.
re-xl.
Lost core
TD

STATE	COMPANY	B.H. Putnam	HOLE NO.
Tennessee	FARM	Mallicoat	2
COUNTY Grainger	SURVEY		
BLOCK Indian Creek			TOTAL DEPTH 500
SEC.	COMMENCED	1-25-57	
T. R.	COMPLETED	2-4-57	
ALTITUDE - 23.5	REMARKS	Drilled by Putnam Drlg.	
PRODUCTION	REAMING		
	CEMENT		

CASING RECORD

BX 86'

AX 97'

Logged by J. Spears

FORM 166 - In stock and for sale by Ross-Martin Co., Tulsa

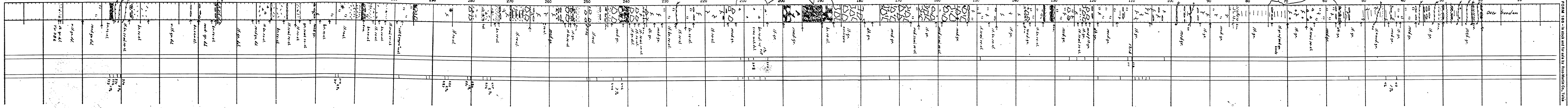
STATE: Tennessee	COMPANY: B. H. Putnam
COUNTY: Grainger	FARM: Mallicoat — HOLE NO. 1
BLOCK: Indian Creek	SURVEY
SEC.	TOTAL DEPTH: 284
T. R.	COMMENCED: 1-22-57
	COMPLETED: 1-25-57
ALTITUDE: +36.0	REMARKS: Drilled by Putnam Drlg. Co.
PRODUCTION: Blank	REAMING
	CEMENT

CASING RECORD

BX - 49'
AX - 59'

FORM 166 - In stock and for sale by Ross-Martin Co., Tulsa

Depth	Description
0–48	Overburden
60	lt. gr.
65	Grn.
70	med. gr.
71	Grn
72	lt. gr.
74	med. gr.
84	lt.-med. gr.
86	ox.
92	CAVITY
96	med. gr. sugary
99	dk. gr.
101	med. gr.
102	Grn
105	lt. gr.
110	med. gr. sugary
111	CAVITY
116	CAV
118	br. re-xl.
124	CAVITY
125	lt. gr.
126	lt. br. re-xl.
127	lt. gr.
127	Grn
130	lt. br. re-xl.
135	lt. gr. sugary
139	lt. gr.
143	lt. re-xl.
147	ox
148	lt. gr. sugary
152	br. re-xl.
155	med. gr. sugary
157	re-xl.
160	med. gr.
162	dk. semi-re-xl.
166	med. gr.
168	dk. gr. sugary
169	Grn
171	lt. gr. sugary
182	lt. re-xl.
189	rec. chat & LS
191	LS
196	lt. br. re-xl.
201	med. gr.
205	lt. re-xl.
207	dk. re-xl.
210	LS
213	lt. br. re-xl.
215	lt. gr. dd.
217	lt. re-xl.
219	LS
221	dk. br. re-xl.
223	CAVITY
233	LS
245	med. gr. sugary
254	lt. re-xl.
255	gr. + br.
259	Grn.
260	lt. coarse re-xl.
265	med. gr.
270	lt. re-xl.
272	lt. gr.
275	lt. semi re-xl.
270–277	65% rec.
278	lt. gr. sugary
282	br. re-xl.
284	T. D.


COMPANY
FARM
WELL NO.
COUNTY
SECTION
TOWNSHIP
RANGE
COMMENCED
COMPLETED
ELEVATION
DEPTH
CASING RECORD
FORM 186-10 WOOD MFG CO KS 12 PLUG-MOOR CO. TULSA

STATE
COUNTY
TOWNSHIP
LOCATION
Elder Creek

OWNER Dill Drilling Co.
ADDRESS
DRILLER Dillon

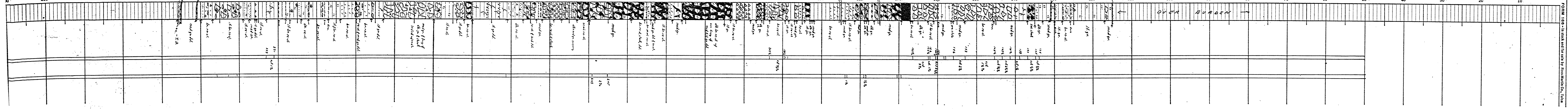
TOOLS USED
Cable

CONTRACT 7-1-57
COMPLETED 7-18-57
TOTAL DEPTH 400'
NAME OF DRILLER Dillon Bros. Co.

REMARKS
Water Strata Found
at 110'

CASING RECORD
8" 110'

Logged by J. Jones



FORM 1863-3 Hoskins Lithographing Co., Tulsa

STATE
Tennessee
COUNTY
Lake
TOWN OR TOWNSHIP
Tiptonville
LOCALITY
Lake Cook
No.
Elevation
Total Depth
COMPLETED 12-12-54
COMPLETED 12-12-54
DRILLED Schlumberger Bros.
DRILLER
PRODUCER
RESERVE
CASING RECORD
8¾" 87'
8¾" 162'
Logged by J. Lyons

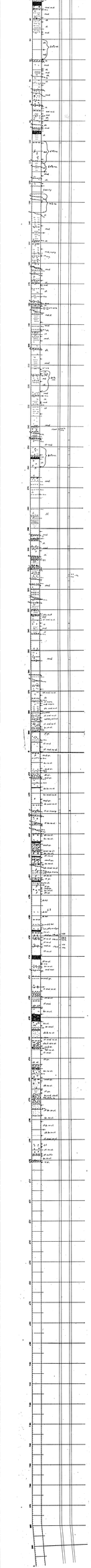
OVER BURDEN

FORM 1313-1-500 REPRINTED THURSDAY, 1-1-54

WELL Hoover #1-A Fenton
LOCATION Sec 16
COUNTY Ness
STATE Kansas

DRILLING CONTRACTOR Red Tiger Drilling Co.
ELEVATION 2250 KB
SPUD 12-17-78
COMPLETED 12-27-78
TOTAL DEPTH 4300
MUD TYPE Chem Gel
CASING RECORD
8 5/8" @ 221'
4 1/2" @ 4300'

FORM 1001 Printed and Sold by Carl Bolz, Inc. Pratt, Kan.



STATE	COMPANY	B.H. Putnam	
Tennessee	FARM	S. Scearce	WELL NO. 2
COUNTY Grainger	SURVEY		
BLOCK Indian Creek			TOTAL DEPTH
SEC.	COMMENCED	11-17-56	
T. R.	COMPLETED		
ALTITUDE	REMARKS		
PRODUCTION			

CASING RECORD

BX 42'

AX 51'

SHOT	QUARTS	BETWEEN

FORM 186 - In stock and for sale by Ross-Martin Co., Tulsa

Company Texaco Inc.	Company D. H. Flanigan
Well Name and No. Fagan Gas Unit	Location Sec. 7
	Elev.
	Date 10-20-78
	Comment 12-20-78
	Comment
	Comment

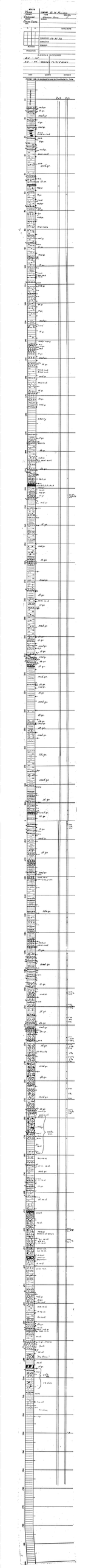
CASING RECORD

8 5/8" 0' 1'

4 1/2" 0' 7000' 7000' 7000'

SIZE	WEIGHT	DEPTH

FORM 1-R-1-78 Sold and Serviced by Furmanite Co., Tulsa



STATE

COUNTY

FIELD

LOCATION

PROPERTY

COMPANY Gulf Oil Corporation

WELL NO. 1

LEASE Gulf Oil Corporation

TOTAL DEPTH

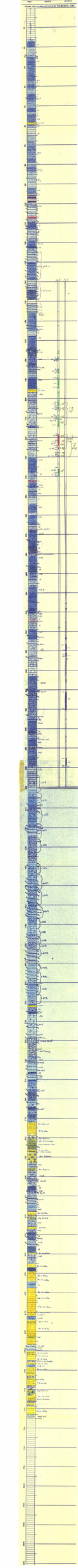
COMPLETED 7-27-78

COMPLETED 10-18-78

ELEVATION

CASING RECORD

SIZE | DEPTH | SIZE | DEPTH



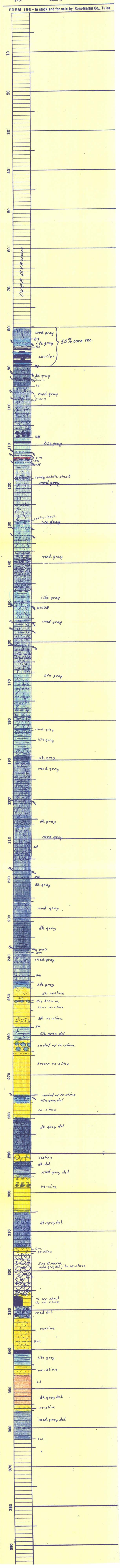
STATE	COMPANY B. H. PUTNAM
Tennessee	
COUNTY Grainger	FARM Lerfew Heirs — WELL NO.
BLOCK Indian Creek	SURVEY
SEC.	
T. / R.	TOTAL DEPTH 363
	COMMENCED 9-21-56
	COMPLETED 9-28-56
ALTITUDE	REMARKS Core recovery 90% or better unless noted
PRODUCTION	

CASING RECORD

BX 80	Pulled
AX 115	Pulled

SHOT QUARTS BETWEEN

FORM 186 - In stock and for sale by Ross-Martin Co., Tulsa



STATE
COUNTY
FIELD
LOCATION
WELL
DRILLING CONTRACTOR
RIG NO.

COMPANY U.S. Plywood
WELL Eastern Mills
NO. 4

TOTAL DEPTH

COMMENCED 10-17-56
COMPLETED 11-30-56

ELEVATION

PRODUCTION

CASING RECORDS

SIZE	WEIGHT	DEPTH
20-16		
8-5/8		

CORING RECORD

SIZE	WEIGHT	DETAILS
7-7/8		

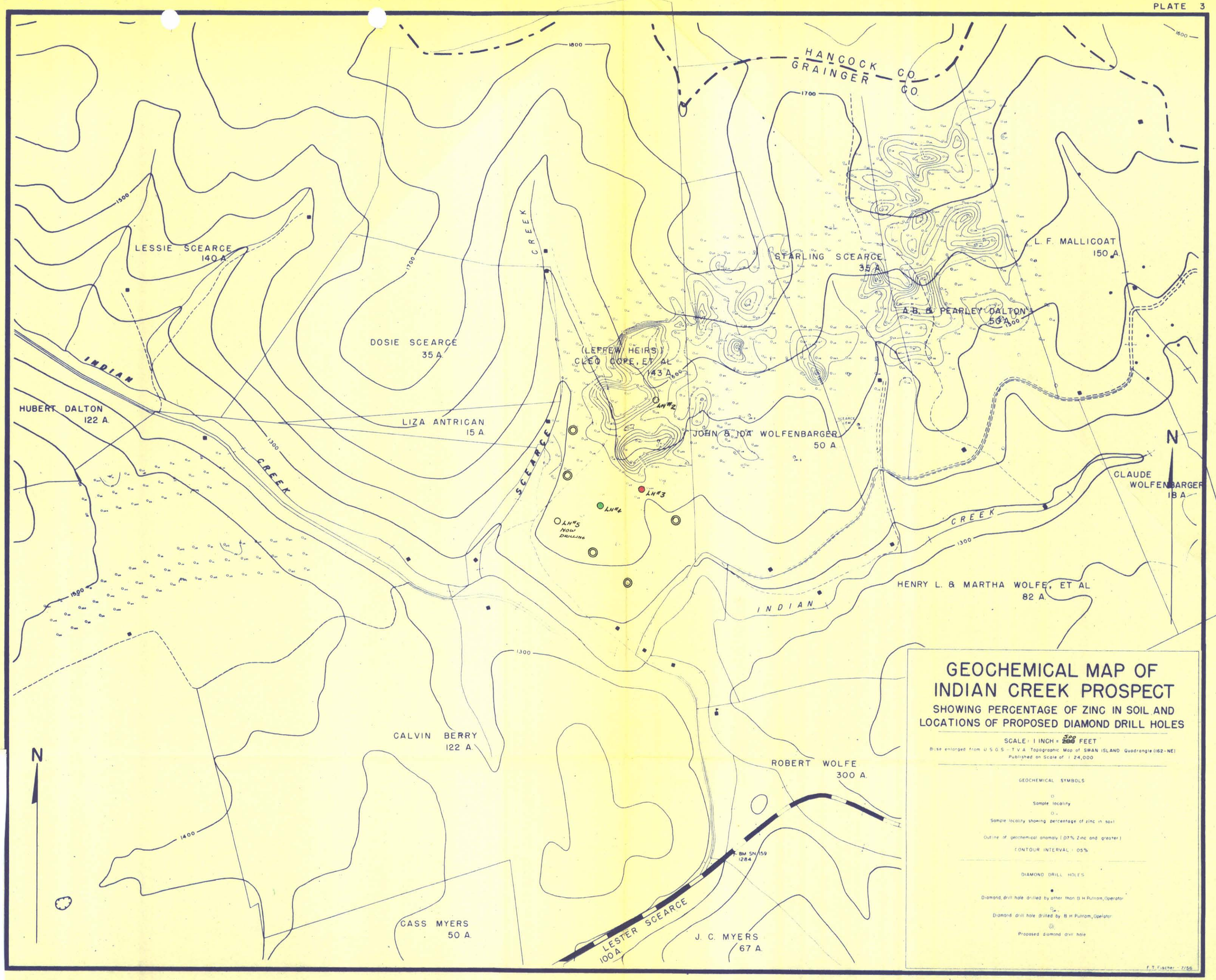
CORING CODE: 1-3 SHOT WITH SIDE WALL CORE 4-6 CONVENTIONAL CORE

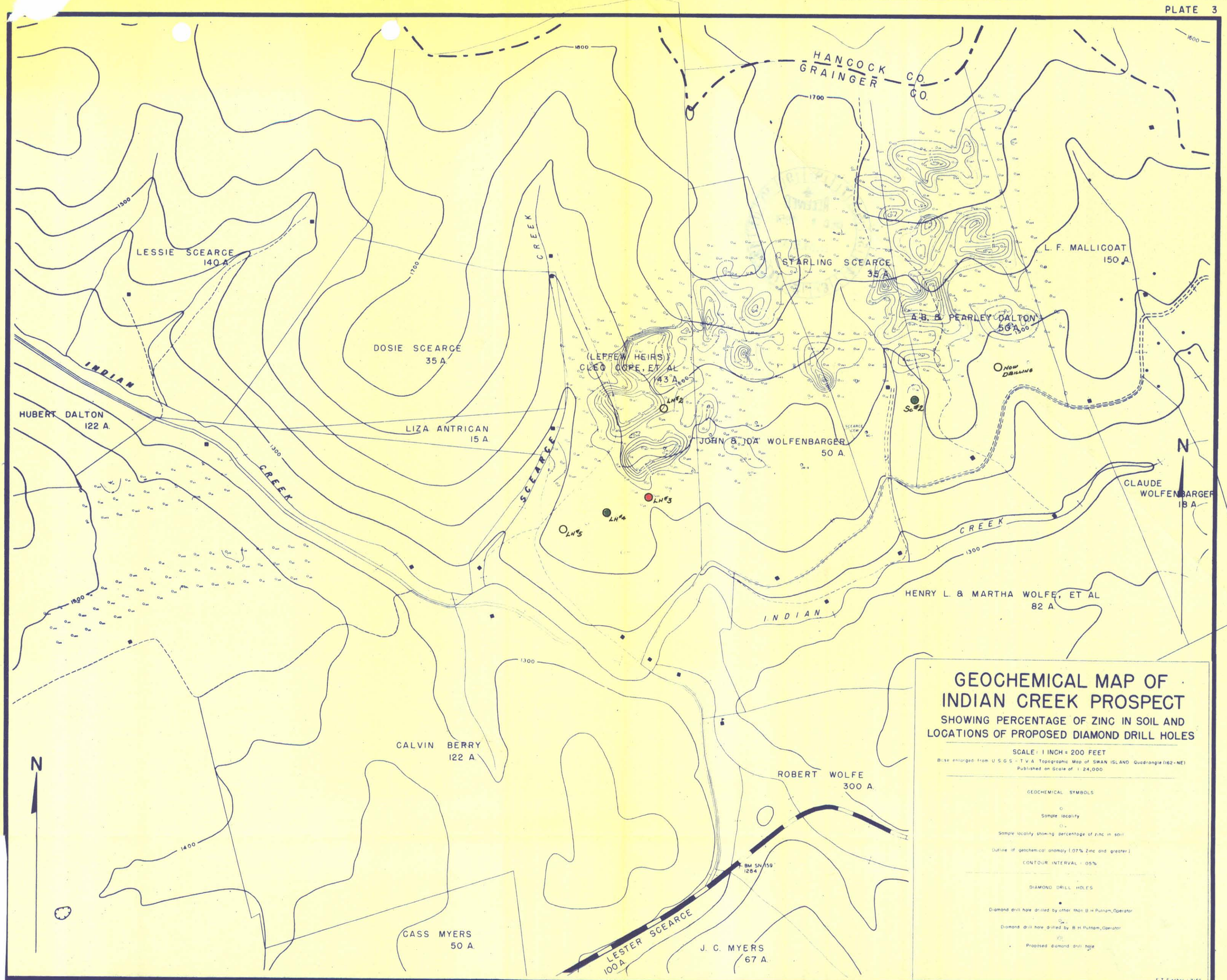
SYMBOLS USED ON STRIP LOGS OF CORE HOLES DRILLED FOR B.H. PUTNAM, OPERATOR

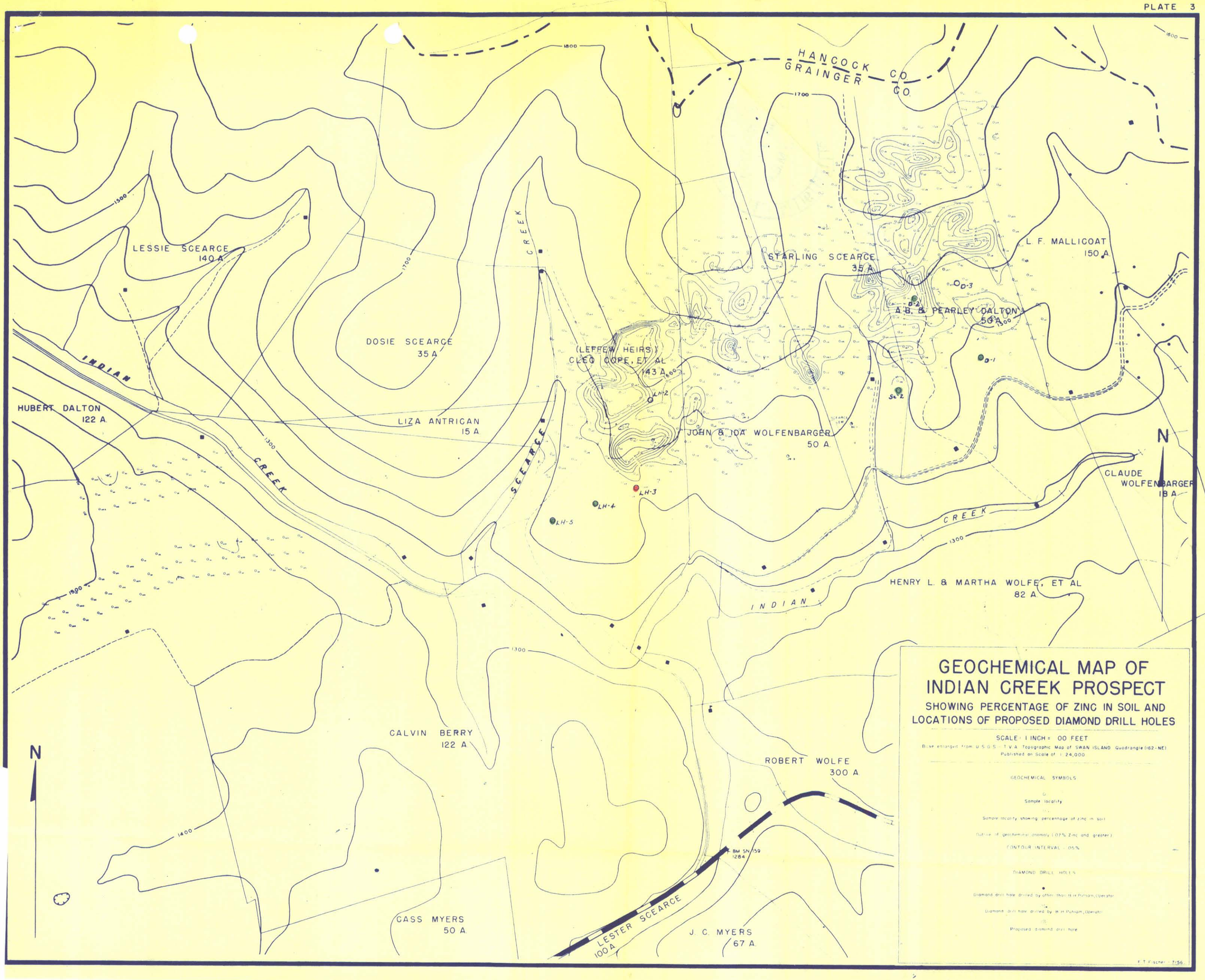
- Light-gray dolomite
- Medium-gray dolomite
- Dark-gray dolomite
- Limestone
- Shaly limestone
- Siliceous recrystalline
- Recrystalline
- Sand sealed with chert (Chert-Matrix type)
- CM The "Chert-Matrix" sand
- Chert nodules
- Secondary chert
- Oölitic chert
- Shale (indicate if green)
- Light mottling
- Heavy mottling
- Banding
- Vuggy
- Sand grains (predominently quartz)
- Edgewise conglomerate
- Semi-recrystalline (fine-grained recrystalline)
- Crackle breccia with white gangue dolomite
- Rubble breccia with white gangue dolomite
- Crackle breccia sealed with chert & white gangue dolomite
- Rubble breccia sealed with chert
- Dry breccia (sealed with chert, shale & white gangue dolomite)
- Breccia sealed with recrystalline, then re-brecciated
- Brecciated chert sealed with chert
- Shear
- Fault breccia
- Cavity
- 3'@ 1.0% 242' 245' 250' 8'@ 3.0% 258' — Zinc mineralization & grade
- 250' 8'@ 3.5% 258' — Pyrite mineralization & grade

ABBREVIATIONS

Oxid.	Oxidation
Grn.	Green
Blk.	Black
Bl.	Blue
W.	White


HANCOCK CO.
GRAINGER CO.
LESSIE SCEARCE
140 A
DOSIE SCEARCE
35 A
LIZA ANTRICAN
15 A
HUBERT DALTON
122 A.
INDIAN
CREEK
SCEARCE
CREEK
(LEFFEW HEIRS)
CLEO COPE, ET AL
143 A
LH#2
LH#3
LH#4
LH#5
NOW DRILLING
JOHN & IDA WOLFENBARGER
50 A
STARLING SCEARCE
35 A
A.B. & PEARLEY DALTON
50 A
L. F. MALLICOAT
150 A
CLAUDE WOLFENBARGER
18 A
INDIAN
CREEK
HENRY L. & MARTHA WOLFE, ET AL
82 A
CALVIN BERRY
122 A
ROBERT WOLFE
300 A
BM SN 159
1284
LESTER SCEARCE
100 A
CASS MYERS
50 A
J. C. MYERS
67 A
N
N
1600
1800
1700
1500
1300
1400
GEOCHEMICAL MAP OF
INDIAN CREEK PROSPECT
SHOWING PERCENTAGE OF ZINC IN SOIL AND
LOCATIONS OF PROPOSED DIAMOND DRILL HOLES
SCALE: 1 INCH = 500 FEET
Base enlarged from U.S.G.S.-T.V.A. Topographic Map of SWAN ISLAND Quadrangle (162-NE)
Published on Scale of 1:24,000
GEOCHEMICAL SYMBOLS
Sample locality
Sample locality showing percentage of zinc in soil
Outline of geochemical anomaly (.07% Zinc and greater)
CONTOUR INTERVAL: .05%
DIAMOND DRILL HOLES
Diamond drill hole drilled by other than B.H. Putnam, Operator
Diamond drill hole drilled by B.H. Putnam, Operator
Proposed diamond drill hole
F.T. Fischer - 7/56


GEOCHEMICAL MAP OF
INDIAN CREEK PROSPECT
SHOWING PERCENTAGE OF ZINC IN SOIL AND
LOCATIONS OF PROPOSED DIAMOND DRILL HOLES
SCALE: 1 INCH = 200 FEET
Base enlarged from U.S.G.S. - T.V.A. Topographic Map of SWAN ISLAND Quadrangle (162-NE)
Published on Scale of 1:24,000
GEOCHEMICAL SYMBOLS
Sample locality
Sample locality showing percentage of zinc in soil
Outline of geochemical anomaly (.07% Zinc and greater)
CONTOUR INTERVAL = .05%
DIAMOND DRILL HOLES
Diamond drill hole drilled by other than B.H. Putnam, Operator
Diamond drill hole drilled by B.H. Putnam, Operator
Proposed diamond drill hole
F.T. Fischer - 7/56
HANCOCK CO.
GRAINGER CO.
LESSIE SCEARCE 140 A.
DOSIE SCEARCE 35 A.
LIZA ANTRICAN 15 A.
HUBERT DALTON 122 A.
INDIAN CREEK
SCEARCE CREEK
(LEFFEW HEIRS) CLEO COPE, ET AL 143 A.
STARLING SCEARCE 35 A.
A.B. & PEARLEY DALTON 50 A.
L. F. MALLICOAT 150 A.
JOHN & JOA WOLFENBARGER 50 A.
CLAUDE WOLFENBARGER 18 A.
HENRY L. & MARTHA WOLFE, ET AL 82 A.
CALVIN BERRY 122 A.
ROBERT WOLFE 300 A.
CASS MYERS 50 A.
LESTER SCEARCE 100 A.
J. C. MYERS 67 A.
BM SN 159 1284
NOW DRILLING
LH#2
LH#3
LH#4
LH#5
Sc#2
1600
1700
1500
1300
1400
N


HANCOCK CO.
GRAINGER CO.
LESSIE SCEARCE
140 A
DOSIE SCEARCE
35 A
LIZA ANTRICAN
15 A
HUBERT DALTON
122 A
INDIAN
CREEK
SCEARCE
CREEK
(LEFFEW HEIRS)
CLEO COPE, ET AL
143 A
LH-2
LH-3
LH-4
LH-5
JOHN & IDA WOLFENBARGER
50 A
STARLING SCEARCE
35 A
D-3
D-2
D-1
A.B. & PEARLEY DALTON
50 A
L. F. MALLICOAT
150 A
CLAUDE
WOLFENBARGER
18 A
CREEK
INDIAN
HENRY L. & MARTHA WOLFE, ET AL
82 A
CALVIN BERRY
122 A
ROBERT WOLFE
300 A
BM SN 159
1284
LESTER SCEARCE
100 A
J. C. MYERS
67 A
CASS MYERS
50 A
N
1800
1700
1600
1500
1300
1400
GEOCHEMICAL MAP OF
INDIAN CREEK PROSPECT
SHOWING PERCENTAGE OF ZINC IN SOIL AND
LOCATIONS OF PROPOSED DIAMOND DRILL HOLES
SCALE: 1 INCH = 00 FEET
Base enlarged from U.S.G.S. - T.V.A. Topographic Map of SWAN ISLAND Quadrangle (162-NE)
Published on Scale of 1:24,000
GEOCHEMICAL SYMBOLS
Sample locality
Sample locality showing percentage of zinc in soil
Outline of geochemical anomaly (.07% Zinc and greater)
CONTOUR INTERVAL - .05%
DIAMOND DRILL HOLES
Diamond drill hole drilled by other than H. H. Putnam, Operator
Diamond drill hole drilled by H. H. Putnam, Operator
Proposed diamond drill hole
F. T. Fischer - 7/56

STATE Tennessee	COMPANY B. H. Putnam
COUNTY Grainger	FARM A. B. Dalton — HOLE NO. 5
BLOCK Indian Creek	SURVEY
SEC.	TOTAL DEPTH 475'
T. R.	COMMENCED 1-11-57
	COMPLETED 1-19-57
ALTITUDE	REMARKS Drilled by Putnam Only. Co.
PRODUCTION	REAMING
	CEMENT 5 sacks on 1-19-57

CASING RECORD

BX 56'

AX 81'

Logged by J. Spears

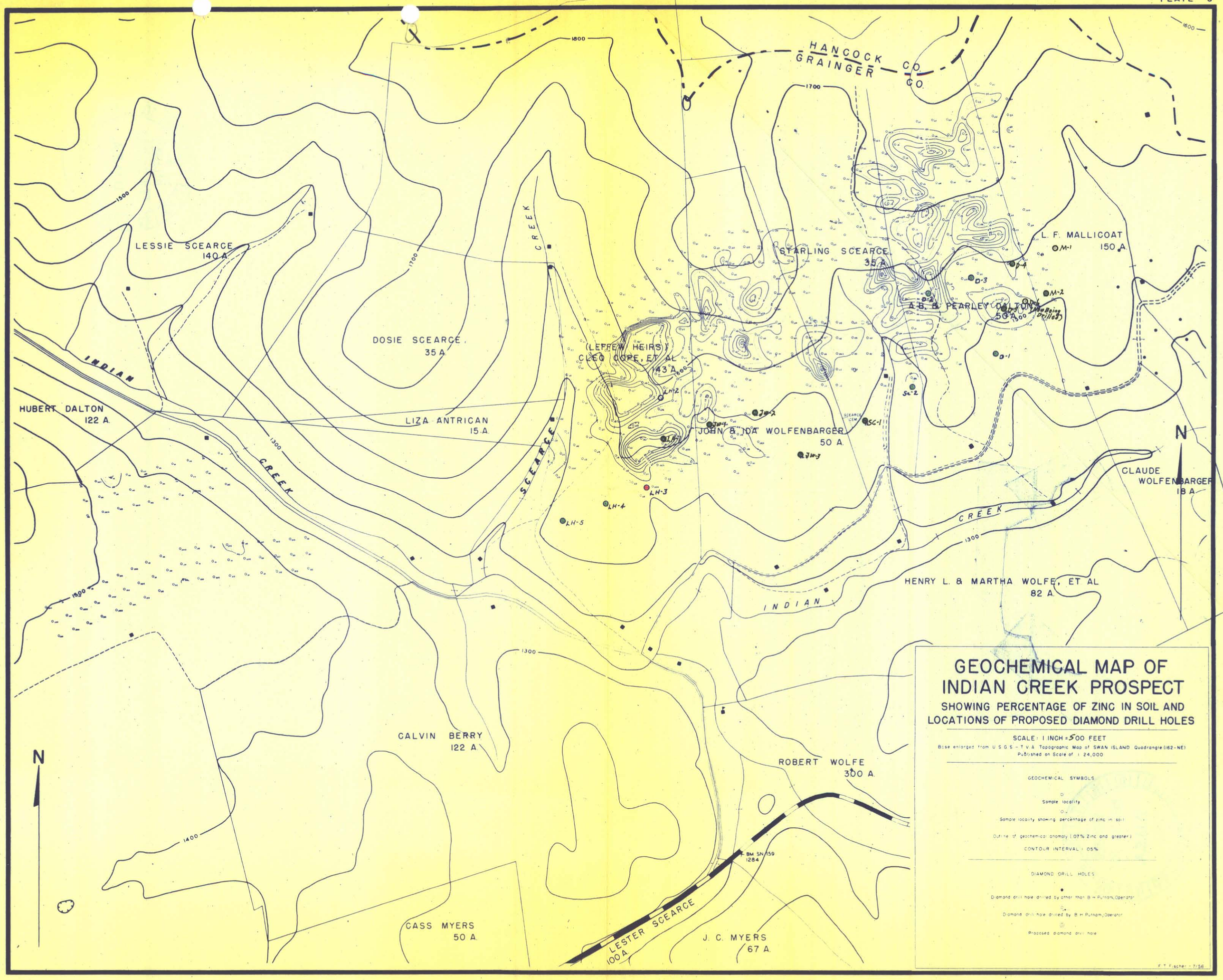
FORM 186 - In stock and for sale by Ross-Martin Co., Tulsa

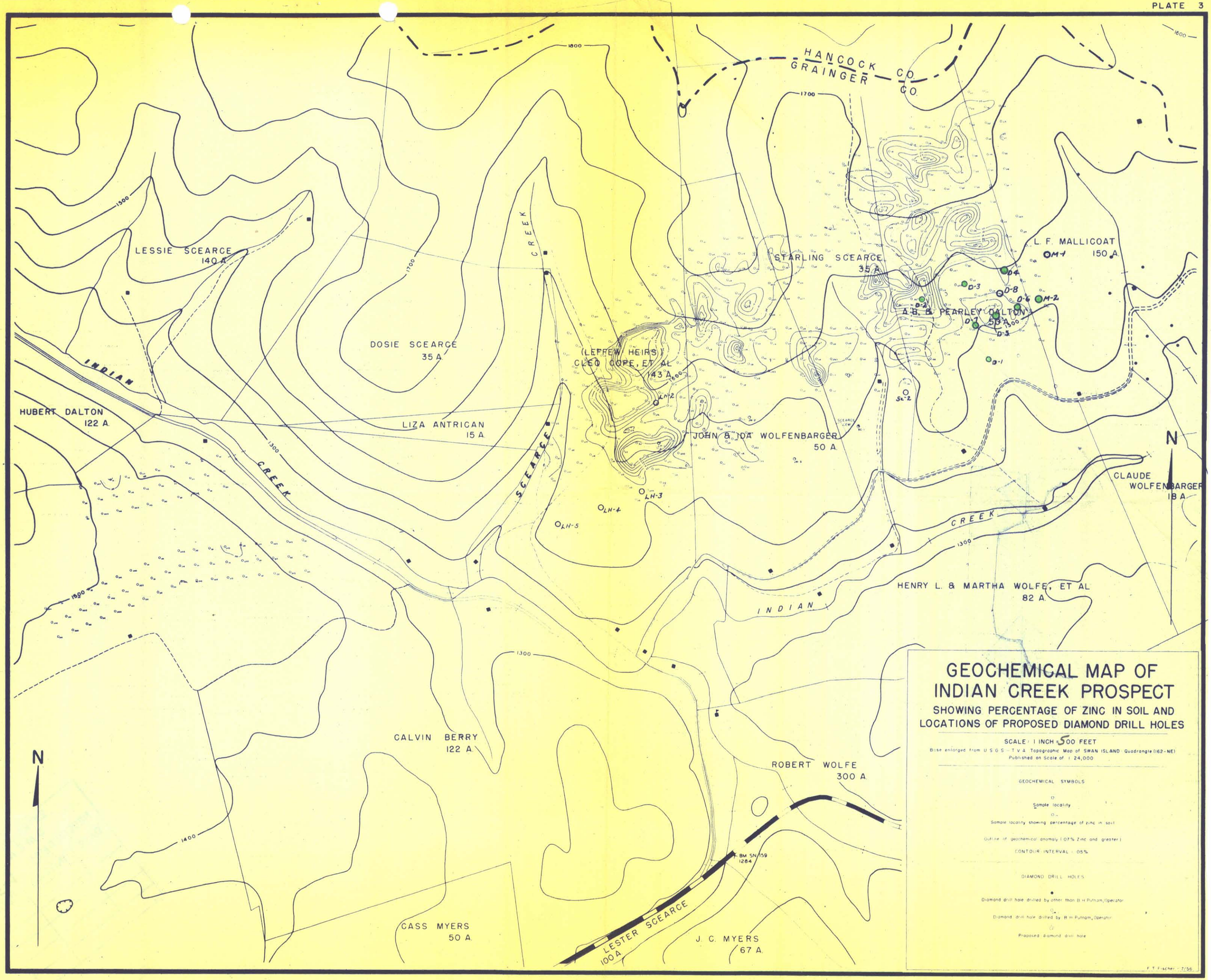
0–55 ← Overburden →

med. gr.
dk. gr.
lt. gr.
38% rec.
ox.
med. gr.
lt. gr.
ox
med. gr.
dk. gr.
cm
med. gr.
lt. gr.
lt.-med. gr.
dk. gr.
med. gr.
lt. gr.
30% rec.
med. gr.
lt. gr.
med. gr.
lt. gr.
med. gr.
lt. gr.
med. gr.
lt. gr.
med. gr.
med. gr.
dk. gr.
med. gr.
dk. semi re-xl.
med. gr.
lt. gr.
med. gr.
dk. gr.
med. gr.
lt. gr.
med. gr.
ox dk. gr.
med. gr.
lt. gr. med. gr.
br. re-xl.
med. gr.
med. lt. gr.
br. re-xl.
dol. re-xl. chert
re-xl. & dol.
med. gr.
dk. gr.
med. gr.
lt. re-xl.
med. gr.
br. re-xl. & some dol.
dk. semi re-xl.
re-xl.
br. re-xl.
med. gr.
med. gr.
lt. gr.
med. gr. re-xl
lt. br. re-xl.
br. re-xl.
med.-dk. gr.
dk. gr.
med. gr.
re-xl. & chert
med. gr. sugary
br. re-xl.
Grn
lt. re-xl.
lt. gr. dol.
br. re-xl.
med. gr. sugary
lt. br. re-xl.
med. gr. sugary
chert w/re-xl. & dol.
dk. re-xl.
Grn. shale
dk. gr. sugary
re-xl.
med. dol. & re-xl.
br. re-xl.
lt. br. re-xl.
lt. gr.
lt. br. re-xl.
lt. gr.
br. re-xl.
lt. gr. dol.
dk. semi re-xl.
br. re-xl.
dk. re-xl.
lt. re-xl.
br. re-xl.
TD

147 2%
148 5%
151
180 1%
181½
182 1%
184
199 1%
201

241
est 1% 245
est 2% 251½ — 11½' @ 1.04%
est ½% 254½ 256½ — 47½' @ .44%
est 1% 261½ 263½
est 1½% 265 269 — 15½' @ .38%
est ½% 274 1% 277
est ½% 284 290½ — 5½' @ 1% .30%
est ½% 328 329
est 1% 332½ 333
est ½% 334½ 335½
est 2½% 337½ 338½ 1% — 10½' @ .28% actual 1½%
est ½% 372½ 373½
est 1½% 375½ 377 — 8' @ .56%
est ½% 390½ 392½
est ½% 394 397 — 5½' @ .032%


GEOCHEMICAL MAP OF
INDIAN CREEK PROSPECT
SHOWING PERCENTAGE OF ZINC IN SOIL AND
LOCATIONS OF PROPOSED DIAMOND DRILL HOLES
SCALE: 1 INCH = 500 FEET
Base enlarged from U.S.G.S. - T.V.A. Topographic Map of SWAN ISLAND Quadrangle (162-NE)
Published on Scale of 1:24,000
GEOCHEMICAL SYMBOLS
Sample locality
Sample locality showing percentage of zinc in soil
Outline of geochemical anomaly (.07% Zinc and greater)
CONTOUR INTERVAL: .05%
DIAMOND DRILL HOLES
Diamond drill hole drilled by other than B.H. Putnam, Operator
Diamond drill hole drilled by B.H. Putnam, Operator
Proposed diamond drill hole
F.T. Fischer - 7/56
HANCOCK CO.
GRAINGER CO.
LESSIE SCEARCE 140 A.
DOSIE SCEARCE 35 A.
LIZA ANTRICAN 15 A.
HUBERT DALTON 122 A.
INDIAN CREEK
SCEARCE CREEK
(LEFFEW HEIRS) CLEO COPE, ET AL 143 A.
STARLING SCEARCE 35 A.
A.B. & PEARLEY DALTON 50 A.
L. F. MALLICOAT 150 A.
JOHN & JOA WOLFENBARGER 50 A.
CLAUDE WOLFENBARGER 18 A.
HENRY L. & MARTHA WOLFE, ET AL 82 A.
CALVIN BERRY 122 A.
ROBERT WOLFE 300 A.
CASS MYERS 50 A.
LESTER SCEARCE 100 A.
J. C. MYERS 67 A.
BM SN 159 1284
N
1600
1700
1800
1500
1300
1400
LH-1
LH-2
LH-3
LH-4
LH-5
JW-1
JW-2
JW-3
JW-4
SC-1
SC-2
D-1
D-2
D-3
D-4
M-1
M-2


HANCOCK CO.
GRAINGER CO.
LESSIE SCEARCE
140 A.
DOSIE SCEARCE
35 A.
HUBERT DALTON
122 A.
LIZA ANTRICAN
15 A.
INDIAN CREEK
SCEARCE CREEK
(LEFFEW HEIRS)
CLEO COPE, ET AL
143 A.
STARLING SCEARCE
35 A.
A.B. & PEARLEY DALTON
50 A.
L. F. MALLICOAT
150 A.
JOHN & IDA WOLFENBARGER
50 A.
CLAUDE WOLFENBARGER
18 A.
HENRY L. & MARTHA WOLFE, ET AL
82 A.
CALVIN BERRY
122 A.
ROBERT WOLFE
300 A.
CASS MYERS
50 A.
LESTER SCEARCE
100 A.
J. C. MYERS
67 A.
BM SN 159
1284
1600
1700
1800
1500
1300
1400
N
GEOCHEMICAL MAP OF
INDIAN CREEK PROSPECT
SHOWING PERCENTAGE OF ZINC IN SOIL AND
LOCATIONS OF PROPOSED DIAMOND DRILL HOLES
SCALE: 1 INCH = 500 FEET
Base enlarged from U.S.G.S. - T.V.A. Topographic Map of SWAN ISLAND Quadrangle (162-NE)
Published on Scale of 1:24,000
GEOCHEMICAL SYMBOLS
Sample locality
Sample locality showing percentage of zinc in soil
Outline of geochemical anomaly (.07% Zinc and greater)
CONTOUR INTERVAL = .05%
DIAMOND DRILL HOLES
Diamond drill hole drilled by other than B.H. Putnam, Operator
Diamond drill hole drilled by B.H. Putnam, Operator
Proposed diamond drill hole
F.T. Fischer - 7/56