JUL 15 1960 O.M.E.

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DATE	INITIALS	CODE
7-15	gad	110
"		110
"		800
"	Murphy	500

FINAL INSPECTION REPORT

DMEA-4580, Idm-E1088 (Zinc)

Operator: B. H. Putnam, Thorn Hill, Tennessee, Assignee

Location: Puncheon Camp Creek area, Grainger County, Tennessee

Summary of drilling completed

	Since last inspection	Total
Number of holes	12 ✓	97X 91
Footage	5,376 ✓	47,844 X 47,838'
Reamed	51(?)*	1,308 *

*Record not clear without access to driller's invoice.

22 holes reamed 1,256' through first 22 holes

Number of holes showing:

a) Commercial-grade zinc ore . . . . . 12 ✓
b) Non-commercial zinc mineralization 51
c) No zinc mineralization 34

Data available on the 12 holes completed since the last previous inspection are summarized as follows:

✓ Hole AJ-1: Located on Austin Johnson property at coordinates: N-47,341; E-41,556. Collar elevation: 1,546 feet AT. Drilling started: 5-9-60; completed: 5-13-60. Total depth: 350 feet. Summary log: 0-90 overburden; 90-347(?) Kingsport formation (TR @ 243); 347-350 Longview dolomite. Mineralization: Barren--no zinc; 35% pyrite @ 286-288; 2% pyrite @ 288-307.

✓ Hole AC-1: Located on Pryor Acuff tract at coordinates: N-47,447; E-42,463 (400 feet down-dip from Hole JA-5). Collar elevation: 1,426 feet AT. Drilling started : (?); completed: 5-13-60. Total depth: 626 feet. Summary log: 0-53 overburden; 53-330 Mascot dolomite; 330-596 Kingsport formation (TR @ 500); 596-626 Longview dolomite. Mineralization: Shine hole---464-465 (1') 2% Zn (est); 483-483½ (1/2') 2% Zn (est).

✓ Hole JA-10: Located on Elvin Jackson tract at coordinates: N-47,671; E-42,063 (200 feet NE on strike from Hole JA-4). Collar elevation: 1,510 feet AT. Drilling started: 5-13-60; completed: 5-23-60. Total depth: 452 feet. Summary log: 0-118 overburden; 118-399 Kingsport formation (TR @ 306); 399-452 Longview dolomite. Mineralization: Barren hole---no zinc; local strong shines of pyrite 145-292; 7% pyrite

@ 306-316; 10% pyrite @ 321-322; 5% pyrite @ 339-344; 2% pyrite @ 360-393; local shines of pyrite @ 423-424, 433, 435.

Hole JA-11: Located on Elvin Jackson tract at coordinates: N-47,007; E-41,783 (approximately 400 feet down-dip from Hole AJ-1). Collar elevation: 1,450 feet AT. Drilling started: 5-14-60; completed 5-21-60. Total depth: 630 feet. Summary log: 0-48 overburden; 48-309 Mascot dolomite; 309-592(?) Kingsport formation (TR @ 463): 592(?) - 630 Longview dolomite. Mineralization: Trace hole---trace of ZnS @ 89; local heavy pyrite @ 191-590 reaching as much as 15 - 20% in 1-foot runs.

Hole JA-12: Located on Elvin Jackson tract at coordinates: N-47,615; E-41,979 (midway between Holes JA-4 and -10). Collar elevation: 1,523 feet AT. Drilling started: 5-23-60; completed: 5-31-60. Total depth: 413 feet. Summary log: 0-103 overburden; 103-373 Kingsport formation (TR @ 259); 373-413 Longview dolomite. Mineralization: Shine hole---shines of ZnS @ 188, 189-191, 195, 199, 204, and 205; 208-209 (1') 3% Zn (est); shine @ 217, trace of ZnS @ 284. Local very strong shines of pyrite @ 199 - 413.

Hole BR-1: Located on S. S. Breeding tract at coordinates: N-48,488; E-43,277 (400 feet NE on strike from Hole CO-6). Collar elevation: 1,522 feet AT. Drilling started: 5-26-60; completed: 6-2-60. Total depth: 325 feet. Summary log: 0-49 overburden; 49-294 Kingsport formation (TR @ 184); 294-325 Longview dolomite. Mineralization: Barren hole---no zinc; local heavy pyrite shines @ 163, 195, 211, 218, 247, and 257.

Hole BR-2: Located on S. S. Breeding tract 200 feet NE on strike from Hole BR-1. Coordinates and collar elevation not yet available. Drilling started: 6-2-60; completed: 6-8-60. Total depth: 400 feet. Summary log: 0-89 overburden; 89-372 Kingsport formation (TR @ 279(?)); 372-400 Longview dolomite. Mineralization: Barren--no zinc; pyrite shines @ 279 and 286.

Hole JA-13: Located on Elvin Jackson tract 100 feet SW on strike from Hole JA-4. Coordinates and collar elevation not yet available. Drilling started: 5-31-60; completed: 6-6-60. Total depth: 481 feet. Summary log: 0-88 overburden; 88-386 Kingsport formation (TR @ 279); 386-481 Longview dolomite. Mineralization: Shine hole--shines of ZnS @ 186, 258, and 399. Much pyrite as follows: 210-251 (41') 6%; 267-272 (5') 4%; 277-284 (7') 2%; 285-316 (31') 3%; 317-371 (4') 2%; 390-420 (30') ½%.

Hole JA-14: Located on Elvin Jackson tract 200 feet up-rake from Hole JA-11 toward JA-7. Coordinates and collar elevation not yet available. Drilling started: 6-7-60; completed: 6-15-60. Total depth: 560 feet. Summary log: 0-55 overburden; 55-264 Mascot dolomite; 264-526 Kingsport formation (TR @ 436): 436-560 Longview dolomite. Mineralization: Barren---no zinc; core well-brecciated and shows heavy pyrite in scattered strong shines @ 197-547.

Hole MG-6: Located on McGinnis tract 400 feet SW of Hole MG-3. Coordinates and collar elevation not yet available. Drilling started: 6-8-60; completed: 6-20(?)-60. Total depth: 350 feet. Summary log: 0-40 overburden; 40-323½ Kingsport formation (TR @ 229); 323½-350 Longview dolomite. Mineralization: Barren hole.

Hole JA-15: Located on Elvin Jackson tract 100 feet down-dip from Hole JA-5. Coordinates and collar elevation not yet available. Drilling started: 6-16-60; completed: 6-23-60. Total depth: 450 feet. Summary log: 0-46 overburden; 46-151 Mascot dolomite; 151-436(?) Kingsport formation (TR @ 338); 436(?)-450 Longview dolomite. Mineralization: Shine hole---shines of ZnS @ 205, 290½, and 368. Local strong shine of pyrite 118-184, 210-251, 336-411, 419-426, and 446-450.

Hole JA-16: Located on Elvin Jackson tract 200 feet NE on strike from Hole JA-5. Coordinates and collar elevation not yet available. Drilling started: 6-20(?)-60; completed: 6-28-60. Total depth: 339 feet. Summary log: 0-64 overburden; 64-80(?) Mascot dolomite; 80(?)-339 Kingsport formation (TR @ 264)---bottom 30 feet in massive chert. Mineralization: Shine hole---295-296 (1') ½% Zn (est); very little pyrite.

With the completion of Hole JA-16 on June 28, 1960 insufficient time was available to start and reasonably complete other holes prior to the closing date of the contract (6-30-60). Consequently, the 2,156 feet of the 50,000 feet of drilling allowed under the contract were unused; or conversely 95.7% of the drilling was completed. This drilling has adequately explored the three major targets in the contract area outlined by geochemical prospecting. Preliminary review of the drilling results shows that the exploration found: 1) a small ore body on the Green-Dalton tract; 2) traces of mineralization but probably of sufficient strength to give the geochemical anomaly on the Stapleton-Dave Jackson tracts; and 3) a large pyrite-bearing breccia body mostly on the Elvin Jackson tract---probably with sufficient zinc to cause a strong geochemical anomaly. The results suggest that the project may be certifiable but further study is warranted.

Inspected: July 8, 1960

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

DEC 19 1960

Reg IV 60461

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DATE	INITIALS	CODE
12/21	cae	210
		110
		120
12/22	WPM	~~500~~
		500

Mr. Benjamin H. Putnam, Assignee
512 Third Street
Marietta, Ohio

Re: DMRA-4590 (Zinc)
Benjamin H. Putnam, Assignee
Pemberton Gap Creek Prospect
Grainger County, Tennessee
Contract Idm-E1968

Dear Mr. Putnam:

Enclosed for your information and files is a copy of a Report of Review on the project costs under the subject contract. The balance due of $4,456.98 will be paid shortly.

Sincerely yours,

George C. Selfridge

Chief, Division of Field Operations

Enclosures

LGHouk/GCSelfridge/gla/fw-12/16/60

cc: Docket (white)
Director's Read File
CARA Division
Reg. IV (1)
Fiscal Section, Div. Admin. Services
Mr. Houk (pink surname copy)
Chron.

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

Sch 59

Budget Bureau No. 42-R1036.5

DEC 21 1960
O.M.E.

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

Month of June, 1960 Docket No. DMEA 4890 Contract No. 16m R 1094
Operator's Name R. H. Putnam Minerals Zinc
Address 512 Third Street, Marietta, Ohio
Contract Amount, $ Government Participation: % Amount, $ 88,062.50

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:						
Drilling	6348.35	134,271.00	140,619.35	[illegible]	[illegible]	[illegible]
Bulldozing						
Crosscutting						
Drifting						
Reaming	20.00	2,312.00	2,332.00	[illegible]	[illegible]	[illegible]
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
Core Boxes	-	290.25	290.25	-	[illegible]	[illegible]
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis	-	303.75	303.75	-	[illegible]	[illegible]
Payroll Taxes						
Liability Insurance Paid. Allow. @ $0.18/ft.	522.90	8,087.94	8,610.84	[illegible]	[illegible]	[illegible]
(8) Contingencies (specify):						
Totals	6891.15	145,444.94	154,346.09	891.59	145,432.19	154,346.09

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

Date 7-19-60 *Payee R. H. Putnam

Per R. H. Putnam Title agent

*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:

For Report of Review 12/19/60 $ 4456.96

Signature [illegible]
(Authorized Certifying Officer)

Date 12/20/60 Vou. No. 2594

(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. E-1088 in accordance with the terms of the contract.

Signature W. J. Lynch Title MINING ENGINEER U. S. BUREAU OF MINES Date JUL 26 1960

APPROVAL BY ~~DMEA EXECUTIVE OFFICER OR ALTERNATE~~: George C. Selfridge, Chief Division of Field Operations

Signature George C. Selfridge Title Date Dec. 16, 1960.

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 195 60 Docket No. DMEA 4580 Contract No. Idm E 1088

Operator's Name B. H. Putnam Minerals

Address 513 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	Ft.	8340.25	2,905	142,619.25	47,838	2.981	50,000	3.00
Reaming	"	20.00	10	2,332.00	1,266	2.00	5,000	2.00
Churn								
Samples	Ea.	-	-	293.75	237	1.239	500	1.25
Auger								
Core Boxes	"	-	-	290.25	150	1.935	150	2.00
Stripping								
Trenching								
Test Pits								
Roads and Trails								
Rigging Ideld. Allow. @ $0.18/Ft.	Ft.	522.90	2,905	8,610.24	47,838	0.18	50,000	0.18
Total Distributed Costs		8891.15		154,346.00				Total Costs Authorized by Contract
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
Total Costs		8891.15		154,346.00				

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 7-19-60 Operator B. H. Putnam

Per [signature] Title agent

Remarks: A-13, EF-1, EF-2, A-24, MG-6, A-15, A-16

→ 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)

[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

A PROGRESS REPORT ON THE PUNCHEON CAMP CREEK PROJECT

GRAINGER COUNTY, TENNESSEE

June, 1960

Docket No. 4580
Contract No. Idm-E-1088

During the month of June seven (7) holes were drilled on the Puncheon Camp Creek Project. A total of 2,905 feet of hole was drilled. Four of these holes were drilled on the Elvin Jackson farm, two on the S. S. Breeding farm and one on the J. C. McGinnis farm.

According to the terms of Amendment No. 5, the subject contract expired on June 30, 1960, and the drilling under this contract is terminated.

Hole JA-13 was drilled at a location 100 feet west of JA-4 on the strike fence in order to explore for the possibility of mineralization trending in this direction from JA-7. Hole JA-13 collared in the Kingsport formation and was drilled to a depth of 481 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0- 88	Overburden	-	-	-
88-386	Kingsport	"R" @ 279 "S" @ 347 "T" @ 386	Shine @ 186,258, 399	Dolomite and recrystalline; abundant pyrite
386-481	Longview	"U" @ 396	-	Dolomite & recrystalline

Hole BR-1 was drilled 400 feet east of CO-6 in an attempt to intersect an alternate possible trend of mineralization from the Elvin Jackson geochemical anomaly. This hole collared in the Kingsport formation and was drilled to a depth of 325 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0- 49	Overburden	-	-	-
49-294	Kingsport	"H" @ 184 "G" @ 247 "I" @ 294	-	Dolomite and recrystalline, some breccia
294-325	Longview	"J" @ 308	-	Dolomite

Hole BR-2 was drilled at a location approximately 200 feet east of BR-1 in a further attempt to intersect an alternate possible trend of mineralization. This hole collared in the Kingsport formation and was drilled to a depth of 400 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0- 69	Overburden	-	-	-
69-372	Kingsport	"H" @ 279? "G" @ 330? "I" @ 372	-	Dolomite and recrystalline;some breccia
372-400	Longview	"J" @ 383	-	Dolomite & recrystalline

Hole JA-14 was drilled 200 feet west of JA-9 in an attempt to intersect mineralization trending in this direction from hole JA-7. Hole JA-14 collared in the Mascot formation and was drilled to a depth of 560 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0- 55	Overburden	-	-	-
55-264	Mascot	Chert @ 264	-	Dolomite
264-526	Kingsport	"H" @ 436 "G" @ 493? "I" @ 526	-	Dolomite and recrystalline; breccia & very abundant pyrite
526-560	Longview	"J" @ 536	-	Dolomite, recrystalline and some limestone

Hole MC-6 was drilled 200 feet east of BR-2 to further explore the area between CO-6 and MC-3 east of the Elvin Jackson anomaly. MC-6 collared in the Kingsport formation and was drilled to a depth of 330 feet.

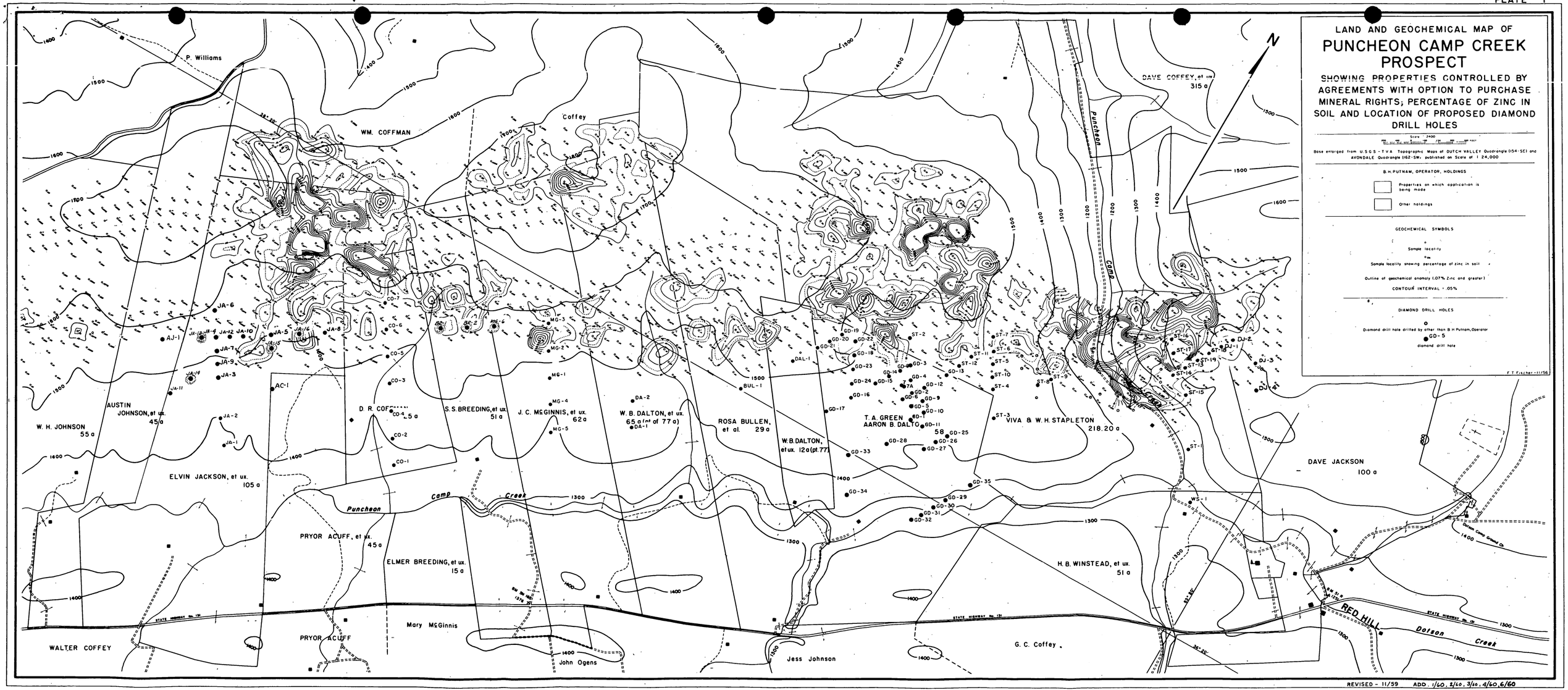
Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0- 40	Overburden	-	-	-
40-323	Kingsport	"g" @ 229 "g" @ 2757 "g" @ 323	-	Dolomite, recrystalline and some limestone. Little breccia
323-330	Longview	"g" @ 333	-	Dolomite and recrystalline

Hole JR-15 was drilled at a location 100 feet downdip from JR-5 to explore for mineralization in that area east of JR-7. JR-15 collared in the Rascot formation and was drilled to a depth of 450 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0- 46	Overburden	-	-	-
46-151	Rascot	Chas @ 152	-	Dolomite
151-4367	Kingsport	"g" @ 330 "g" @ 394 "g" @ 4367	Shine @ 205, 290½ & 368	Dolomite & recrystalline. Some breccia
4367-450	Longview	-	-	Dolomite & recrystalline

Hole JR-16 was drilled at a location 200 feet east of JR-5 to explore for mineralization downdip from the geochemical anomaly. This hole collared in the Rascot formation and was drilled to a depth of 339 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0- 62	Overburden	-	-	-
62- 027	Rascot	Chas @ 027	-	Dolomite
02-339	Kingsport	"g" @ 270 "g" @ 315?	293-294, Est.	Dolomite,recrystalline and chert. Little breccia



REVISED - 11/59 ADD. 1/60, 2/60, 3/60, 4/60, 6/60

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RECEIVED MAY 26 1960

DATE	INITIALS	CODE
5-26	gad	VVO
		VVO
5/26		800
5/31	Murphy	500

INTERIM REPORT

DMEA-4580, Idm-E1088 (zinc)

Operator: B. H. Putnam, Thorn Hill, Tennessee, Assignee

Location: Puncheon Camp Creek area, Grainger County, Tenn.

Summary of drilling completed

	Since last inspection	To date
Number of holes.....	8 ✓	85 79
Footage	3,568 ✓	42,468 42462'
Footage reamed.....	98 ?	1,256 ?

Number of Holes showing:

a)	Commercial-grade zinc ore.....	12
b)	Non-commercial zinc mineralization...	45
c)	No zinc mineralization.....	28

Since the last interim report submitted (for inspection of project on March 9, 1960) the project was visited on April 19, 1960 in the company of L. G. Houk, Acting Field Officer, OME R gion IV and V. J. Lynch, U. S. Bureau of Mines. No report was submitted for that visist as the information available to the Examiner at that time was incomplete. Also in that period The New Jersey Zinc Company effected a management contract with B. H. Putnam for the completion of the DMEA contract and placed a Longyear drill in operation in the Puncheon Camp contract area on April 13, 1960. With the progress now being made it is anticipated that the drilling will be essentially complete by the end of the current contract expiration date on June 30, 1960.

Data on the eight drill holes completed since March 9 are summarized as follows:

Hole DJ-4: Located on Dave Jackson Tract 200 feet down dip from Hole DJ-3. Drilling started: 2/29/60; completed: approximately 3/10/60. Total depth: 450 feet. Summary log: 0-174 Mascot dolomite (thickness of overburden not recorded); 174-444 Kingsport formation (TR @ 355); 444-450 Longview dolomite. Mineralization: None--barren hole.

MAY 26 1960
O.M.E.

Hole JA-3: Located on Elvin Jackson tract approximately 300 feet up-dip from Hole JA-2. Drilling started: 3/26/60; completed 4/6/60. Collar elevation: 1,455 feet. Total depth: 600 feet. Summary log: 0-73 overburden; 73-252 Mascot dolomite; 252-600 Kingsport formation and Longview dolomite (T-bed not recognized--fault gouge; TR @ 413). Mineralization: Shine hole; shines of ZnS @ 194½, 427 with 1 ft (449-450) estimated @ 4½% Zn. Hole strongly mineralized with pyrite throughout.

Hole JA-4: Located on the Elvin Jackson tract 600 feet up-dip from Hole JA-2. Collar elevation 1526 ft. Drilling started: 4/7/60; completed: 4/13/60. Total depth 475 ft. Summary log: 0-98 overburden; 98-102 Mascot dolomite; 102-397 Kingsport formation (TR @ 297); 397-475 Longview dolomite. Mineralization: 1 ft (195-397) 3 % Zn; 1 ft. (205-206) 3½%; 1 ft. (211-212) 1%; 1 ft. (219-220) 3/4 %; 1 ft (231½-323½) 3-3/4%; 1½ ft (274-275½) 3%. All values given are in percent estimated Zn; also strong shines of ZnS @ 214, 226,290,295,297, and 315. Hole also contains considerable pyrite.

Hole JA-5: Located on Elvin Jackson tract 400 ft northeast (on strike) from Hole JA-4. Collar elevation: 1485 ft. Drilling started: 4/13/60; completed: 4/23/60. Total depth: 400 ft. Summary log: 0-44 overburden; 44-400 Mascot, Kingsport and Longview formations (separating markers not recognized; TR @ 278). Strong brecciation @ 238-258 amf 325-390. Mineralization: 12 ft (238-250) 1/4%; shines of ZnS @ 286,303,307, and 310,.

Hole JA-6: Located on Elvin Jackson tract 200 ft up-dip from Hole JA--4. Collar elevation: 1569 ft. Drilling started: 4/15/60; completed: 4/19/60. Total depth: 309 ft. Summary log: 0-90 overburden; 90-296 Kingsport formation (TR @ 163); 296-309 Longview dolomite. Mineralization: Shine (trace) hole; shine of galena @ 154 and shine of sphalerite @ 165. Of note is the galena-the first to be recognized in the DMEA exploration drilling on Copper Ridge; only other occurrence known in the Copper Ridge district is at the Flat Gap mine.

Hole JA-7: Located on the Elvin Jackson tract 100 feet down dip from Hole JA-4. Collar elevation: not known. Drilling started: 4/20/60; completed: 4/25/60. Total depth: 450 ft. Summary log: 0-50 overburden; 50-168 Mascot dolomite; 168-409 Kingsport formation (TR @ 320) 409-450 Longview dolomite. Mineralization: Ore hole; 16' (241-257) 6.2%; 8½' (276-284½) 2.02%; 8' (292-300) ½% est. 10 ft (309-319) 0.79%; 8'(327-335) 2% est. Also shines @ 158-and 260.

Hole JA-8: Located on Elvin Jackson tract 400 ft. northeast (on strike) from Hole JA-5. Collar elevation: not yet known. Drilling strated: 4/22/60; completed: 5/2/60(?) Total depth: 384 ft. Summary log: 0-70 overburden; 70-71 (?) Mascot dolomite; 71(?)-384 Kingsport dolomite (T-bed not reached) TR @ 259). Mineralization: Barren hole--considerable pyrite but no sphalerite.

Hole JS-9: Located on Elvin Jackson tract 100 ft down dip from Hole JA-7. Collar elevation: Not yet known. Drilling started: 4/26/60; completed: 5/6/60. Total depth: 500 ft. Summary log: 0-92 overburden; 92-201 Mascot dolomite; 201-500 Kingsport and Longview formations (T-bed not recognized; TR @ 380). Mineralization: Trace hole--ZnS shine @ 183 and 210; considerable breccia and pyrite.

Drilling in progress

Drilling is in progress at Holes AC-1 and AJ-1 (Acuff and Johnson tracts respectively). Hole AC-1 is located 400 feet down dip from Hole JA-5 and was at a depth of 596 ft with anticipated bottom being 625 ft. Hole AJ-1 is located 400 ft southwest (on strike) from Hole JA-4 and was drilling at a depth of 282 ft with anticipated total depth being about 350 feet. Hole AC-1 was the only hole of the two that showed any zinc--there being two strong shines located at depths of 464 and 483 feet. New sites presently considered are midway between Holes JA-4 and 5, and 400 feet down-dip from Hole AJ-1.

Inspected : May 12, 1960

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

Z

OFFICIAL FILE COPY
O. M. F.
RECEIVED Aug. 18 1960

DATE		
8-18	gad	VVO
		FOO

AUG 18 1960

REGION IV

Memorandum

To: Fiscal Section, Division of Administrative Services, Office of the Secretary, Department of the Interior, Washington 25, D. C.

From: Acting Field Officer, Region IV

Subject: Assay verification - DMEA-4580 (Zinc)
Benjamin H. Putnam, Assignee
Puncheon Camp Creek Prospect
Grainger County, Tennessee
Contract 1088

Please place this letter with the supporting data on the May 1960 voucher.

Lawrence G. Houk

L. G. Houk
Acting Field Officer
Region IV

Attachment

LGHouk/fw-8/18/60

cc: OME Washington docket
CA&A Division
Chron. - Mr. Houk
Reg. IV (2)

RECEIVED
AUG 16 1960
U. S. BUREAU OF MINES
DEF. MIN. ADM.
Knoxville, Tennessee

JEFFERSON CITY, TENNESSEE
August 15, 1960

Mr. Lawrence G. Houk
Acting Field Officer
Region IV, O.M.E.
Room 11, Post Office Bldg.
Knoxville 2, Tennessee

Dear Mr. Houk:

Mr. Lynch has requested that we furnish you the following information. In May the analyses listed below were made under my direction for the B. H. Putnam project at Puncheon Camp Creek:

Sample #	Hole #	Footage	% Zn
10910	JA-7	241-245	18.82
10911	"	245-249	6.70
10912	"	249-254	0.18
10913	"	254-257	0.20
10914	"	276-280	1.60
10915	"	280-284½	2.40
10916	"	309½-314	1.40
10917	"	314-319	0.25
10918	"	327-331	1.94
10919	"	331-335	2.47

Sincerely yours,

THE NEW JERSEY ZINC COMPANY

George R. Durland

George Durland
Chemist, Jefferson City Mine

George Durland/dm
In duplicate
cc: Mr. Lynch ✓

Form 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

JUN 30 1960

Month of May, 1960 Docket No. DMEA 4580 Contract No. Idm 6 1088
Operator's Name B. H. Putnam Minerals Zinc
Address 512 Third Street, Marietta, Ohio
Contract Amount, $ 170,185.00 Government Participation: 50 % Amount, $ 85,092.50

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:				8545.95		
Drilling	8545.95	125,725.05	134,271.00		125,702.30	134,248.25
Bulldozing						
Crosscutting						
Drifting Remining	-	2,512.00	2,512.00	—	2512.00	2512.00
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Tracks Cars Bonds	-	290.25	290.25	—	290.25	290.25
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment	10.00	283.75	293.75	10.00	283.75	293.75
Sampling and Analysis						
Payroll Taxes Incld.						
Liability Insurance Allow. $0.18/ft.	534.78	7,553.16	8,087.94	534.78	7553.16	8,087.94
(8) Contingencies (specify):						
TOTALS	9090.73	136,354.21	145,444.94	9090.73	136,341.46	145,432.19

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

Date 6-30-60 *Payee B. H. Putnam

Per [signature] Title Drilling Supervisor

*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:

$ 4545.37

Signature [signature]
(Authorized Certifying Officer)

Date 6/27/60 Vou. No. 5400

(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. E-1088 in accordance with the terms of the contract.

Signature W. Bryant Title U. S. BUREAU OF MINES Date JUN 22 1960

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Lawrence D. Hoult Title ACTING FIELD OFFICER, REGION IV OFFICE OF MINERALS EXPLORATION Date 6/24/60

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

JUN 30 1960 O.M.E.

OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of May 1960 Docket No. DMEA 4380 Contract No. Idm 8 1088

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 Remaining	Ft.	6545.95	2,971	134,271.00	44,933	2.988	50,000	3.00
Churn	"		-	2,508.00	1,256	2.00	5,000	2.00
Auger Samples	Ea.	10.00	10	393.75	237	1.660	500	1.85
Core Sum.	"		-	290.25	150	1.935	150	2.00
Stripping								
Trenching								
Test Pits								
Roads and Trails Incld. Allow. $0.18/Ft.	Ft.	534.78	2,971	8,087.94	44,933	0.18	50,000	0.18
Total Distributed Costs		9090.73		$145,444.94				Total Costs Authorized by Contract
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
Total Costs		9090.73		$145,444.94				

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 6-10-60 Operator B. H. Putnam

Per G. P. Eddy Title Oper. 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: A-9
AC-1
AJ-1
A-10
A-11
A-12

(Instructions on reverse)

(For Government use only)

Hueaow

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.

MME FORM 6 REFERENCE SLIP
REV. 2-59 OFFICE OF MINERALS EXPLORATION

TO:	DATE	INITIALS
1. 110	6/30	JG
2. ~~500 Mr. Murphy~~		
3.		
4.		
5.		
FROM:		

FOR: Check items for action desired

____ Action ____ Reply for signature of _____
____ Approval ____ Investigate ____ Surname
____ Comment ____ Recommendations ____ Signature
____ Conference ____ Rewrite ____ File
____ Instructions ____ Your information

REMARKS:

GPO 872894

A PROGRESS REPORT ON THE PUNCHEON CAMP CREEK PROJECT

GRAINGER COUNTY, TENNESSEE

May 1960

Docket No. 4580
Contract No. Idm-E-1088

During the month of April six (6) holes were drilled on the Puncheon Camp Creek Project. A total of 2,971 feet of hole was drilled.

Four of these holes were drilled on the Elvin Jackson farm, one on the Pryor Acuff farm and one on the Austin Johnson farm.

Hole JA-9 was drilled at a location 100 feet south of hole JA-7 on the dip fence in order to gain better knowledge concerning the extent of the mineralization in this direction. This hole collared in the Mascot formation and was drilled to a depth of 500 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0- 92	Overburden	-	-	-
92-201	Mascot	CM @ 201	Shine @ 183	Dolomite
201-500	Kingsport & Longview	"R" @ 380 "S" @ 444 ±	Shine @ 210	Dolomite and recrystalline. Abundant pyrite from 237 to bottom in breccia; Fault gauge 462-500

Hole AC-1 was located 400 feet south of hole JA-5. This hole collared in the Mascot formation and was drilled to a depth of 626 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0- 53	Overburden	-	-	-
53-330	Mascot	CM @ 330	-	Dolomite
330-596	Kingsport	"R" @ 500 "S" @ 544 "T" @ 596	464-465,2% Est. 483-483½,2% "	Dolomite and recrystalline; some "rock-matrix" breccia. Chert from 566-596
596-626	Longview	-	-	Dolomite & recrystalline

Hole AJ-1 was drilled at a location 400 feet west of JA-4. The hole collared in the Kingsport formation and was drilled to a depth of 350 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0- 90	Overburden	-	-	-
90-243	Kingsport	"R" @ 243 "S" @ 292 "T" @ 347	-	Dolomite and Recrystalline; some breccia
347-350	Longview	-	-	Dolomite

Hole JA-10 was drilled 200 feet east of JA-4 on the strike fence in an attempt to intersect mineralization between hole JA-7 and the geochemical anomaly. This hole collared in the Kingsport formation and was drilled to a depth of 452 feet.

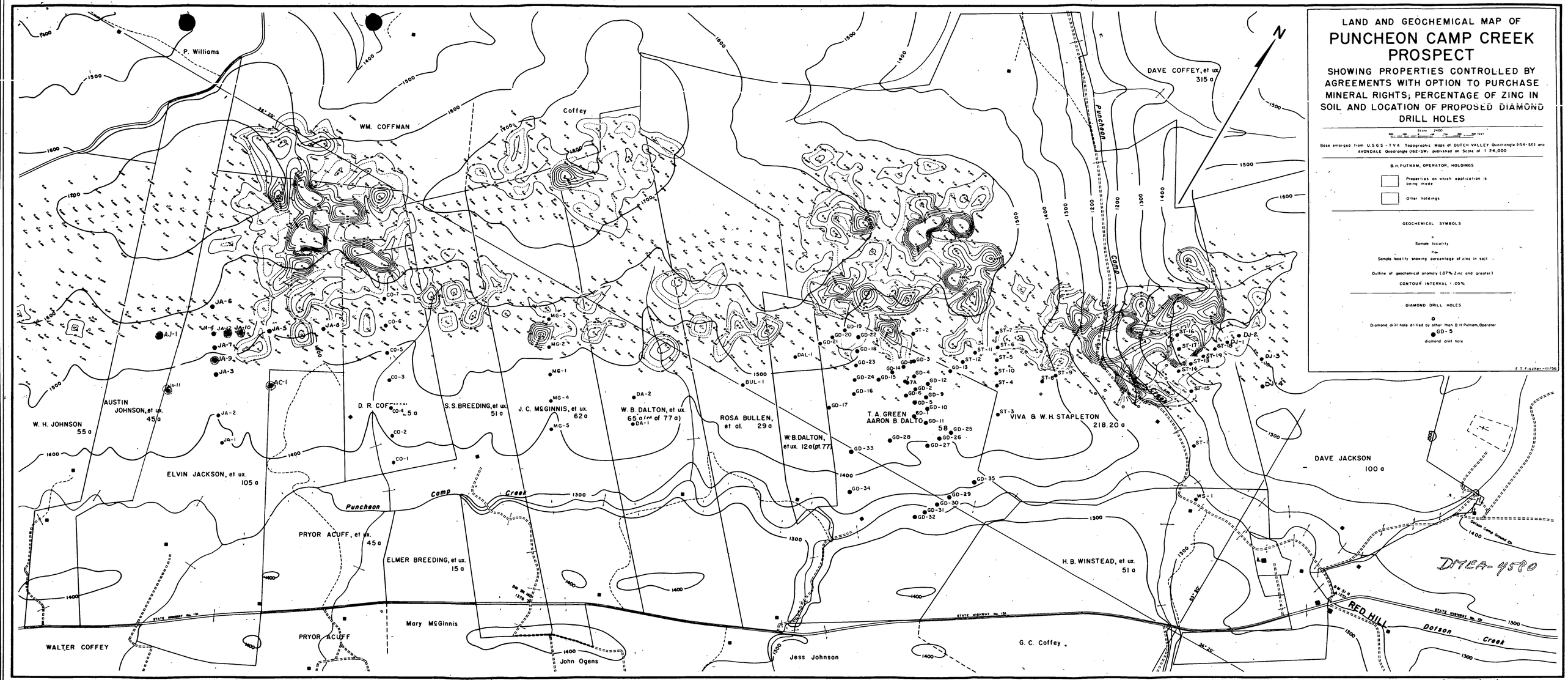
Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-118	Overburden	-	-	-
118-399	Kingsport	"R" @ 306 "S" @ 355 "T" @ 399	-	Dolomite and recrystalline; little breccia;Abundant pyrite 306-393
399-452	Longview	"U" @ 410	-	Dolomite & recrystalline

Hole JA-11 was drilled 400 feet downdip from hole AJ-1 in an attempt to intersect mineralization trending from hole JA-7 and the geochemical anomaly. This hole collared in the Mascot formation and was drilled to a depth of 630 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0- 48	Overburden	-	-	-
48-309	Mascot	CM @ 309	Trace @ 89	Dolomite
309-567	Kingsport	"R" @ 463 "S" @ 528 "T" @ 547	-	Dolomite & recrystalline; "Crackle" breccia; Very strong pyrite 247-550
567-630	Longview	"U" @ 578	-	Dolomite & recrystalline

Hole JA-12 was drilled 100 feet east of JA-4 on the strike fence in a further attempt to intersect mineralization trending between hole JA-7 and the geochemical anomaly. This hole collared in the Kingsport formation and was drilled to a depth of 413 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-103	Overburden	-	-	-
103-373	Kingsport	"R" @ 259 "S" @ 333 "T" @ 373	Strong shines @ 188,189-91 195,199,204 & 205; 208-209, 3% Est. Shine @ 217,Trace 284	Dolomite & recrystalline; some breccia. Very strong pyrite 231-413
373-413	Longview	"U" @ 385	-	Dolomite & recrystalline


LAND AND GEOCHEMICAL MAP OF
PUNCHEON CAMP CREEK PROSPECT
SHOWING PROPERTIES CONTROLLED BY AGREEMENTS WITH OPTION TO PURCHASE MINERAL RIGHTS; PERCENTAGE OF ZINC IN SOIL AND LOCATION OF PROPOSED DIAMOND DRILL HOLES
Scale 1:24000
Base enlarged from U.S.G.S. - T.V.A. Topographic Maps of DUTCH VALLEY Quadrangle (154-SE) and AVONDALE Quadrangle (162-SW), published on Scale of 1:24,000
B.H. PUTNAM, OPERATOR, HOLDINGS
Properties on which application is being made
Other holdings
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
GD-5
diamond drill hole
F.T. Fischer - 11/56
N
P. Williams
WM. COFFMAN
Coffey
DAVE COFFEY, et ux. 315 a
Puncheon Camp Creek
W. H. JOHNSON 55 a
AUSTIN JOHNSON, et ux. 45 a
ELVIN JACKSON, et ux. 105 a
D. R. COFFEY 15 a
S. S. BREEDING, et ux. 51 a
J. C. McGINNIS, et ux. 62 a
W. B. DALTON, et ux. 65 a (pt of 77 a)
ROSA BULLEN, et al. 29 a
W. B. DALTON, et ux. 12 a (pt. 77)
T. A. GREEN
AARON B. DALTO 58
VIVA & W. H. STAPLETON 218.20 a
DAVE JACKSON 100 a
PRYOR ACUFF, et ux. 45 a
ELMER BREEDING, et ux. 15 a
H. B. WINSTEAD, et ux. 51 a
WALTER COFFEY
PRYOR ACUFF
Mary McGinnis
John Ogens
Jess Johnson
G. C. Coffey
RED HILL
Dolson Creek
STATE HIGHWAY No. 131
Dolson Camp Ground Ch.
DMEA-4580
REVISED - 11/59 ADD. 1/60, 2/60, 3/60, 4/60

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

Budget Bureau No. 42-R1036.5

Ach 1813

MAY 27 1960
O.M.E.

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

Month of April 1960 Docket No. DMEA 4580 Contract No. Ion E 1088
Operator's Name B. H. Putnam Minerals Zinc
Address 512 Third Street, Marietta, Ohio
Contract Amount, $ 170,125.00 Government Participation: 50 % Amount, $ 85,062.50

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:				7670.30		
Drilling	$7693.05	118,032.00	125,725.05		118,032.00	125,702.30
Bulldozing						
Crosscutting						
Drifting						
Reaming	-	2,512.00	2,512.00	-	2512.00	2512.00
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
Core Boxes	-	290.25	290.25		290.25	290.25
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis		283.75	283.75		283.75	283.75
Payroll Taxes						
Liability Insurance						
Incidental Allowance @ $0.18/Ft.	471.24			471.24	7081.92	7553.16
(8) Contingencies (specify):						
Totals	$8164.29	136,354.21	128,199.92	8141.54	128,199.92	136,341.46

I certify that the above bill is correct and just and that payment therefor has not been received.
Date May 9, 1960 Payee B. H. Putnam
Per [signature] Title Drilling 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:

$ 4090.77

Signature
(Authorized Certifying Officer)

Date 5/27/60 Vou. No. 4907

(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. E-1088 in accordance with the terms of the contract.

Signature W. J. Lynch Title MINING ENGINEER U. S. BUREAU OF MINES Date MAY 19 1960

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Lawrence G. Hoch Title ACTING FIELD OFFICER, OFFICE OF MINERALS E. Date 5-23-60

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.

UNITED STATES
DEPARTMENT OF THE INTERIOR
Office of the Secretary
Accounting Unit
Washington

ADMINISTRATIVE SUSPENSION STATEMENT

Name and Address of Payee: B. H. Putnam
512 Third Street, Marietta, Ohio

Amount Claimed:	Differences (Explained Below)	Amount Approved
8,164.29	22.75	8,141.54 Govt. Part. 50% 4,070.77
Bu. Voucher No.	Payee's Invoice No. Contract No. Idm E 1088	Period April 1960

EXPLANATION

Disallowed:

Haul core on invoice No. 46030 from E. J. Longwear Co.	6.50
Capping hole on " " " " " " " "	3.25
Haul core on invoice No. 46029 from E. J. Longwear Co.	9.75
Capping hole on invoice No. " " " " " "	3.25
	22.75

Not authorized by contract

Any reclaim for items deducted must be supported by the original of this statement and submitted to the office shown above.

Suspension made by:

Opal M. Alexander
Signature

Assistant Chief, Accounting Unit
Title

74165

Form MF-104A
(April 1952)

Budget Bureau No. 42-R1151.2

MAY 27 1960 O.M.E.

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

Month of April 1960 Docket No. DMEA 4580 Contract No. Icm F 1088
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	Ft.	$7693.05	2,610	125,725.05	41,962	2.996	50,000	3.00
Reaming	"	-	-	2,502.00	1,256	2.00	5,000	2.00
Churn Samples	Ft.	-	-	283.75	227	1.25	500	1.25
Auger Core Boxes	"	-	-	290.25	150	1.935	150	2.00
Stripping								
Trenching								
Test Pits								
Roads and Trails Incld. Allow. $0.18/Ft.	Ft.	471.24	2,610	7,553.16	41,962	0.18	50,000	0.18
Total Distributed Costs		$8164.29		$136,354.21				Total Costs Authorized by Contract
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
Total Costs		$8164.29		$136,354.21				

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 9, 1960 Operator B. H. Putnam

Per C. R. Eddy Title Dlg. 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: $19.50 deducted from drilling costs. No provision made for capping holes the 1st yr.

See suspension attached in the amount of 22.75 OA

(For Government use only)

H Gordon

GEOLOGIST, U. S. G. S.
MAY 18 1960

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 PUNCHEON CAMP CREEK PROJECT

GRAINGER COUNTY, TENNESSEE

April 1960

Docket No. 4580
Contract No. Idm-E-1088

During the month of April six (6) holes were drilled on the Puncheon Camp Creek Project. On April 12th, an additional diamond drill was moved onto the property. We now have two contract machines on the project, one of E. J. Longyear Company in addition to Putnam Drilling Company's rig.

All of the holes were drilled on the Elvin Jackson farm.

Hole JA-3 was drilled 300 feet north of JA-2 on the dip fence. This hole collared in the Mascot dolomite and was drilled to a depth of 600 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0- 73	Overburden	-	-	-
73-252	Mascot	CM @ 252	-	Dolomite, scattered pyrite mineralization
252-600	Kingsport & Longview	"R" @ 413	Shine ZnS @ 427; 449-50, Est. 4%	Dolomite and recrystalline. Vertical fault from 450-577. 431-72, 41' @ 2% FeS_2

Hole JA-4 was drilled 300 feet updip from JA-3. This hole collared in the Mascot dolomite and was drilled to a depth of 475 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0- 98	Overburden	-	-	-
98-102	Mascot	CM @ 102	-	Dolomite
102-397	Kingsport	"R" @ 297 "S" @ 355 "T" @ 397	195-196, Est. 3%; 205-206, Est. 3%; 211-212, Est. 1%; 219-220, Est. 3/4%; Shines @ 226, 231½, 232½, 236; 274-275½, Est. 3%; Shines @ 290, 295, 297 & 315	Dolomite and recrystalline; some breccia
397-475	Longview	"U" @ 405	-	Dolomite and recrystalline some breccia

Hole JA-5 was located 400 feet east of JA-3. The hole collared in the Kingsport formation and was drilled to a depth of 400 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0- 44	Overburden	-	-	-
44-400	Kingsport	"R" @ 278 "S" @ 350±	238-250, Est. 1% Shines @ 286, 303, 307, 310	Dolomite and recrystalline; and "rock-matrix" breccia

Hole JA-6 was drilled on the dip fence at a location 200 feet north of JA-4. The hole collared in the Kingsport formation and was bottomed at 309 feet.

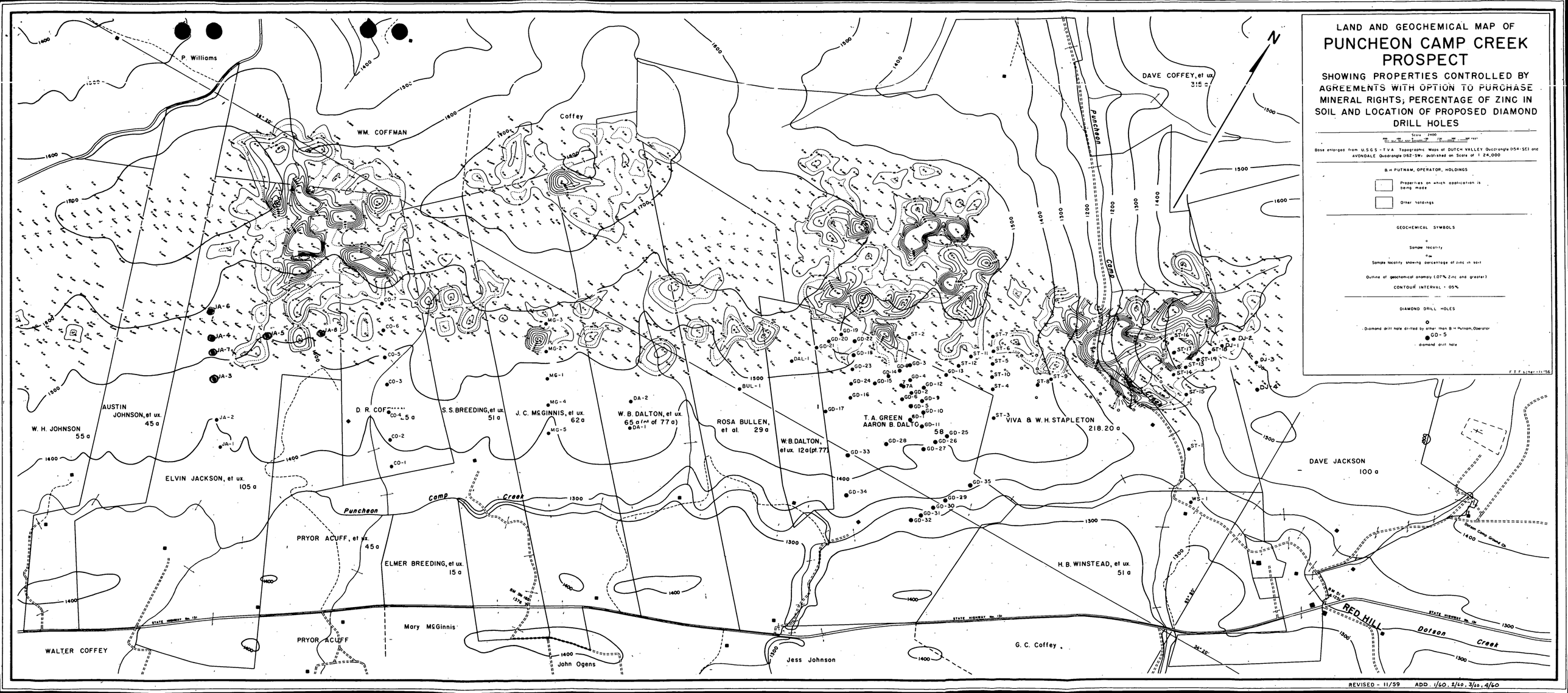
Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0- 90	Overburden	-	-	-
90-296	Kingsport	"R" @ 193' "S" @ 241 ± "T" @ 296'	Shine @ 165'	Dolomite and recrystalline; Shine PbS @ 154; some breccia
296-309	Longview	-	-	Dolomite, some recrystalline

Hole JA-7 was located 100 feet south of JA-4 on the dip fence. The hole collared in the Mascot dolomite and was drilled to a depth of 450 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0- 50	Overburden	-	-	-
50-168½	Mascot	CM @ 168½'	-	-
168½-409	Kingsport	"R" @ 320' "S" @ 385 ±	Shine @ 158; 241-257, 16' @ 5% Zn, Est. Shine @ 260; 276-284½, 8½' @ 1½% Est; 292-300, 8' @ ½% Est; 309½-319, 9½' @ 1½% Est; 321-322, Est. 1%; 327-335, 8' @ 2½% Est.	Dolomite and recrystalline; some breccia
409-450	Longview	"U" @ 418'	-	Dolomite and recrystalline

Hole JA-8 was drilled 40C feet east of JA-5. This hole collared in the Kingsport formation and was drilled to a depth of 384 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0- 70	Overburden	-	-	-
70-384	Kingsport	"R" @ 259' "3" @ 313 ±	-	Vertical Fault 70-119; Dolomite, recrystalline and limestone


LAND AND GEOCHEMICAL MAP OF
PUNCHEON CAMP CREEK PROSPECT
SHOWING PROPERTIES CONTROLLED BY AGREEMENTS WITH OPTION TO PURCHASE MINERAL RIGHTS; PERCENTAGE OF ZINC IN SOIL AND LOCATION OF PROPOSED DIAMOND DRILL HOLES
Scale 2400
Base enlarged from U.S.G.S. - T.V.A. Topographic Maps of DUTCH VALLEY Quadrangle (154-SE) and AVONDALE Quadrangle (162-SW) published on Scale of 1:24,000
B.H. PUTNAM, OPERATOR, HOLDINGS
Properties on which application is being made
Other holdings
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
GD-5
diamond drill hole
F.T.F. Lecher - 11-'56
N
P. Williams
WM. COFFMAN
Coffey
DAVE COFFEY, et ux. 315 a
Puncheon Camp Creek
W. H. JOHNSON 55 a
AUSTIN JOHNSON, et ux. 45 a
ELVIN JACKSON, et ux. 105 a
D. R. COFFEY 45 a
S. S. BREEDING, et ux. 51 a
J. C. McGINNIS, et ux. 62 a
W. B. DALTON, et ux. 65 a (of 77 a)
ROSA BULLEN, et al. 29 a
W. B. DALTON, et ux. 12 a (pt. 77)
T. A. GREEN
AARON B. DALTON 58
VIVA & W. H. STAPLETON 218.20 a
DAVE JACKSON 100 a
PRYOR ACUFF, et ux. 45 a
ELMER BREEDING, et ux. 15 a
H. B. WINSTEAD, et ux. 51 a
WALTER COFFEY
PRYOR ACUFF
Mary McGinnis
John Ogens
Jess Johnson
G. C. Coffey
STATE HIGHWAY No. 131
RED HILL
Dotson Creek
Puncheon Camp Creek Co.
JA-1
JA-2
JA-3
JA-4
JA-5
JA-6
JA-7
JA-8
CO-1
CO-2
CO-3
CO-4
CO-5
CO-6
CO-7
MG-1
MG-2
MG-3
MG-4
MG-5
DA-1
DA-2
DAL-1
BUL-1
GD-1
GD-2
GD-3
GD-4
GD-5
GD-6
GD-7A
GD-9
GD-10
GD-11
GD-12
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GD-34
GD-35
ST-1
ST-2
ST-3
ST-4
ST-5
ST-6
ST-7
ST-8
ST-9
ST-10
ST-11
ST-12
ST-13
ST-14
ST-15
ST-16
ST-17
ST-18
ST-19
DJ-1
DJ-2
DJ-3
DJ-4
WS-1
1400
1300
1500
1600
1700
1200
1100
1000
900
800
700
600
500
400
300
200
100
REVISED - 11/59 ADD. 1/60, 2/60, 3/60, 4/60

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

Sch 1813

Budget Bureau No. 42-R1036.5

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

MAY 27 1960

Month of March 195 60 Docket No. DMEA 4580 Contract No. Idm E 1088

Operator's Name B. H. Putnam Minerals Zinc

Address 512 Third Street, Marietta, Ohio

Contract Amount, $ 170,125.00 Government Participation: 50 % Amount, $ 85,062.50

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:						
Drilling	$1,350.00	116,682.00	118,032.00			
Bulldozing						
Crosscutting						
Drifting						
Reaming	56.00	2,456.00	2,512.00			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
Core Boxes	-	290.25	290.25			
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis	-	283.75	283.75			
Payroll Taxes						
Liability Insurance						
Incidental Allowance @ 0.19/ft. +8	81.00	7,000.92	7,081.92			
(8) Contingencies (specify):						
TOTALS	$1,487.00	126,712.92	128,199.92	1487.00	126,712.92	128,199.92

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

Date 4/18/60 *Payee B. H. Putnam

Per [signature] Title [signature]

*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:

$ 743 50

Signature [signature] (Authorized Certifying Officer)

Date 5/27/60 Vou. No. 4907

(See other side)

743 50

(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-1088 in accordance with the terms of the contract.

Signature [illegible] Title MINING ENGINEER U. S. BUREAU OF MINES Date APR 22 1960

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Lawrence G. Hook Title Actg Field Office Date APR 22 1960

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.

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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

MAY 27 1960
O.M.E.

UNITED STATES
DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION

OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of March 1960 Docket No. DMEA 4580 Contract No. Idm E 1038
Operator's Name D. 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	$1,350.00	450	$118,052.00	39,344	3.00	50,000	3.00
Churn Reaming	Foot	56.00	28	2,502.00	1,228	2.00	5,000	2.00
Auger Samples	Each	-	-	283.75	227	1.25	500	1.25
Stripping Core Boxes	Each	-	-	290.25	150	1.935	150	2.00
Trenching								
Test Pits								
Roads and Trails Incid. Allow @ $0.18/ft	Foot	81.00	450	7,081.92	39,344	0.18	50,000	0.18
Total Distributed Costs		$1,487.00		$128,199.92				Total Costs Authorized by Contract
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
Total Costs		1,487.00		$128,199.92				

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 4/1/60 Operator D. H. Putnam

Per A. R. Eddy Title Dist. Superintendent

Remarks:

→ 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)

Sheridan
Clerk, U. S. C. S.
APR 21 1960

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.

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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 Puncheon Camp Creek
Project, Grainger County, Tennessee

March, 1960

Docket No. 4580
Contract No. Idm E-1088

During the month of March one (1) hole was drilled on the Puncheon Camp Creek Project. Hole DJ-4 was drilled 200 feet south of DJ-3 on the dip fence. This hole collared in the Mascot formation and was drilled to a depth of 450 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-77	Overburden	———	———	———
77-174	Mascot	———	———	Openings 78½-95' dolomite
174-444	Kingsport	"R" @ 355' "S" @ 405' E "T" @ 444'	———	Recrystalline and dolomite; light crackle
444-450	Longview	———	———	Dolomite

Invoice

Marietta, Ohio

March 1960

B. H. Putnam
512 Third Street
Marietta, Ohio

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Puncheon Camp Creek Project DMEA Contract No. Idm-E-1088, Docket No. 4580 - March 1960

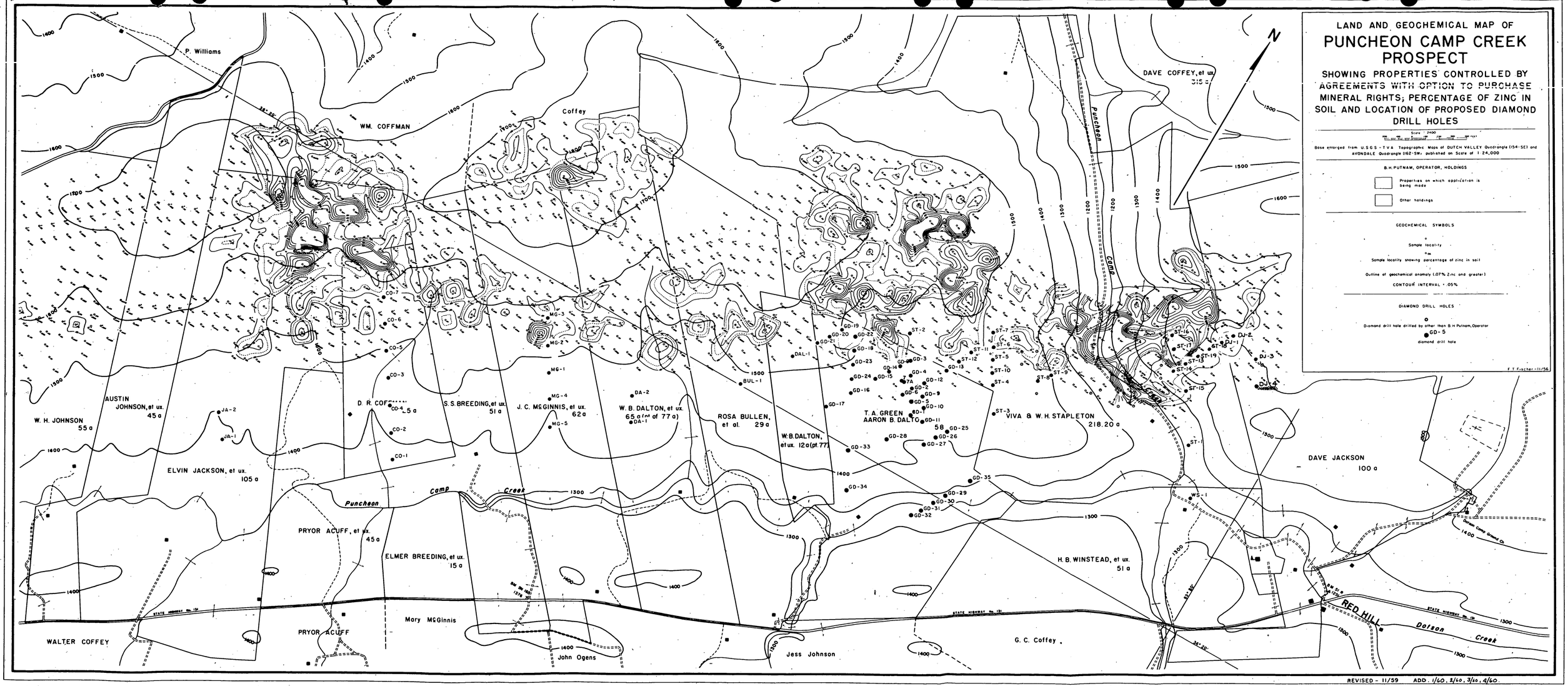
Core Hole No. DJ-4

Footage drilled 450' @ 3.00/ft.		$1,350.00
Footage reamed 28' @ 2.00/ft.		56.00
Total for DJ-4		$1,406.00

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

B. H. Putnam, Operator

by: A. R. Eddy
A. R. Eddy
Drilling Superintendent



REVISED - 11/59 ADD. 1/60, 2/60, 3/60, 4/60.

OFFICIAL FILE COPY
O. M. E.
RECEIVED MAR 17 1960

DATE	INITIALS	CODE
3-17	gad	220
"	JRG	110
3/18	[illegible]	800
3/21	[illegible]	500

INTERIM REPORT

DMEA-4580, Idm-E1088(zinc)

Operator: B. H. Putnam, Thorn Hill, Tennessee--Assignee

Location: Puncheon Camp Creek area, Grainger County, Tennessee

Summary of drilling completed

	Since last inspection	To date
Number of holes	8	77
Footage	2,353	38,894
Footage reamed	0 X 70'	1,158 X

71 holes
1228' reamed
Talbert 3/18/60

Number of holes showing:

a)	Commercial-grade zinc ore	11
b)	Non-commercial zinc mineralization	40
c)	No zinc mineralization	26

Data on the eight holes completed since the last inspection on January 11, 1960 are summarized as follows:

Hole ST-15: Located on Stapleton tract 200 feet down dip from Hole ST-13. Coordinates: N-50,817; E-48,378. Collar elevation: 1389 feet A.T. Drilling started: 1-11-60; completed: 1-15-60. Total depth: 440 feet (no reaming). Summary log: 0-27 overburden; 27-141 Mascot dolomite; 141-399½ Kingsport formation (TR @ 335); 399½-440 Longview dolomite. Mineralization: Barren hole.

Hole ST-16: Located on Stapleton tract approximately 260 feet up dip from Hole ST-14 on offset dip fence. Coordinates: N-51,122; E-48,096. Collar elevation: 1443 feet A.T. Drilling started: 1-18-60; Completed: 1-19-60. Total depth: 190 feet (no reaming). Summary log: 0-14 overburden; 14-161 Kingsport formation (TR @ 67) 161-190 Longview dolomite. Mineralization: Shine hole--trace of ZnS @ 17; 1' est. @ ½% Zn @ 21½-22½; possible shine of zinc carbonate @ 32; 2' est. @ 1% Zn @ 43-45.

Hole ST-17: Located on Stapleton tract about 100 feet down dip from Hole ST-16. Coordinates: 51,047; E-48,155. Collar elevation: 1428 AT. Drilling started: 1-21-60; completed: 1-25-60. Total depth: 245 feet (no reaming*). Summary log: 0-55 overburden; 55-213 Kingsport formation (TR @ 116); 213-245 Longview dolomite. Mineralization: Barren.

Hole ST-18: Located on Stapleton tract about 200 feet northeast of Hole ST-13 on strike fence. Coordinates: 51,081; E-48,448.

* Wrong. 60' reamed.
Talbert 3/18/60

Collar elevation: 1475 feet A.T. Drilling started: 1-26-60; completed: 1-29-60. Total depth: 312 feet (no reaming). Summary log: 0-31 overburden; 31-226½ Kingsport formation (TR @ 187½); 226½-312 Longview dolomite. Mineralization: Shine hole - with estimated values of zinc as follows: 37-37½ (½'), 1%; 86-86½(½'), 2%; 87½-88½ (1'), 4%; 102-103 (1'), 1%; shine @ 107; 108-109½ (1½') 4%; 110-111 (1'), 3%; 111-113 (2') 2½%; 116½-118 (1½'), 1½%; shines @ 124½; 124-124½ (½), 2½%; shines @ 126 and 126½; 130½-133 (2½'), 1/4%; 135½-137½(2'), ½%; shine @ 142.

Hole ST-19: Located on Stapleton tract about midway between Holes ST-13 and-18. Coordinates: N-51,081; E-48,319. Collar elevation: 1463 feet A.T. Drilling started: 1-31-60; completed: 2-3-60. Total depth: 315 feet (no reaming). Summary log: 0-30 overburden; 30-293½ Kingsport formation (TR @ 196); 293½-315 Longview dolomite. Mineralization:"Shine" hole--shines @ 95-95½.

Hole DJ-1: Located on Dave Jackson property (northeast of Stapleton tract) 100 feet northeast of Hole ST-18 on strike fence. Coordinates: 51,253; E-48,409. Collar elevation: 1494 feet AT. Drilling started: 2-4-60; completed: 2-9-60. Total depth: 300 feet (no reaming)**. Summary log: 0-35 overburden; 35-245 Kingsport formation (TR @ 153); 245-300 Longview dolomite. Mineralization: Shine hole--with values of zinc as follows: trace @ 61; 65-67½(2½') 2.41%; 67½-68 (½'), 2.04%; shine @ 86; traces @ 89½, 90, and 93; shine @ 95½; 10,-102(1'), 0.22½%; trace @ 103½; 106½-108½(2'), 2.35%; 112½-113½(1'), 3.34%; 117½-118(½'), ½% (est); 125½-127(1½'), 4.08%; trace @ 128½; 129¼-129½ (¼'), 6% (est); trace @ 278½.

Hole DJ-2: Located on Dave Jackson tract about 100 feet northeast of Hole DJ-1 (on strike fence). Coordinates: N-51,345; E48,451. Collar elevation: 1499 feet A.T. Drilling started: 2-18-60; completed 2-22-60. Total depth: 220 feet (no reaming). Summary log: 0-93 overburden; 93-190 Kingsport formation (TR @ 103); 190-220 Longview dolomite. Mineralization:Barren hole.

Hole DJ-3: Located on Dave Jackson tract about 240 feet S75° E of Hole DJ-2 (first hole in dip fence 500 feet northeast of fence with Holes WS-1, ST-1, ST-15, and ST-13). Coordinates: N-51,268; E-48,689. Collar elevation: 1487 feet A.T. Drilling started: 2-23-60; completed: 2-26-60. Total depth: 331 feet (no reaming). Summary log: 0-85 overburden; 85-313 Kingsport formation (TR @ 216½); 313-331 Longview dolomite. Mineralization: Shine hole--with estimated values of zinc as follows: 151½-153 (1½'), 2%; shines @ 154½; trace @ 155.

** Wrong. 10' reamed.
Talbot
3/18/00

Drilling in progress

Drilling is in progress on Hole DJ-4 located approximately 200 feet southeast of Hole DJ-3 (down dip on dip fence). Core was seen to a depth of 190 feet. The hole was started on February 29, 1960 but encountered considerable difficulty due to a large cavity from about 70 to 105 feet in depth. At least three starts had been made on this hole and the third major effort consists of reaming to at least 110 feet to go below the cavity. On completion of Hole DJ-4 it is anticipated that at least two holes will be drilled in a strike fence southwest of Hole DJ-4.

Inspected: March 9, 1960

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

z

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
ROOM 11 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

March 7, 1960

EXTRA COPY
O. M. E
RECEIVED MAR 17 1960

DATE		CODE
3-17	gad	110
"	gg	110
~~3-18~~	~~Murphy~~	~~502~~

Memorandum

To: Fiscal Section, Division of Administrative Services,
Office of the Secretary
Department of the Interior
Washington 25, D. C.

From: Executive Officer, OME - Region V - Knoxville, Tenn.

Subject: February Monthly Report & Voucher, DMEA-4580, (zinc)
B. H. Putnam, Operator
Puncheon Camp Creek Project
Grainger County, Tennessee
Contract No. Idm-E1088

Enclosed is the original and two copies of the subject monthly report. Government's participation of this voucher is $1,873.94.

Robert A. Laurence

~~Sm.~~
cc
~~Spr~~
Lynch
Files

Form MP-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

MAR 17 1960 O.M.E.

Ach 1393

Month of February 1960 Docket No. DMEA 4580 Contract No. Idm-2-1038
Operator's Name B. H. Putnam Minerals Zinc
Address 512 Third Street, Marietta, Ohio
Contract Amount, $ 170,125.00 Government Participation: 50 % Amount, $ 85,062.50

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:						
Drilling	$3,498.00	$113,184.00	$116,682.00			116,682.00
Bulldozing						
Crosscutting						
Drifting						
Reaming	20.00	2,436.00	2,456.00			2,456.00
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
Core Boxes	----	290.25	290.25			290.25
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis	20.00	263.75	283.75			283.75
Payroll Taxes						
Liability Insurance						
(8) Contingencies (specify): Incidental Allowance @ $0.15/foot	209.88	6,791.04	7,000.92			7,000.92
TOTALS	$3,747.88	$122,965.04	$126,712.92	3747.88	122,965.04	126,712.92

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

Date February '60 *Payee B. H. Putnam

Per Ludwick Fischer 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:

$ 1873.94

Signature
(Authorized Certifying Officer)

Date 3/16/60 Vou. No. 3711

(See other side)

1873.94

(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-1088 in accordance with the terms of the contract.

Signature V. J. Lynch Title U. S. BUREAU OF MINES Date MAR 7 1960

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert A. Lawrence Title OMF FIELD TEAM REGION V Date MAR 7 1960

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

MAR 17 1960
O.M.E.

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

Month of February 1960 Docket No. DMEA 4580 Contract No. Idm-R-1082
Operator's Name D. H. Putman 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	$3,498.00	1166	$116,682.00	38,894	$ 3.00	50,000	$ 3.00
~~Churn~~ Reaming	Foot	20.00	10	2,456.00	1,228	2.00	5,000	2.00
~~Auger~~ Samples	Each	20.00	16	283.75	227	1.25	500	1.25
~~Stripping~~ Core Boxes	Each	———	———	290.25	150	1.935	150	2.00
Trenching								
Test Pits								
~~Roads and Trails~~ Incident. Allow. @ $0.18/foot	Foot	209.88	1166	7,000.92	38,894	0.18	50,000	0.18
TOTAL DISTRIBUTED COSTS		$3,747.88		$126,712.92				TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS		$3,747.88		$126,712.92				

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 February, 1960 Operator D. H. Putman

Per Frederick L. Fisher 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)

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

INSTRUCTIONS

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GPO 872894

A Progress Report on the Puncheon Camp Creek
Project, Grainger County, Tennessee

February 1960
by: F. T. Fischer

Docket No. 4580
Contract No. Idm-E-1088

During the month of February four (4) holes were drilled on the Puncheon Camp Creek Project; Hole ST-19 was drilled 100 feet southwest of ST-18 on the strike fence. This hole collared in the Kingsport formation and was drilled to a depth of 315 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-30	Overburden	———	———	———
30-293½	Kingsport	"R" @ 196'	Shines from 95-95½	Opening from 40-79'; Dolomite
		"S" @ 254½'	———	Dolomite and recrystalline; some breccia and "dry breccia"
		"T" @ 293½'	———	Recrystalline and some dolomite; some breccia and "dry breccia"
293½-315	Longview	"U" @ 306½	———	Dolomite

Hole DJ-1 was drilled 100 feet northeast of ST-18 on the strike fence. The hole collared in the Kingsport formation and bottomed at a depth of 300 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-35	Overburden	———	———	———
35-245	Kingsport	"R" @ 153'	ZnS trace @ 61'; ZnS shines 65-67½, 2.41%; 67½-68, 2.04%; ZnS shine @ 86'; Traces of ZnS @ 89½ and 90'; Trace ZnS @ 93'; ZnS shines @ 95½'; ZnS shines 101 - 102, 0.22%; Trace ZnS @ 103½; ZnS 106½-108½, 2.35%; 112½-113½, 3.34%; 117½-118, est ½%; 125½-127, 4.08%; Trace ZnS @ 128½; ZnS 129½-129½, est. 6%,	Dolomite, partly brecciated
		"S" @ 215'	———	Recrystalline and some dolomite; some breccia

		"I" @ 245	———	Recrystalline, limestone and little dolomite
245-300	Longview	"U" @ 258'	———	Dolomite
		"L-3" @ 269'	Trace ZnS @ 278 3/4'	Recrystalline and dolomite Fault zone @ 276-76½

Hole DJ-2 was drilled 100 northeast of DJ-1 on the strike fense. The hole collared in the Kingsport formation and bottomed at a depth of 220 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-93	Overburden	———	———	———
93-190	Kingsport	"R" @ 103'	———	Dolomite
		"S" @ 159'	———	Dolomite and recrystalline; partly brecciated
		"T" @ 190'	———	Recrystalline, dolomite and limestone
190-220	Longview	"U" @ 200'	———	Dolomite
		"L-3" @ 217'	———	Recrystalline

Hole DJ-3 was drilled N 87° E, 275 feet from DJ-1 on the next dip fence to the northeast. The hole collared in the Kingsport formation and was drilled to a depth of 331 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-85	Overburden	———	———	———
85-313	Kingsport	"R" @ 216½'	ZnS shines 151½-153, est. 2%; shine @ 154½; Trace @ 155	Dolomite
		"S" @ 274'	———	Dolomite and recrystalline
		"T" @ 313'	———	Limestone, recrystalline & Dolomite
313-331	Longview	"U" @ 329'	———	Dolomite

Invoice

Marietta, Ohio

E. H. Putnam
512 Third Street
Marietta, Ohio

February 1960

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Puncheon Camp Creek Project DMEA Contract No. IDm-E-1088, Docket No. 4520 - February 1960

Core Hole No. ST-19

Footage drilled 315' @ $ 3.00/ft. $ 945.00

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

E. H. Putnam, Operator

by: A. R. Eddy
A. R. Eddy
Drilling Superintendent

Invoice

Marietta, Ohio

F. H. Putnam
512 Third Street
Marietta, Ohio

February 1960

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Puncheon Camp Creek Project DMRA Contract No. Idm - E-1088, Docket No. 4580 - February 1960

Core Hole No. DJ-1

Footage drilled 300' @ $ 3.00/ft.		$ 900.00
Footage reamed 10' @ 2.00/ft.		20.00
Total for DJ-1		$ 920.00

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

F. H. Putnam, Operator

By A. R. Eddy
A. R. Eddy
Drilling Superintendent

Invoice

Marietta, Ohio

E. H. Putnam
512 Third Street
Marietta, Ohio

FEBRUARY 1960

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Punnheon Camp Creek Project DMRA Contract No. Idm - S-1088, Docket No. 4580 - February 1960

Core Hole No. DJ - 2

Footage drilled 220' @ $ 3.00/ft. $ 660.00

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

E. H. Putnam, Operator

By: A. R. Eddy
A. R. Eddy
Drilling Superintendent

Invoice

Marietta, Ohio

E. B. Putnam
512 Third Street
Marietta, Ohio

February 1960

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Luncheon Camp Creek Project DMSA Contract No. Idm - E - 1088, Docket No. 4580 - February 1960

Core Hole No. DJ-3

Footage drilled 331' @ 3.00/ft. $ 993.00

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

E.B. Putnam, Operator

By: A. W. Eddy
A. W. Eddy
Drilling Superintendent

ENGINEERING
FOUNDATIONS
INSPECTIONS
ANALYSES
SAMPLING
CONSULTING
RESEARCH

The Bruce Williams Laboratories

MAIN OFFICE AND LABORATORIES 618-624 JOPLIN STREET TELEPHONE MAYFAIR 3-1586

ESTABLISHED 1898

Joplin, Missouri

E. H. Putnam
P. O. Box 65
Ware Mill, Tennessee

2-3-60

			ZINC %		
316353 ST #18 Sample	#1	(102-03")	0.64		
354	2	106-108	0.98	8'@ 1.37%	12'@ 1.1%
355	3	108-109	5.70		
356	4	100-112	1.64		
357	5	112-113	0.54		
358	6	116½-118½	1.14		
359	7	125-125½	0.78		
360	8	131-132	0.20		
361	9	135½-137½	0.18		
362	10	87-88½	1.60		

THE ABOVE FIGURES ARE AS DETERMINED IN OUR LABORATORIES 72-305 Bruce Williams

ENGINEERING
FOUNDATIONS
INSPECTIONS
ANALYSES
SAMPLING
CONSULTING
RESEARCH

The Bruce Williams Laboratories

MAIN OFFICE AND LABORATORIES 618-624 JOPLIN STREET TELEPHONE MAYFAIR 3-1558

ESTABLISHED 1898

Joplin, Missouri

B. H. Putnam
P. O. Box 65
Thorn Hill, Tennessee

2-13-60

				ZINC Zn		
818747	DJ - #1	Sample #1	65½ - 67½	2.41		
748		2	67½ - 68	2.04		
749		3	101 - 102	0.22		26' @ .55%
750		4	106½ - 108½	2.35	8' @ 1.01%	
751		5	112½ - 113½	3.34		
752		6	125½ - 127	4.08		
753	ST-18	(106 - 108')	rerun 7	0.96		

THE ABOVE FIGURES ARE AS DETERMINED IN OUR LABORATORIES 72-394

Bruce Williams

B. H. Putnam DDH - ST-19

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm - E - 1088

Hole No.:	ST-19	Collared:	1-11-60
Farm:	W. D. Stapleton	Bottomed:	2-3-60
Location:	N 51,080.70	Depth:	315'
	E 48,318.52	Casing:	BX - 30'; AX - 85'
Elevation:	1,462.86'	Reaming:	None
Drilled by:	Putnam Drilling Co.	Cement:	None
Logged by:	F. T. Fischer		

Top Kingsport	—
Top "R" Bed	196
Top "S" Bed	254-1/2
Base Kingsport	293-1/2

0-30	Overburden
-34½	Dol, lt-med gray, mott upper 3', banded below; oxid @ top 34° dip @ 34'
-35½	Dol, med. gray, lt. banded; T gray S @ 35'; oxid ss @ base
-39½	Dol, lt-med gray, ch. @ base
-40	Dol, lt. gray oxid
-79	Opening
-87	Dol, lt. gray, mott; lt. gray ch. @ 81 and 81½; ch nod @ base
-90½	Dol, lt.-med gray; ch @ 87½, lt. banded below to base; ch @ 89, 89½
-96½	Dol, med gray, banded; oxid TGS @ 91; scatt ss @ 93 & 93½; mott below to base; TGS @ 94½; wh gangue "crackle" 95-95½; ss to 3" heavy ss @ base; oxidized at base. Many sing shiny 95-95½
-101	Dol, lt-med brown-gray; mott; opening oxid 97'; breco. 107½-08½ w/ wh gangue ptly vugular. 41° dip @ 93'
-101½	Chert, blue & tan "blotchy"; TGS 1" above base
-103½	Dol, lt-med gray; wh gangue "crackle" @ base; oxid over TGS
-105½	Dol, med gray-blue; oxid 104½-base; oxid TGS @ base
-109	Dol, lt-med gray; scatt open fractures; blue ch. @ 108½; few scatt ss grains below; 3" breco blue ch. sealed w/green shale @ base.
-110½	Dol, med gray, breco & sealed w/wh gangue upper ½ and "rock-matrix" lower ½; TGS @ base
-113	Dol, med gray, lt. banded to lt. mott; oxide @ base; TGS @ base
-116	Dol, med gray; breco w/wh gangue & "rock-matrix"; upper 1' oxid; gangue ptly oxide below; ch @ base
-119	Dol, med gray; "crackle"; lower 6" "blotchy" w. v. lt. gray silica; TGS @ base
-121½	Dol, med gray; lt. mott; TGS @ base
-131	Dol, lt.-med gray; few scatt wk. fract. high L, some w/wh. gangue; TGS @ 125; ch. @ 137½; lower 3' lt. banded; TGS @ 130
-134	Dol, lt. gray
-136	Dol, lt-med gray, upper half lt. banded, lower half mott; few scatt ss grains @ base
-136½	Chert blue, breco & sealed w/green sh. & a little wh. gangue
-138	Dol, lt. gray; ch. @ 137' "blotchy" w/wh. chert 137-137½ ; 6" blue chert over TGS @ base
-139	Dol, med gray, ss @ base
-142½	Dol, lt-med gray; lt. banded; TGS @ 140'
-145½	Dol, med gray; lt. mott; few scatt wh. gangue-filled fract.; oxid TGS @ 145
-147½	Dol, lt-med gray; scatt high L gangue-filled fracts. 146-146½
-150	Dol, lt. med gray; banded, few scatt wh. gangue fracts; oxid @ 150
-151	Dol, med gray, lt. mott
-154	Dol, lt. med gray, lt banded 35° dip @ 153'
-155½	Dol, lt. med gray; breco & s sealed w/wh. gangue, ptly. oxid & vugular; oxid @ base; scatt ss grains in lower 6" of dolomite (breco)
-157	Dol, med gray; scatt wk open fractures @ top; breco. lower 3" & sealed w/ green shale; few scatt ss grains in breco dol.
-158	Dol, med gray; few lt. fractures
-161½	Dol, lt-med gray; wk breco to "crackle" w/wh rexl. & green sh. 158½-160'
-168½	Dol, lt-med green-gray, mott. w/green sh. upper 1½'; "blotch" below; ch @ 165 and 165½; banded lower 2'; chert @ 167; TGS @ base
-169	Dol, med gray, banded, lt. "crackle"; oxid. TGS @ base
-172½	Dol, lt-med gray, lt. banded, TGS over ch nod @ base
-176	Dol, med gray, lt. banded; oxid TGS @ 173½; ch nod @ base
-177½	Dol, lt-med gray, lt. banded; oxid TGS @ base
-180½	Dol, med gray; scatt wk "crackle", oxid near base, oxid TGS @ base

-181 Dol, med gray; oxid
-184½ Dol, lt. med gray, mott to banded, few oxid; open high L shears @ base
-185 Shale, green
-186 Semi-rexl, tan-gray mott
-187 Semi-rexl, brown mott; scatt vugular wh. gangue "crackle"
-189½ Dol, med green gray; mott w/green sh. upper 6"; oxid @ 189
-192½ Dol, lt med gray; strong mott; thin breec w/wh. gangue @ 191' & w/wh. gangue from 192 to base
-195 Dol, med gray; mott, oxid @ 193; "crackle" to breec w/wh. gangue 193½-94
-196 Semi-rexl, med gray, strong mott 35% core loss 195-204
-197 Dol, lt-med gray, breec w/wh. gangue & green dol. 3" green sh @ base
-197½ Rexl, brown-gray breec w/green sh @ top, "rock-matrix" & vugular wh gangue "rock-matrix" at base
-202 Dol, lt-med gray & chert, blue, breec & sealed w/green sh & rexl ("dry breccia") as grains 199-201 in matrix
-203½ Re xl, brown, "crackle" w/"rock-matrix" & wh gangue; TGS @ 203½
-204½ "Dry breec" as above; GS @ base
-207 Rexl, tan-gray, TGS @ 206'
-209 Rexl, brown-gray, mott TGS @ 207½, 208
-214½ Rexl, tan-gray, mott; little weak wh. gangue "crackle"; ptly vugular
-216½ Dol, med gray; "crackle" w/"rock-matrix" & wh. gangue; 3" blue chert @ 216
-218½ Rexl, brown, breec w/oxid wh. gangue & "rock-matrix"; ch @ 218 also breec w/wh. gangue
-221½ Rexl, tan-gray, mott. vugular; breec w/wh. gangue 219-19½; mott strong w/wh gangue "blotches" below; breec w/wh. gangue @ 220½
-223½ Dol, med-gray-brown, lt. "crackle" @ top, breec w/wh. gangue remainder
-227 Semi-rexl, med green-gray, mott; oxid TGS @ 226
-229½ Dol, lt-med green-gray, lt. mott; lt. "crackle" @ base
-230 Rexl, tan, mott, ½" GS @ base
-230½ Shale, green
-235½ Dol, lt-med gray, basal 6" dker
-236 Rexl, dk. brown, scatt wh. eyelets & fract.
-239½ Dol, med-dk gray, lt. mott w/wh
-240 Chert, dk & green rexl
-240½ Dol, med-dk brown-gray, breec w/green rexl & wh gangue, w/green sh. & rexl @ base, oxid
-241 Dol, dk gray to blk
-244½ Dol, med-dk gray; wh gangue eyelets 241½-242; scatt wh. gangue "crackle" below; TGS @ base
-245 Rexl, Lt-med gray, mott
-246 Rexl, as above, breec & sealed w/wh. ch. and silica
-247 Rexl, tan, mott w/white; highly siliceous; TGS @ base
-248 Dol, med gray, TGS @ 247½
-248½ "Dry breccia"
-254½ Dol, lt-med gray, breec & sealed w/wh gangue. From 249½ dol. is strongly banded; gangue ptly vugular; some chert frags. in breccia
-257 Rexl, tan, mott, siliceous in upper part
-258½ Dol, lt-med gray, banded
-260 Dol, as above, and rexl, tan, breec w/rexl & wh gangue; siliceous from 259½ to base
-261½ Rexl, brown; ch. @ 261, breec below w/green sh. & rexl
-262 Shale, interbedded green & blk
-263½ Rexl, tan & chert, breec & sealed w/green sh. silica & rexl ("dry breccia")
-268 Rexl, tan-gray; "dry breccia" w/FeS_2 shines 263½-264 & thin w/o FeS_2 @ 267

	FeS_2 shines 263½-64'; breec w/wh gangue 267½ to base
-268½	Rexl, brown, w/wh gangue "crackle" TGS @ base
-269	"Dry breec" w/½" GS @ base
-270	Rexl, greenish-brown, lt. "crackle"
-275	Dol, lt-med tan-gray, breec w/wh gangue 270-71, w/rexl, tan, & wh. gangue 271-72 & w/silica, blk, and rexl & dk sh. to base "dry breec" 272½ to base
-277½	Rexl, lt tan, ptly mott w/ lt. "crackle"; lower 1½' siliceous
-278½	Sandstone, CM, tan; TGS @ base
-286	Rexl, tan-gray w/ch in upper 6"; strongly mott w/wh gangue, ptly vugular below — FeS_2 shines 284½-85
-288½	Rexl, gray, w/interbedded TGS's — Heavy FeS_2 @ 285
-293	Rexl, gray, mott w/wh gangue; ½" BS @ 292½; BS @ 293 over TGS — FeS_2 shines 285-285½
-293½	Semi-rexl, med gray
-298	Dol, lt-med gray; ch @ 296½, thin breec sealed w/tan rexl over ch. @ base; few scatt; high L fract in lower 1'
-299	Semi-rexl, lt-med gray; mott; ch @ top; TGS @ 298½; TGS @ base
-302	Dol, med gray; breec w/rexl & wh. gangue 299½-300; vertical shears below 1'
-303½	Dol, lt-med gray
-306½	Dol, med gray, mott lower 1'; ch. 305½ — 36° dip @ 303'
-307	Rexl, brown, lt. mott w/wh gangue
-310½	Dol, lt-med gray; lt mott; TGS @ 307½; strong shearing 308½-309, vertical shears for 1' below
-315	Dol, med gray; upper 1' "blotchy"; lt. "crackle" 311½-12½; dk gray ch. @ 313½ & 314; strong wh gangue "crackle" 313½-315 lower 1' is med-dk gray, rexl

[illegible] Putnam [illegible] - [illegible]J-1

Copper Ridge Project - Puncheon Camp Creek

[illegible] Min - [illegible] - 1962

Hole No.:	NJ-1	Collared:	2-4-60
Farm:	Dave Jackson	Bottomed:	2-9-60
Location:	N 51,252.72	Depth:	300'
	[illegible] 48,409.43	Casing:	BX - 35'; AX - 65'
Elevation:	1,[illegible].78'	Reaming:	10' from 55-65'
Drilled by:	Putnam Drilling Co.	Cement:	None
Logged by:	[illegible] Fischer		

Top Kingsport	—
Top "[illegible]" Red	153
Top "[illegible]" Red	215'
Base Kingsport	245'

0-35	Overburden
-38	Dol, lt-med gray; banded; oxid open @ 35½. 38° dip @ 37'
-45	Opening
-47	Dol, lt-med gray; banded, oxid upper half. 20° core loss 45-50'
-52½	Dol, lt gray, mott; oxid @ top & @ 48' & 49'; ch. nod @ 50½', 51' & 52'; TGS @ base; lower 6" oxid
-54½	Dol, lt-med gray, lt. banded; ch. nod @ 53' & 54'
-55½	Dol, med gray, lt. mott; ss @ base
-57	Dol., lt-med gray, breco w/wh. gangue & some "rock-matrix"
-60	Opening
-61	Dol, lt-med gray, breco w/wh gangue; some oxid & oxid high L fract. ZnS shines @ 61'
-65	Dol, lt gray, oxid, open shears 61½-62; [illegible] @ 63½; lt "crackle" 63½-64
-68½	Dol, lt-med gray, lower 1' darker; breco & sealed w/wh. gangue; ss @ 67'; bl. ch. @ 68' ZnS - 67-68. Est. 2%
-70	Dol, lt-med gray; banded; open oxid fract @ 69'; ss grains @ base over TGS
-73½	Dol, lt-med gray; breco w/wh. gangue; oxid wh. gangue; ch. @ 72½'
-74½	Dol, lt-med gray
-75½	Dol, lt-med gray & chert, blue, breco w/"rock-matrix"; 6" blue chert @ base, lower pt. breco w/wh. gangue, oxid
-77	Dol, med gray; thin blue chert breco w/"rock-matrix" & wh. gangue @ 76½
-77½	Dol, lt-med gray, "blotchy" w/fine silica
-79	Dol, lt-med gray, lt. mott
-82	Dol, lt-med gray, scatt wk. fract. some open; ch. @ 81'; thin breco w/oxid wh. gangue @ 81½; lt. banded below. 38° dip @ 82'
-85	Dol, lt. gray, lt. banded; chert nod @ 84, siliceous @ base
-87	Dol, lt-med gray, banded to mott, fract. w/wh. gangue @ 86' & 86½'; thin "rock-matrix" @ 87. ZnS shine @ 86'
-88½	Dol, lt-gray; large wh. gangue fract. @ base
-90½	Dol, lt-med gray, banded, thin "rock-matrix" @ top; ch. nod @ 89; v. thin ch. seam @ 89½; "r-m" @ 90; TGS over ch. over TGS @ base; few ss grains in "r-m"; Traces ZnS @ 89½' Traces ZnS @ 90'
-93	Dol, med gray, breco ch. w/wh. gangue @ 91-91½; Trace ZnS @ 93' ch. @ 92½; OH ss @ base over fract. ch;
-96	Dol, lt-med gray, lt. banded, v. thin breco w/wh. gangue & rexl @ 95½' ZnS shine @ 95½'
-100	Dol, med gray, lt. mott, TGS @ 98½; lt. "crackel" @ base
-101	Dol, lt-med gray, banded, "crackle" w/wh. gangue, rexl & blk. jasperoid
-103½	Dol, lt-med gray, upper half banded; breco w/wh. gangue, some blk. jasperoid & green rexl upper 1'; lt. "blotchy" below; few ss grains @ 101½'. ZnS 101-102; Est. 1½%
-104½	Dol, med gray, breco w/wh. gangue & blk. jasperoid; ZnS @ top. Traces ZnS @ 103½'
-106	Dol, lt. gray, lt. banded, breco w/wh. gangue & blk. jasperoid 105-106'
-108½	Dol, lt-med gray; banded, breco w/wh. gangue, some blk. jasperoid & green rexl; ZnS 106½-108. Est. 3%
-111½	Dol, lt-med gray, lt. banded, "crackle" 110½-111½
-113½	Dol, med gray, breco w/wh. gangue, some blk. jasperoid & green rexl; few ss grains @ 113'. ZnS 112½-113½. 3.25%

DJ-1 (Cont'd)

-116½ Dol, med gray; lower 1' lt. mott
-118 Dol, lt-med gray; lt. "crackle" to wh. gangue breec @ base. ZnS 117½-118. est. 1%
-120 Dol, lt-med brown-gray, scatt wh. gangue fractures, ch. @ 119½.
lt. banded below; some shears & bedding w/wh. filling; FeS_2 shine @ 119'
wk. breec. @ 125½-126' w/wh. gangue; breec 125½.
127' w/wh. gangue & some green rexl ZnS 125½-127'. est 4%
-130½ Dol, med gray, lt. mott; large wh. gangue fractures
@ 129½ w/heavy sphalerite; as grains over 3" breec 38° dip @ 128'
w/oxid wh. gangue over oxid TGS @ base. Fracs ZnS @ 128½'
-136½ Dol, lt. med gray, mott w/tan, oxid; oxid @ 133;
lt. banded 135' to base, dker @ base; ZnS. 129½-129½'. est. 6%
3" TGS @ base. 25 core loss 132-135'
-139 Dol, tan saccharoidal, mott & slightly vugular;
TGS @ 138'; "crackle" below
-140½ Dol, lt-med green-gray
-143½ Dol, lt-med gray, mott; occasional wh. gangue "crackle", basal 1' med gray
-144½ Dol, lt-med gray, mott w/green sh.; lt. "crackle"
-147 Dol, lt-med tan-gray, mott; breec & sealed w/wh. gangue above & "r-m" lower 1'
-148 Dol, med brown-gray, lt. mott
-149 Dol, lt-med gray, mott; breec w/wh. gangue & green dol, TGS @ base
-151½ Dol, lt-med tan-gray, strong mott, TGS @ 150'
-152 Dol, med brown-gray, TGS @ base
-153 Dol, med gray, banded, breec 152½-153 w/wh. gangue; ½" GS @ base
-153½ Rexl, brown, "crackle"
-154 Dol, lt-med tan-gray, lt "crackle", TGS @ base
-157 Semi-rexl, brown, strong mott; TGS @ base
-158½ Rexl, brown, lt "crackle"; 3" GS @ base
-159½ Semi-rexl, lt-med tan-gray, lt. mott
-161 Rexl, brown, siliceous, strong, mott; scatt, wh. gangue fractures
-163 Rexl, dk. gray, thin breec w/wh. gangue @ 161-161.'
-164 Dol, lt-med tan; scatt wk. fractures
-164½ Dol, lt-med tan; breec w/green sh. & little rexl
-166 Dol, lt-med gray-green, mott w/green sh; GS @ base
-169 Rexl, tan-brown, w/green shale laminae; thin breec w/green sh. @ 168'
-170 Semi-rexl, tan-green, strong mott; lt green rexl-filled fract. @ base
-171 Rexl, tan, mott; 2" GS @ base
-172 Rexl, dk. brown, "crackle"
-172½ Chert, blue-gray & rexl, brown, breec & sealed w/green sh; as grains
in sh. matrix
-173½ Semi-rexl, tan, mott; 3/4" fract. @ 173' filled w/rexl & green (rexl)
apparently deposited ll original bedding.
-174½ Rexl, tan to brown, mott; lower 6" breec to "crackle" w/green sh. & wh. gangue
-175 Dol, tan, "crackle"; TGS w/as grains @ base
-177½ Rexl, tan, mott @ top; scatt, lt. "crackle"
-178 Dol, lt-med gray; TGS @ base
-178½ Rexl, lt-tan, "crackle"
-181 Dol, lt-med gray; "crackle" to weakly breec w/wh. gangue; lower 6" breec
w/ wh. gangue
-182 Rexl, lt-med green-gray, mott
-183 Rexl, tan-gray, v. strong "blotchy"
-184 Rexl, lt-med tan-gray; breec w/rexl
-187½ Rexl, lt-med gray, scatt "crackle"

-187 Dol, med tan-gray, saccharoidal, lt. banded; lower 1' brecc & sealed w/rexl; blue ch. in brecc; 2" GS @ base w/FeS_2 traces in sh. 60° dip @ 188'
Traces FeS_2 @ 189'

-189½ Ls, lt-gray; w/green sh; lower half brecc w/green sh

-190½ Shale, green

-191 Rexl, brown, w/interbedded green sh.

-192 Semi-rexl green-gray

-196½ Dol, lt-med gray, brecc 192-193' w/wh. gangue & "r-m"; & from 194-195'; wh. gangue ptly. vugular

-199½ Dol, dk gray; thin wh. gangue brecc @ 197½; "crackle" below; brecc w/"r-m" -- 198½-199

-200 Shale, green, chert @ base

-202½ Dol, med gray, "crackle" from 200½ - 201½'

-203½ Dol, lt-med gray, brecc & sealed w/green sh. & little wh. gangue

-204½ Dol, med gray; ½" GS @ base

-205 Rexl, brown TGS @ base

-207 Dol, med tan-gray, lt. banded, scatt wh. gangue-filled fractures to 206½' brecc w/green sh. to base

-208½ Dol, med-dk brown-gray; brecc w/green sh. chert & some rexl 207½ to base; (dry breccia).

-209½ Dol, lt-med gray, lt. mott, some vugular wh. gangue eyelets & fract

-211½ Dol, dk gray, mott, wh. gangue eyelets partly vugular

-213 Rexl, med tan, brecc w/ wh. gangue

-215 Dol, med gray, brecc 214-14½ w/wh. rexl; brecc ch. & rexl base

-216½ Rexl, tan-gray, mott, siliceous; thin brecc 216; TGS @ 216½'; brecc ch. below.

-218½ Rexl, lt tan-gray; blue ch. w/orange color @ 217½, 218, 218½; orange & yellow rexl @ base.

-219 Shale, green & blk. variegated

-220½ Ls., lt gray; dk chert @ top; 4" chert @ base, blue fract. & sealed w/green sh.

-223 Semi-rexl, lt gray, mott, few wh. gangue fracts.

-225½ Rexl, lt-med gray, mott; "crackle" from 224; ½" GS @ base

-228 Rexl, lt tan, "crackle" w/vugular wh. gangue 226½, dker & mott for 1' below.

-230 Dol, lt-med tan-gray, vugular wh. gangue "crackle"

-233 Dol, med gray, strong oxid sheaving @ top; TGS @ 230½; ch. below; wh. gangue brecc filling 231'; lt. "crackle to base.

-234 Ls., lt. gray; TGS @ base

-236½ Rexl, lt gray, lt mott @ top 1'; stronger mott to base; TGS @ base

-238 Ls., lt tan-gray, lt banded, TGS @ 237 & 1" GS w/ss @ base. 52° dip @ 237½

-239 Ls., lt tan-gray; 2" is brecc sealed w/green sh. & ss grains @ base

-239½ Ls., lt tan-gray; siliceous

-240 Rexl, tan-brown, brecc & sealed w/green sh. & ss grains

-241 Rexl, tan, vugular; ½" GS w/ss grains @ 241'

-241½ Dol, med tan, banded, TGS @ base. 42° dip @ 241½

-242 Rexl, blk & gray, mott, v. coarse-grained

-243 Rexl, tan-green, 1" GS w/ss grains @ base

-245 Rexl, green-gray,; mott w/green sh. upper 6", lighter in color below.

-246½ Dol, lt-med gray, saccharoidal, lt mott; scatt lt. oxid "crackle".

-247½ Dol, lt-med gray; lt "crackle"; oxid ch. @ 247'.

-249 Dol, med gray; little scatt "crackle", ch. @ 248½ & 249

-258 Dol, med-dk gray; lt. banded; scatt wh. gangue fract; TGS @ 252; wk. oxid shears below; brecc w/oxid wh. gangue 254-55'; 31° dip @ 251'
"crackle" below to base, gangue also oxid; blue oolitic chert at base.

DJ-1 (Cont'd)

-259½ Dexl, dk. brown, "crackle", TGS @ base
-263 Dexl, lt gray, mott; TGS @ base
-269 Dexl, tan, strong "crackle" oxid upper 6"; wk. breec 264-65; oxid opening 266; dker below to base
-271½ Dol, lt-med gray; "crackle"
-276½ Dol, med gray; strong "crackle", vug; med-dk gray from 274; FeS2 shines 276'
breec 274½-276; fault zone 276-76½; strong "crackle" below. FeS2 shines 276½'
-279 Dexl, med gray, mott @ top. Trace ZnS @ 278-3/4'
-280 Dexl, med-dk gray, mott; "crackle"; ch. @ base. FeS2 shines @ 278½-79'
-281 Dexl, lt-med gray, "blotchy" w/silica
-281½ Dexl, gray, oxid TGS @ base
-284½ Dol, lt-med tan-gray, mott, w/oxid wh. gangue fract & open fracts; heavy ss @ 284½ to 284½ over blue ch. nodules
-287 Dol, lt tan, siliceous, ss @ 285 & 285½; open @ 286 oxid; breec ch. over siliceous sed. breec over banded chert over oxid sh. @ base.
-288 Dol, med-dk gray, scatt ss grains toward base; oxid TGS @ base w/yellow sh.
-288½ Dexl, gray, wh. gangue mott: siliceous
-289½ Sed. breccia w/ lge chunk dol. (as from 287-88' above).
-292 Dexl, gray, coarse; oxid 291½'
-292½ Dol, med gray, banded, lt. "crackle".
-295 Dol, lt-med gray; "crackle" to wk. breec w/wh. gangue; ss grains @ 294½
-296 Dexl, lt tan; strong "crackle", 3" sed. breec w/med-gray dol. frag. @ 295½; 3" frg. sed breec @ base.
-296½ Dexl, lt tan-gray, mott
-300 Dexl, gray mott w/green sh. from top to 297½; strong mott w/wh. gangue from 298 to base.

D. H. Putnam DJ-DJ-2

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm - [illegible] - 1083

Hole No.:	DJ-2	Collared:	2-18-60
Farm:	Dave Jackson	Bottomed:	2-22-60
Location:	N 51,345.37	Depth:	220'
	E 48,451.28	Casing:	BX - 91'; AX - 120'
Elevation:	1,498.93'	Reaming:	None
Drilled by:	Putnam Drilling Co.	Cement:	None
Logged by:	E. T. Kincher		

Top Kingsport	—
Top "A" Bed	103'
Top "C" Bed	159'
Base Kingsport	190'

0-93	Overburden
-94	Dol, lt-med gray, mott, opening @ 94' 50% core loss 93-95'
-96	Dol, med gray, mott; some "crackle" oxid, TGS @ base 40% core loss 95-105'
-97½	Dol, lt-med gray, banded & oxid; ½" CS @ 97'
-101	Dol, med gray; mott, lower half lighter
-103	Dol, med-dk gray; mott; oxid ch. wh. base over 3" CS
-105	Rexl, med-dk gray; scatt oxid wh eyelets; oxid base over sh. brecc & sealed w/oxid green dol., & green sh. opening @ 105'. 70% core loss 105-115'
-110	Rexl, lt-med tan-gray, tiny scatt vugs; ch. over TGS @ base. 40% core loss 115-120'
-115	Rexl, tan, lt. mott & vugular; TGS @ 111; brecc w/CS & ss grains 113-113½; TGS @ 114½
-117	Rexl, brown, lt. mott; TGS @ 115½
-120	Rexl, tan, scatt. wk. "crackle" oxid; vug. wh. gangue fract.
-122	Dol, med tan-gray, brecc w/oxid wh. gangue, green sh. & green dol.; ch. nod @ 120½, 121 & 121½
-123	Rexl, lt. tan & green mott; coarse-grained
-125	Dol, med green-gray; lt. banded; scatt wh. gangue wk "crackle". 36° dip @ 124'
-125½	Dol, med green-gray, banded, TGS @ base
-126	Dol, lt-med gray, "crackle" wk w/green sh., few scatt ss grains @ 125-3/4'
-128½	Dol, lt-med green-gray; few scatt ss grains over blue ch. @ base
-130	Dol, med-dk gray & lt-med gray; brecc & sealed w/green sh., tan rexl & some green dol
-130½	Rexl, dk brown, lt. mott
-131	Dol, tan; scatt few wh. gangue fract; blue ch. @ base. 20% core loss 130-135'
-134	Rexl, lt tan-green; mott; thin brecc w/wh. gangue & green dol. @ 133
-135½	Rexl, lt-med tan; thin brecc. blue ch. @ base sealed w/green sh & wh. gangue
-136½	Rexl, tan, lt. "crackle" w/green sh. & some wh. gangue
-139½	Rexl, lt. tan, brecc w/wh. gangue; blue ch. frag. in matrix; TGS @ base
-146	Dol, lt-med green-gray, brecc w/green sh. 140-140½; brecc w/greenish & green dol & ss grains 141-141½; w/wh. gangue from 142-142½; 1" CS @ 143½; 1-½" CS @ 144'; 6" tan rexl below; green sh. & gr. rexl @ 145½; 1" CS @ base
-147	Dol, dk brown-gray, mott; scatt wh. eyelets
-149½	Dol, med-dk brown-gray, scatt eyelets; 3" CS @ 147½; thin brecc w/green sh. @ 148-48½
-150	Rexl, lt-med gray-green mott
-150½	Dol, dk brown-gray, 2" CS @ base
-151	Semi-rexl, gray; mott
-154	Dol, tan-gray; mott, brecc w/rexl & green sh. 151-52; scatt "crackle" below
-155	Dol, lt-med gray; brecc w/green to rexl
-158	Dol, med gray; vug. wh. gangue eyelets; banded from 156-157½ w/some lt. "crackle", TGS @ 157½
-159	Chert w/some "blotches" of tan rexl; wh. gangue upper 3"; TGS @ base 31° dip @ 157'
-160	Rexl, tan & blue chert, brecc w/green sh. & silica "dry breccia". FeS_2 shines @ 158½ & 159'
-161	Rexl, tan; "crackle"
161½	Shale, green, w/lo lt. tan-gray, lenses 50% core loss 161-163'
-162½	Rexl, ls, & ch. brecc & sealed w/rexl, green sh & silica "dry breccia" 50% core loss 163-169'
-163½	Chert, upper half wh., lower half brown to blue 10% core loss 169-180'
-165½	Ls., lt-tan-gray
-169	Rexl, tan-gray, "crackle" wk. TGS's @ base
-170½	Rexl, brown

J-2 (Cont'd)

-172 Rexl, brown & dol, med gray, breco & sealed w/rexl, silica, sh & wh. gangue
-173½ Dol, med gray, strong "crackle"; TGS @ 173'
-176 Dol, med tan-gray, breco & sealed w/wh. gangue, silica, green sh & green dol; ss grains @ 174'
-177½ Rexl, lt-med tan-gray, mott. TGS @ base
-178 Rexl, brown, coarse-grained, ss grains throughout 3" GS @ base w/ss grains
-179½ Rexl, tan, "crackle" to breco w/wh. gangue & some green sh. from 178½-179
-184 Rexl, tan-brown, green sh. mottling @ 181-181½; green sh. frags from 181½ to base
-186 Rexl, tan "blotchy" w/brown dol & silica; oxid @ 185; dkor toward base; oxid @ base
-187 Rexl, green-gray, reddish mott 186½-187; TGS @ base
-190 Rexl, lt-med gray; breco. w/wh. gangue
-191½ Dol, med gray; siliceous @ 190½; scatt shears below to base
-196 Dol, lt-med gray; scatt wk. fract, lt. "crackle" 194-195; oxid @ 195½
-200 Dol, med gray; scatt shears; oolitic blue chert @ base
-202 Rexl, brown, highly siliceous; 65' core loss 200-220'
-207 Rexl, tan-gray, scatt wk. "crackle" & fract; oxid fract & vugular gangue
-220 Dol, med gray saccharoidal

F. H. Putnam DDH-DJ-3

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm - E - 1068

Hole No.: DJ-3	Collared: 2-23-60
Farm: Dave Jackson	Bottomed: 2-26-60
Location: N 51,267.87	Depth: 331
E 43,688.99	Casing: BX - 87'; AX - 100'
Elevation: 1,486.89	Reaming: None
Drilled by: Putnam Drilling Co.	Cement: None
Logged by: F. T. Fischer	

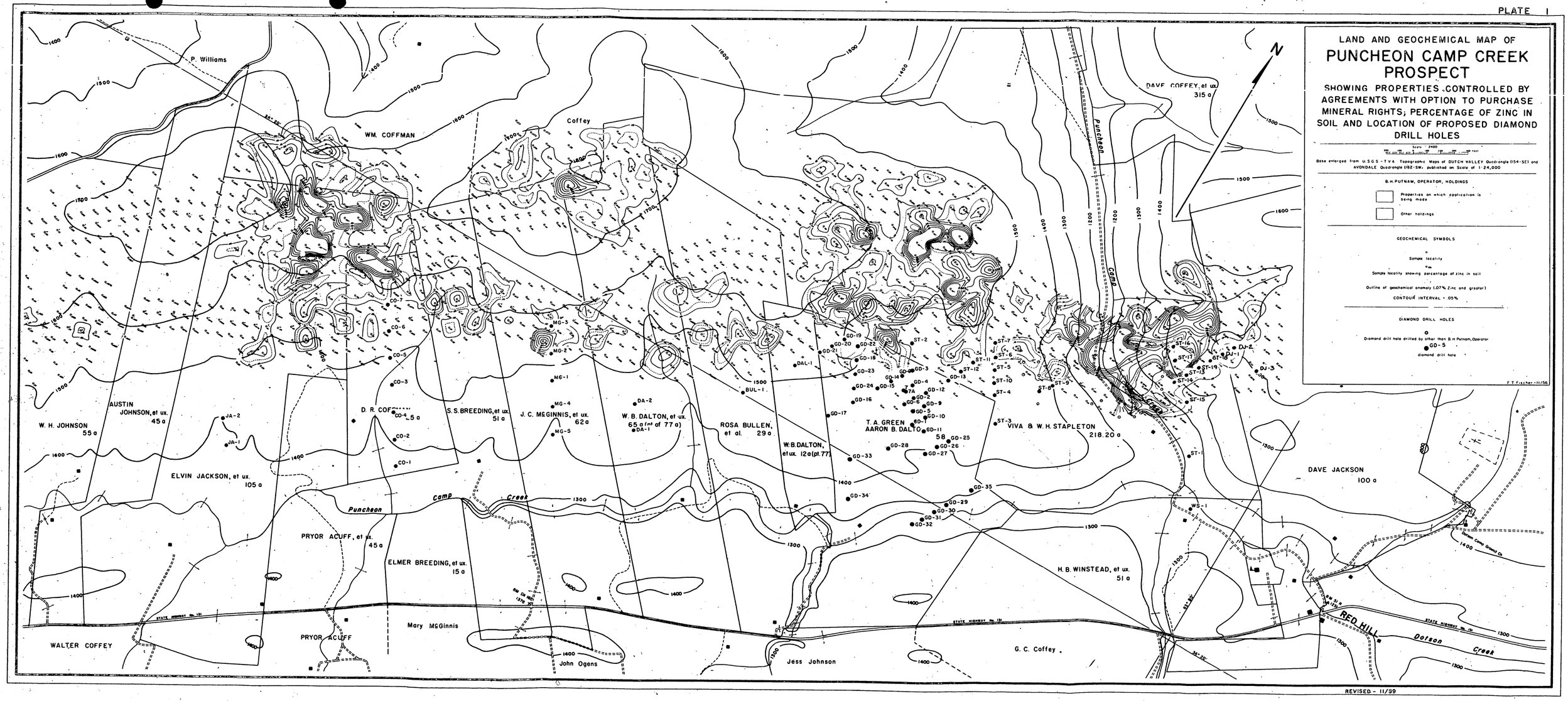
Top Kingsport	
Top "R" Bed	216½'
Top "S" Bed	274
Base Kingsport	313

0-85 Overburden
-90½ Dol, med gray, lt mott TGS @ 88½; blue ch @ base 40% core loss 85-90'
-93 Dol, lt-med gray, strong mott upper 1'; opening @ 92, oxid @ 92½ & TGS @ base
20% core loss 90-100'
-99 Dol, med gray; lt mott; oxid opening @ base
-109 Dol, lt gray; lt mott, oxid upper 6"; chert @ 102' TGS @ 102½ @ 103'; lt banded 103 - base; oxid fract @ 105½; 3" blue chert @ 106½; blue chert @ 103½ & @ base
-112 Dol, lt-med gray; strong banded 43° dip @ 110'
-115 Dol, med gray; strong banded; ss @ 114½ and scatt to ss over ch @ base
-118 Dol, med gray, mott w/lt; few scatt gangue fracts; TGS & blue ch @ base
30% core loss 115-118'
-123 Dol, lt-med tan-gray, oxid mud-filled opening @ 120 70% core loss 118-123'
-125 Opening 25% core loss 125-127'
-127 Dol, lt gray; ch @ 126; lt banded below to 127
-130 Opening
-131 Dol, lt gray, lt banded stronger banding immediately above base
20% core loss 131-137'
-137 Dol, lt-med gray; ch mod @ 132, 133 and 136½
-140 Opening
-140½ Dol, med gray
-147 Dol, lt gray, lt banding; ch mod @ 146½
-150 Opening
-155 Dol, lt-med blue gray; oxid @ top; scatt wk shears normal to bedding; "crackle" 151½-153; scatt wh higher angle shears; thin blue ch breec w/gangue and green dol @ base over TGS
<u>ZnS 151½-153, est 2%</u>
-160 Dol, lt-med gray, lt mott 156½-157½; blue chert @ 158 @ 158½; few high angle healed fracts in lower chert; blue ch @ base
<u>ZnS traces @ 155'</u>
-163 Dol, lt-med gray, lt banded ptly oxid; ss @ 160½, TGS 161½; lt "crackle" @ 152½ scatt high angle shears, healed, displace bedding (shears normal to bedding)
-166 Dol, med gray, lt mott strong mott 165½-66 25% core loss 165-171'
-171 Dol, lt-med; lt banded
-172 Dol, lt-med tan-gray; lt mott & oxid
-175 Dol, lt-med lt mott @ top
-176 Dol, med gray; breec & sealed w/ wh gangue & green dol; scatt ss over 3" GS @ base
-180 Dol, med gray;
-185 Dol, lt-med gray, lt mott @ oxid; ch @ base
-190½ Dol, med gray; lt banded wk "crackle" 187½-188'; scatt fracts below w/wk gangue & green dol
-194 Dol, lt-med gray; ch @ 193
-197½ Dol, med gray; lt banded; ch 195½; ss @ 197½ over 1" GS
-200 Dol, med green-gray; lt mott, TGS @ 199½
-202½ Dol, lt-med gray; mott; few scatt wh gangue eyelets
-204 Dol, med gray; lt banded wk "crackle" lower 6" over 3" GS @ base FeS2 shines 203-03½
-206 Re-xl, brown, mott, vugular, few scatt wh gangue ptly open shears TGS @ base
-209 Dol, med green-gray, mott, sacchroidal dol, TGS @ 206½ & @ base
-210½ Dol, lt-med tan, mott, sacchroidal, TGS @ 210 & 210½
-212 Dol, med gray; mott, 2" GS @ base
-213 Dol, med tan-brown, mott w/green sh; sacchroidal
-216½ Dol, dk brown-gray, mott; TGS @ 214; dol sacchroidal; breec w/wh gangue 215-216½
-217½ Dol, med gray; wh gangue "crackle" w/some green dol
-218½ Shale, green w/some interbedded lt tan-gray ls
-220 Re-xl, brown, mott; some wh gangue

-221 Dol, lt gray, blue chert @ base over T Gray S
-222 Ls, lt tan-gray, w/interbedded TGS's; TGS @ base
-223 Re-xl, lt tan-gray, mott w/wh
-228½ Re-xl, brown, "crackle" to breccia @ base w/ re-xl, wh gangue, green dol, & ss grains; 3" tan dol to base
-228 Re-xl, tan, scatt small vugs 1" GS @ base
-230 Re-xl, lt gray, mott, coarse-grained
-234 Re-xl, tan-gray, mott; ch @ 232½ and thin breccia w/ wh gangue, re-xl, green dol, brecc w/ chert & wk gangue @ 233½
-235½ Dol, tan, lt mott; thin brecc w/wh gangue over ch @ 235
-236 Ch green scaling dol & ch
-236½ Re-xl, blk & wh; V coarse-grained
-237 Re-xl, tan and green, mott
-239 Re-xl, green-gray, lt mott banding
-239½ Re-xl, tan-brown "crackle"
-242½ Semi-re-xl, greenegray, brecc w/wh gangue tan re-xl & green dol from 240-240½; FeS2 shine @ 240½'
-249½ Dol, med gray, brecc w/wh gangue 242½-243½; strong "crackle 245-246, "crackle" 247 to brecc @ base FeS2 242½-243½, est 4% FeS2 245-246, est 2%
-253 Re-xl, lt-med gray-green brecc w/wh gangue 251½-252 FeS2 249-249½, est 5%
-255 Dol, lt-med gray; brecc w/wh gangue; some v coarse gangue; T Gray S @ base FeS2 253-255, est 3%
-255½ Dol, lt-med gray; lt banded; strong "crackle" @ base
-256½ Dol, med-dk gray; TGS @ base over thin brecc over TGS
-257½ Semi-re-xl, dk brown, mott, asphaltic;
-261 Dol, dk brown-gray; brecc w/wh gangue; asphaltic
-264 Dol, dk brown-gray; "crackle" 262-63;
-265 Re-xl, brown, mott; 3" ch @ top some green re-xl & sh
-267 Dol, med-dk gray, lt mott; scatt wk "crackle"; coarse-grained v. lt gray re-xl @ base Heavy FeS2 shines @ 267
-270 Dol, dk gray-brown, lt mott asphaltic; scatt wk "crackle" to breccia @ 270 TGS @ base Heavy FeS2 shines @ 269½
-271½ Dol, med-dk gray-green scatt wk "crackle", 3" brecc w/green sh & re-xl @ base
-274 Dol, med gray; lt banded; brecc 272½-273½, more toward base of brecc FeS2 272½-273½, est 2%
-278 Re-xl, tan-gray; st mott, siliceous upper 6"
-280 Dol, med gray; brecc w/re-xl
-281½ Re-xl, lt tan-gray, v strong mott w/wh GS @ base
-283 Re-xl, tan-gray; mott
-284 Ls, lt tan-gray, ptly re-xl'd @ top interbedded sh green
-284½ Ch green w/ included ch & ls fragments
-286 Ch blue; brecc w/ wh gangue & green sh toward base 20% cor loss 234½-234½
-290 Ls lt gray; scatt int green sh
-290½ Ch. blue-gray; brecc & sealed w/green sh
-293 Re-xl, lt tan-gray; mott & brecc w/wh gangue ;4" GS w/ss grains & ch frags @ base
-295 Dol, med gray; upper 6" brecc 2/wh gangue; scatt "crackle" below to base
-295½ Re-xl, tan, brecc & sealed w/wh gangue
-296½ Dol, med gray; ch @ 296
-302 Ls, lt tan-gray, some interbedded green shales 1' GS @ base
-303 Re-xl, gray-green, TGS @ base
-305½ Ls, lt tan-gray; scatt ss grains; 304½; ss w/ green sh @ base
-313 Re-xl, tan; lt "crackle"; TGS @ 307½, 308; 309, 312 & 313

DJ-3 (Cont'd)

-314 Semi-re-xl, lt green-gray
-319 Dol, lt-med gray; scatt wk sheers ch @ GS @ 317 & 317½
-325 Dol, med gray; scatt wk shears; TGS @ 320½; scatt "crackle"; few ss grains over oolitic blue ch @ base
-326 Re-xl, lt gray, mott; upper 6" breec w/wh tongue
-328 Semi-re-xl, lt-med gray, lt mott
-330½ Dol, lt-med gray, lt mott wk "crackle"
-331 Re-xl, lt-med gray; lt mott, wk "crackle" FeS_2 shines 330½-331



REVISED - 11/59

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DATE	INITIALS	CODE
2-11	gad	VVO
4	[illegible]	110
2/12	[illegible]	800
[illegible]	Murphy	500

INTERIM REPORT

DMEA-4580, Idm-E1088 (zinc)

Operator: B. H. Putnam, Box 65, Thorn Hill, Tenn. Assignee

Location: Puncheon Camp Creek area, Grainger County, Tennessee

Summary of drilling completed

	Since last inspection	To date
Number of holes.....	2	69
Footage.....	679	36,541
Footage reamed.....	0	1,158

63 Talbert 2/10

Number of holes showing:

a) Commercial-grade zinc mineralization	11
b) Non-commercial zinc mineralization.....	35
c) No zinc mineralization.....	23

Diamond drilling on the Puncheon Camp project, recessed on November 21, 1959 for repairs to the drill rig, was resumed on December 23, 1959. The drilling was still on the Stapleton tract but was on the northeast side of the gorge where Puncheon Camp Creek cuts through Copper Ridge at a point near the project boundary. The purpose of drilling in this area is to test a large geochemical anomaly and significant surface showings of sphalerite. Data on the two holes completed since the resumption of drilling are summarized as follows:

Hole ST-13: Located on the Stapleton tract at coordinates: N-50,992; E-48-273 (approximately 600 feet northwest of Hole St1 on same dip fence). Collar elevation: 1,445 feet A.T. Drilling started: 12/23/59; completed: 12/31/59. Total depth: 336 feet. Summary log: 0-36 overburden: 36-40? Mascot dolomite; 40?-322½ Kingsport formation (TR @ 212½?) 322½-336 Longview dolomite. Mineralization: Trace hole. Traces of Sphalerite @ 270½ and 288.

Hole ST-14: Located on Stapleton tract at coordinates: N-50,902; E-48,227 (approximately 100 feet south of Hole ST-13 on strike fance). Collar elevation: 1415 feet A.T. Drilling started; 1/1/60; oompleted: 1/8/60. Total depth: 343 feet; Summary log: 0-25 overburden; 25-51½ Mascot dolomite: 51½-336½ Kingsport formation (TR @ 215½); 336½-343 Longview dolomite. Mineralization: Barren

Drilling in progress

Hole ST-15 was in progress at the time of inspection. It is located approximately 200 feet down dip from Hole ST-13. Core was observed to a depth of 235 feet where the hole was drilling in the upper part of the Kingsport formation.

Inspected: January 11, 1960 Helmuth Wedow, Geologist, USGS

February 9, 1960

Memorandum

To: E. D. Talbert, Office of Minerals Exploration, Interior Building, Washington 25, D. C.

From: Administrative Assistant, Norris, Tennessee

Subject: Monthly report and voucher

We are enclosing two copies of the following monthly report and voucher:

Idm-E1088 B. H. Putnam
Docket No. DMEA-4580
26th payment - month of January 1960
Amount $2492.70

Helen R. Miller

Attachments
/hbm
Copies to R. A. Laurence
V. J. Lynch
Norris files
Day files

Extra

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O. M. E.
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DATE	INITIALS	CODE
2-11	gad	220
"	[illegible]	110
~~2/12~~	~~[illegible]~~	~~500~~

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

Budget Bureau No. 42-R1036.5

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

FEB 11 1960
PAID ON VOUCHER & SCHEDULE
OF PAYMENTS K- 26

OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of January, 1960 Docket No. DMEA 4580 Contract No. Idm -E- 1088
Operator's Name B. H. Putnam Minerals Zinc
Address 512 Third Street, Marietta, Ohio
Contract Amount, $ 170,125.00 Government Participation: 50 % Amount, $ 85,062.50

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	$4,590.00	$108,594.00	$113,184.00			
Bulldozing						
Crosscutting						
Drifting						
Reaming	120.00	2,316.00	2,436.00			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
Core Boxes	—	290.25	290.25			
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis	—	263.75	263.75			
Payroll Taxes						
Liability Insurance						
(8) Contingencies (specify):						
Incidental Allowance @ $0.18/foot	275.40	6,515.64	6,791.04			
TOTALS	$4,985.40	$117,979.64	$122,965.04	4985.40	117,979.64	122,965.04

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

Date _____ *Payee B. H. Putnam

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:

$ 2492.70

Signature [signature]
(Authorized Certifying Officer)

Date FEB 9 1960 Vou. No. 39
(See other side)

2492.70

(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-1088 in accordance with the terms of the contract.

Signature [signature] Title U. S. BUREAU OF MINES Date FEB 8 1960

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert A. Laurence Title EXECUTIVE OFFICER OME FIELD TEAM REGION V Date FEB 8 1960

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 1962)

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 January 1960 Docket No. DMEA 4580 Contract No. Idm-E-1088
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	$4,590.00	1,530	$113,184.00	37,728	$3.00	50,000	$3.00
~~Churn~~ Reaming	Foot	120.00	60	2,436.00	1,218	2.00	5,000	2.00
~~Auger~~ Samples	Each	——	——	263.75	211	1.25	500	1.25
~~Stripping~~ Core Boxes	Each	——	——	290.25	150	1.935	150	2.00
Trenching								
Test Pits								
~~Roads and Trails~~ Incident.	Foot							
Allow @ $.18/foot		275.40	1,530	6,791.04		0.18	50,000	0.18
TOTAL DISTRIBUTED COSTS		$4,985.40		$122,965.04				TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS		$4,985.40		$122,965.04				

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 February 2, 1960 Operator B. H. Putnam

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)

(For Government use only)

FEB 11 1960
O.M.E.

[signature]
GEOLOGIST, U. S. G. S.
FEB - 8 1960

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 Puncheon Camp Creek Project, Grainger County, Tennessee

January, 1960
by: F. T. Fischer

Docket No. 4580
Contract No. Idm-E-1088

During the month of January five (5) holes were drilled on the Puncheon Camp Creek Project. Hole ST-14 was drilled 100 feet southwest of ST-13 on the strike fence. The hole collared in the Mascot formation and was drilled to a depth of 343 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-25	Overburden	___	___	___
25-51½	Mascot	CM @ 51½	___	Dolomite
51½-336½	Kingsport	"R" @ 215½	___	Dolomite & recrystalline; some breccia
		"S" @ 282	___	Recrystalline with little dolomite. Dry Breccia
		"T" @ 336½	___	Heavy Pyrite
336½-343	Longview	___	___	Dolomite

Hole ST-15 was drilled 200 feet south of ST-13 on the dip fence. The hole collared in the Mascot formation and was drilled to a depth of 440 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-27	Overburden	___	___	___
27-141	Mascot	CM @ 141'	___	Dolomite
141-399	Kingsport	___	___	Dolomite, heavy pyrite upper part
		"R" @ 305'	___	Dolomite & recrystalline
		"S" @ 367½'	___	Recrystalline, little dolomite some breccia & heavy pyrite
		"T" @ 399	___	
399-440	Longview	"U" @ 411	___	Dolomite & recrystalline some breccia lower part

Hole ST-16 was drilled 260 feet north of ST-14 on the offset dip fence. The hole collared in the Kingsport formation and was drilled to a depth of 190 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-14	Overburden	———	———	———
14-161	Kingsport	"R" @ 67	Traces of ZnS @ 17'; ZnS shines 21½-22½, est ½% Zinc carbonate (?) @ 32'; ZnS shines 43-45, est 1%	Dolomite, partly brecciated
		"S" @ 120	———	Recrystalline & dolomite with very thin limestone
		"T" @ 161	———	Limestone and recrystalline
161-190	Longview	"U" @ 175	———	Dolomite & some recrystalline
		"L-3" @ 186	———	

Hole ST-17 was drilled 100 feet south of ST-16 on the offset dip fence. The hole collared in the Kingsport formation and was drilled to a depth of 245 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-55	Overburden	———	———	———
55-213	Kingsport	"R" @ 116	———	Dolomite & recrystalline
		"S" @ 178	———	Recrystalline & little dolomite
		"T" @ 213	———	
213-245	Longview	"U" @ 233	———	Dolomite; faulting in "T" bed

Hole ST-18 was drilled 200 feet northeast of ST-13 on the dip fence. The hole collared in the Kingsport formation and was drilled to a depth of 312 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-31	Overburden	———	———	———

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
31-266½	Kingsport		ZnS shines 37-37½, est 1%; 86-86½, est 2%; 87½-88½ est 4%; 102-103, est 1%; shine @ 107; 108-109½; est 4%; 110-111, est 3%; 111-113 est 2½%; 116½-118, est 1½%; shines 124½-124½; 125-125½, est 5%; shine @ 126 & 126½; 130½-133, est ½%; 135½-137½, est ½; shine @ 142	Dolomite, strongly brecciated
		"R" @ 187½	_____	Dolomite & recrystalline
		"S" @ 234	_____	Recrystalline & little dolomite
		"T" @ 226½	_____	
266½-312	Longview	"U" @ 296	_____	Dolomite; brecciated in lower part with heavy pyrite

Invoice

Marietta, Ohio

B. H. Putnam
512 Third Street
Marietta, Ohio

January 1960

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Puncheon Camp Creek Project DMEA Contract No. 4580 - January 1960

Core Hole No. ST-14

Footage drilled 343' @ $3.00/ft. $1029.00

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

B. H. Putnam, Operator

by: A. R. Eddy

A. R. Eddy
Drilling Superintendent

Invoice

Marietta, Ohio

B. H. Putnam
512 Third Street
Marietta, Ohio

January 1960

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Puncheon Camp Creek Project DMEA Contract No. 4580 - January 1960

Core Hole No. ST-15

Footage drilled 440' @ $3.00/ft. $1320.00

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

B. H. Putnam, Operator

by: A. R. Eddy

A. R. Eddy
Drilling Superintendent

Invoice

Marietta, Ohio

B. H. Putnam
512 Third Street
Marietta, Ohio

January 1960

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Puncheon Camp Creek Project DMEA Contract No. 4580 - January 1960

Core Hole No. ST-16

Footage drilled 190' @ $3.00/ft. $570.00

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

B. H. Putnam, Operator

by: A. R. Eddy

A. R. Eddy
Drilling Superintendent

Invoice

Marietta, Ohio

B. H. Putnam
512 Third Street
Marietta, Ohio

January 1960

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Puncheon Camp Creek Project DMEA Contract No. 4580 - January 1960

Core Hole No. ST-17

Footage drilled	245'	@ $3.00/ft.	$735.00
Footage reamed	60'	@ $2.00/ft.	120.00
		Total	$855.00

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

B. H. Putnam, Operator

by: A. R. Eddy

A. R. Eddy
Drilling Superintendent

Invoice

Marietta, Ohio

B. H. Putnam
512 Third Street
Marietta, Ohio

January 1960

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Puncheon Camp Creek Project DMEA Contract No. 4580 - January 1960

Core Hole No. ST-18

Footage drilled 312' @ $3.00/ft. $ 936.00

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

by: A. R. Eddy
A. R. Eddy
Drilling Superintendent

B. H. Putnam DDH-ST-14

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm - E - 1088

Hole No.:	ST-14	Collared:	1-1-60
Farm:	W. H. Stapleton	Bottomed:	1-8-60
Location:	N 50,902.31	Depth:	343'
	E 48,227.34	Casing:	BX - 25'; AX - 70'
Elevation:	1,414.77'	Reaming:	None
Drilled by:	Putnam Drilling Co.	Cement:	None
Logged by:	F. T. Fischer		

Top Kingsport	51½'
Top "R" Bed	215½
Top "S" Bed	282
Base Kingsport	336½

0-25	Overburden	
-31	Dol, lt-med gray, lt band toward base, oxid openings	
-35	Dol, med gray, ptly banded oxid @ base	60% core loss 25-35'
-38	Dol, lt gray, lt banded, oxid & weathered	
-40	Dol, lt-med gray, lt mott, oxid openings	30% core loss 35-45'
-41	Dol, med gray, lt mott	
-46½	Dol, lt-med gray, lt mott, vug wh gangue eyelet @ base	
-48½	Dol, med-dk gray, lt mott, oxid upper foot; lt shears normal to bedding @ base over gray chert	
-49	Dol, med gray	
-51½	Dol. lt-med gray, lt banding, 4" GM ss @ base	
-55	Dol, lt-med gray, lt scatt ss @ 53½'; lt mott to 55'	
-56	Dol, med gray, strong mott	
-62	Dol, lt med gray, lt mott, T Gray S @ 59½, "blotchy" above for 6" Open 57-58, 59-60	
-68	Dol, lt gray, mott to banded, T Gray S @ 67'	
-71	Dol, lt-med, gray, lt fract @ top; T Gray S @ 69'; wh gangue eyelet & lt scatt ss @ 70'; oxid @ base	
-80	Dol, med gray; lt mott; scatt open fractures	40% core loss 70-80'
-81	Dol, med gray, banded to "blotchy"	
-82½	Dol, lt-med gray, banded; gray chert @ base	
-85	Dol, lt-med gray, banded, scatt oxid fract	
-85½	Dol, med gray, brecc & sealed w/wh gangue; gangue vug	
-87	Dol, med gray; scatt lt "crackle"; blue-gray ch @ base	
-90	Dol, med blue-gray; banded; T Gray S @ 88' & @ base	38° dip @ 90'
-93	Dol, med gray, ss to 91, T Gray S @ 91½, heavy GM ss 92½ & 93, sdy between	
-95	Dol, lt-med gray, oxid	
-98	Dol, med gray mott to blotchy ss & 1" GS @ base	
-99	Dol, med gray, faint "crackle"	
-100	Dol, lt-med gray, GM ss @ base	
-103	Dol, med gray, lt ss @ 100½, TBS @ 102½	
-105½	Dol, lt-med to med gray, gray ch @ base	
-110	Dol, lt-med gray, lt mott; lt oxid 108-09	
-115	Dol, lt-med gray, mott ss @ base over oxid dol, over TGS	
-120	Dol, lt-gray, mott; ch over double TGS @ base	
-125	Dol, lt to med lt gray, ch @ base	
-129	Dol, lt gray, banded ch @ 126½	37° dip @ 127
-131½	Dol, lt-med gray, strong banding; scatt ss from half-way to base; heavy ss lower foot TGS @ base	
-134	Dol, med-dk gray, strong mott; "crackle" w/wh gangue near base; GS over blue ch @ base	
-144½	Dol, lt-med gray; lt banding; ch @ 137½ over oxid shale (G?) oxid below to 139' 6" blue ch @ base lower half of chert brecc & sealed w/ silica & GS	
-146½	Dol, lt-med gray, lower 6" mott w/ few scatt ss grains	
-147½	Dol, med gray; mott to banded; TGS oxid @ base	
-152½	Dol, lt-med gray	
-153	Dol, lt-med gray; finely-"blotchy" w/wh silica flecks TGS @ base	
-154½	Dol, lt-med tan-gray; "blotchy"; oxid TGS @ base	
-162½	Dol, lt gray, lt banded, blue ch nod @ 160½; oxid from 161 to base	
-164½	Dol, lt-med gray, mott. TGS @ 164	
-168	Dol, lt gray	
-170	Dol, lt-med gray, mott to banded brecc bl ch @ base sealed w/ wh gangue & silica	
-172	Dol, lt-med tan-gray, blue chert @ base, oxid	
-179	Dol, lt gray, lt banded, oxid from 177-178½, mott & darker to base	

-189 Dol, med-lt gray, banded, TGS @ 183½ 38° dip @ 181'
-190 Dol, med gray, ss over ch over 1" GS @ base
-197 Dol, lt-med gray; scatt lt "crackle" @ 194-195' w/wh gangue oxid
-199 Dol, med gray; lt gangue fract 25% core loss 197-205'
-211 Dol, lt-med gray; oxid fract Cavity 201-203 90% core loss 205-211'
-214 Dol, med green-gray; oxid open fract @ 212½; T Gray S @ base
-215½ Dol, lt-med gray; oxid fractures; TGS @ 215½
-220 Semi-re-xl, med gray, mott, GS @ 216½; oxid wh gangue fractures below; brecc w/wh gangue 218-19 1" Gs @ base
-222 Dol, med gray, TGS @ base
-225 Dol, lt-med gray mott
-226½ Dol, med-dk gray, banded, lt shears @ base
-228½ Semi-re-xl, lt-med gray, mott
-229½ Re-xl, dk gray, w/wh gangue fract
-230½ Dol, lt-med gray, lt mott
-231 Shale, green
-233½ Re-xl, brown, lt "crackle", blue chert @ base
-234 Dol, lt-med gray, lt "crackle"
-234½ Dol, lt-med gray, brecc & sealed w/wh gangue & lt green re-xl
-235½ Chert, dk gray brecc & sealed w/ green shale & little wh gangue; ss @ base over Green & blk variegated shale
-236 Re-xl, lt-med gray, mott oxid @ base
-238 Dol, lt-med gray "crackle" & oxid
-239½ Dol, med-brown-gray, "crackle"; strong shears @ 239, dk brown to base
-240 Dol, lt-med gray, finely "blotchy", scatt lt shears; 1" GS @ base
-243½ Re-xl, med tan-brown, "crackle", Green shale mottling @ base
-246 Re-xl, brown, oxid @ base 20% core loss 235-249'
-250½ Semi-re-xl, lt-med gray, mott, "crackle", gray ch @ base
-251½ Dol, med gray, banded, gray ch @ base
-254 Dol, med gray, upper 6" brecc w/wh gangue
-255 Semi-re-xl, tan-gray, mott
-255½ Semi-re-xl, green-gray
-261 Dol, med gray-green; lt mott, lt "crackle"
-262 Re-xl, lt-med tan, mott GS & interbedded wh rexl @ base
-263 Dol, lt-med gray
-263½ Dol, lt-med gray, brecc & sealed w/wh gangue dol
-266 Dol, lt-med gray, scatt wh gangue lge. eyelets, TBS @ base
-266½ Dol, med gray
-269½ Dol, dk gray, sacchraidal, "lt wh gangue "crackle", med-dk gray from 1' on; white ch nod. @ 269½
-271 Dol, black; "crackle"; brecc lower 6" w/2h gangue, re-xl, & heavy FeS_2 FeS_2 est 4% 270½-71'
-272½ Re-xl, wh & black, fine mott, TGS @ 27½ & over black sh @ base
-274½ Dol, lt-med gray, mott, scatt "crackle"
-276 Dol, med gray, scatt "crackle"
-277 Dol, med-dk gray,
-278½ Re-xl, med-tan-gray, mott w/wh highly siliceous 277½-278;
-279½ Chert, lt blue-gray, brecc & sealed w/ re-xl & ch
-282 Dol, lt-med gray; oxxas "crackle" filling; TGS @ base
-287½ Re-xl, lt tan-gray; mott
-288½ Dol, lt-med tan-gray; ch nod @ 288; re-xl @ base
-289½ Dol, med gray; scatt open shears
-293 Re-xl, tan, mott TGS @ base FeS_2 est 1% 293-294'
-293½ Shale, black, w/wh re-xl xls 2" GS @ base
-296½ Chert, blue, brecc & sealed w/ lt-med gray re-xl

ST-14 (Cont'd.)

-299½	Re-xl, lt-med gray, ch nod 296½-97' & 297½, "crackle" @ 297½; TGS @ 298½; "crackle" below to 299	
-300½	Semi-re-xl, med gray	
-307	Chert, blue, brecc & sealed w/ re-xl, green sh & some silica	FeS2 est 2% 301-301½'
-308½	Re-xl, gray, mott	FeS_2 est 3% 302-303'
-309	Chert, blue, brecc & sealed w/ re-xl	FeS2 est 4% 308½-09'
-311	Re-xl, brown-gray; "crackle" @ top; "blotchy" w/wh gangue & wh silica below; Green shale @ base	
-314½	Re-xl, brown; chert brecc 312-12½ sealed w/ re-xl & wh gangue; chert brecc 313½ 314½ sealed w/ re-xl	FeS_2 est 1% 313½-14½
-317½	Dol, tan-gray, "crackle" upper 1'; chert @ 316-16½, 317 & base	
-323	Re-xl, tan; blue ch 321-21½; "crackle" w/ FeS2 shines 322½-23'; TGS @ base	
-326	Chert, blue, brecc & re-xl, tan-gray	
-327½	Re-xl, tan-green; mott w/green sh ; ch @ base	
-328½	Re-xl, tan-gray, mott; TGS @ base	
-336½	Re-xl, lt tan; TGS @ 329½; TGS @ 330; siliceous 333-334	
-343	Dol, tan-gray; ch nod @ 337½ & 339- 39½; siliceous 339½-40½	

B. H. Putnam DDH -ST-15

Copper Ridge Project - Puncheon Camp Creek

DMEA Idn - E - 1088

Hole No.:	ST-15	Collared:	1-11-60
Farm:	W. D. Stapleton	Bottomed:	1-15-60
Location:	N 50,817.34	Depth:	440'
	E 48,378.41	Casing:	BX - 27'; AX - 60'
Elevation:	1,389.28	Reaming:	None
Drilled by:	Putnam Drilling Co.	Cement:	None
Logged by:	F. T. Fischer		

Top Kingsport	141'
Top "R" Bed	335
Top "S" Bed	367½
Base Kingsport	399½

0-27	Overburden	
-29	Dol, lt-med gray, lt mott oxid below	
-44	Dol, lt-med gray, green @ 40' & oxid to 43	85% core loss 27-40
-56	Dol, med gray, mott to strong mott, open oxid fract scatt through upper ½; ch over scatt ss @ 47' ch over opening @ 50' over CM ss double; ss scatt w/wh gangue eyelets & "blotchy" w/ gray silica @ base oxid	50% core loss 40-55
-60	Dol, lt gray, drusy gangue eyelet @ 58½	
-65	Dol, lt-med gray	
-72	Dol, med gray, mott; darker toward base, TBS @ base	
-73½	Dol, dk gray; oxid	
-75½	Dol, med brown-gray; scatt banding	38° dip @ 75
-80	Dol, lt-med gray; scatt wh gangue eyelets and "blotchy" w/ silica toward base; open @ 80'	10% core loss 60-80'
-81	Dol, med-dk gray, mott, ss & blue-gray oolitic ch @ base	
-84½	Dol, lt-med gray; lt tan mott;	
-94½	Dol, med gray; drusy vugs upper 1'; oxid @ 86-86½ beneath T Gray S; scattered oxid vugs to 90' TBS @ base	
-95½	Dol, med-dk gray; mott, CM ss @ base, 9" thick over GS	
-96	Dol, med gray; oxid gray sh 1" in middle	
-100	Dol, lt-med gray; scatt lt open fractures	
-103	Dol, med gray; scatt vugs & open fractures	
-105	Dol, med-dk gray; scatt lt shears normal to bedding	
-112	Dol, lt-med gray; scatt open oxid fract upper 1½'; heavy ss @ 106½; ss @ 107½ over blue chert; lt banding from108-109; scatt ss over TGS @ 109 banded to base	
-117½	Dol, med-dk gray; scatt wh high angle shears; "crackle" breccia w/ wh gangue @ base over chert	
-120½	Dol, lt-med gray, mott, oxid @ top; darker @ base & "crackle"; wh bedded ch @ base	
-124	Dol, med-dk gray, banded, lighter below	37° dip @ 121'
-126	Dol, med tan-gray	
-130	Dol, med gray, lt mottling; TGS @ 129, 129½ and Gray shales @ base	
-131	Dol, dk gray;	
-135	Dol, med-dk gray; TBS @ base	
-139	Dol, med gray; oxid lower half	
-143	Dol, lt-med gray; CM ss @ 141; oxid below ss vugular gangue eyelets above base	
-145	Dol, med-gray, oxid & mott	
-146	Dol, med-dk gray, v strong mott-band, oxid gangue filled fracture in middle	
-151	Dol, lt-med gray, v strong oxid 147½-48'; high angle shears below; oxid; & pinkish coloration to 149½;	
-153½	Dol, med gray, TBS @ 152; oxid to base; oxid Gray S @ base	
-157½	Dol, lt-med gray; lt mott	
-158	Dol, med-dk gray	
-163½	Dol, lt-med gray; TBS @ 162	
-168	Dol, med gray, lt banded lower 1'; chert nod @ base	
-176	Dol, lt-med gray; ch nod @ 169½; banded below; ch nod @ 171, 172& 173; T Gray S @ 173½ & @ base	37° dip @ 175
-181½	Dol, lt-med gray; wh gangue eyelets to "crackle"; lt banding scatt ss 177-177½ TGS @ 178; vugular wh gangue fractures below sh for ½'; ss @ 179; scatt wh gangue filling below to base	FeS_2 shine @ 178' in gangue heavy FeS_2 in gangue @ 179
-182	Dol, med gray-green, mott; T Gray S @ base	FeS_2 shine @ 180
-186	Dol, med gray, lt mott, w/scatt wh gangue filled fractures & lt to wk shears 11; darker @ base over thin scatt ss over ss over 2" GS	scatt FeS_2 traces 181½-82

ST-15 (Cont'd.)

-187 Dol, lt-tan, sacchroidal, w/ wh gangue-filled fract; lt scatt ss grains over blue-white chert @ base

-188½ Dol, lt-med tan-gray; "crackle" throughout; ch @ 187½; ss over wh oolitic chert @ base

-190½ Dol, med, gray, "crackle" w/wh gangue & ss grains 189-189½

-196 Dol, med-dk gray, scatt wh "crackle"; TGS @ 192; chert nod over TGS @ base
FeS_2 est 2% 195-196

-197½ Dol, med gray; lt mott; TGS @ base FeS_2 shines @ 197

-201½ Dol, med-dk gray; lt mott; scatt fract w/wh gangue & pyrite
FeS_2 est 2% 197½-201½

-206 Dol, med gray; lt mott; scatt lt high angle shears @ 202' & 203 & 203½; "crackle" 203½-204; scatt wh gangue below; scatt ss grains over TGS @ base

-212 Dol, lt gray; scatt wk wh gangue-filled fractures; double TGS @ 209; wk open high angle shears @ 211; ch nod @ base

-214½ Dol, lt-med gray; scatt wh gangue fract; ch nod @ 214

-215½ Dol, lt-med gray; banded, blue ch @ base

-221 Dol, med gray; banded few scatt ss grains @ 218½; TGS @ 219½ over scatt ss; @ 220-21 over heavy ss TGS @ 221

-223½ Dol, brown-tan, mott conglomeratic @ 22[illegible]½-223½

-231½ Dol, lt-med gray; lt banded; ch nod @ 226½ over TGS; wh gangue "crackle" @ base over ch over TGS
34° dip @ 226'

-232½ Chert, gray, concent nodules; w/ matrix of green dol & ss grains

-236 Dol, lt-med gray; lt banded; scatt wh gangue-filled fract; mott toward base scatt ss over TGS @ base

-241½ Dol, lt-med gray; chnod @ 239 & 240½', brecc w/ wh gangue over wh ch "blotches" over wug blue ch @ base

-243 Dol, med gray; mott w/wh "blotches", T Gray @ @ base

-247 Dol, lt-med gray, lt banding 245½-247

-247½ Re-xl, brown, brecc w/wh gangue; FeS2 shines 247-47½

-249½ Dol, lt-med gray, lt shearing to "crackle" w/ some wh gangue blue ch @ base

-253½ Dol, lt-med gray, brecc w/ wh gangue TGS @ 250½, gray ch @ base
weak FeS_2 shines 249½-253½

-254½ Dol, lt-med gray; lt banding; few weak open shears normal to bedding

-255 Dol, lt-med gray; brecc w/wh gangue

-256 Dol, med green-gray; TGS @ 255½; wh gangue fract below sh

-263 Dol, lt gray; scatt lt fract w/ wh gangue; banding 258-261; ch nod 258½ & 259½ few scatt ss grains @ 261'; banded concentric ch nod @ 262½

-264 Dol, med tan; v "vlotchy" to mott w/ wh silica & some wh gangue; thin dk ch @ base

-266½ Dol, lt-med gray; lt banded, upper 2'; scatt wh gangue-filled "crackle" below

-268½ Dol, med gray; lt mott;

-269 Dol, lt-med gray-green

-269½ Dol, med brown, sacchroidal, mott

-274½ Dol, lt-med gray; banded scatt wh gangue-filled fractures; scatt ss over TGS @ base

-275 Dol, med gray

-279 Dol, lt-med gray; scatt banding & few wh gangue-filled fract; scatt ss @ base over TGS
28o dip @ 277'

-280 Dol, med tan-gray; blue ch nod near top;

-283 Dol, lt-med gray; scatt lt high angle shears

-284 Semi-re-xl, gray-green, mott w/green sh

-292 Dol, med tan-gray; lt mott to 286; ch & thin breccia w/ wh gangue below @ 286½ scatt wh gangue wywlets below for 1'; thin brecc w/ wh gangue @ 289, 291-91½

ST-15 (Cont'd.)

-294 Dol, white, v highly siliceous, dew scatt ss grains @ top
-294½ Dol, med gray; lt banding
-298½ Dol, lt-med gray; brecc w/ wh gangue top 1', banded below & scatt wh gangue-filled fractures few scatt ss grains @ base 25° dip @ 297'
-301 Dol, med gray-green; scatt vug wh gangue "crackle" in middle 1½'
-305 Dol, lt-med tan-gray, lt mott; vug wh gangue eyelets 302-02½; TGS @ base over ch
-305½ Dol, lt green, ch @ base
-307 Semi-re-xl, med green-gray; TGS @ base
-310 Dol, brown mott w/ tan, sacchroidal; vug wh gangue eyelets @ base over TGS
-311 Dol, med green-gray, mott w/green ch & reddish oxid material
-313 Semi-re-xl, brown-green, mott w/ green
-314 Re-xl, brown, lt mott
-315 Dol, tan, green shaly dol @ base
-315½ Re-xl, tan - brown, lt mott
-316 Re-xl, dk tan-brown, lower half brecc & sealed w/ wh gangue; some blk jasperoid in brecc Trace FeS_2 315¾/4-16
-316½ Dol, lt-med gray, few scatt ss grains @ base
-317 Blue chert, brecc & sealed w/ green dol, ss grains & some green sh
-318½ Re-xl, brown, mott w/ white
-319½ Re-xl, tan, mott w/ green sh
-321½ Re-xl, brwon, lt mott "crackle" @ base
-322 Semi-re-xl, tan
-326 Re-xl, brown, mott; TGS @ 322½ & base
-327½ Dol, tan to brown, TGS @ base
-335½ Re-xl, gray mott w/brown, scatt wh mott; bl ch @ base
-337 Dol, med-dk brown-gray, bl ch @ 336; brecc w/ wh gangue 336½-base 29° dip @ 336'
-338 Dol, med tan; brecc to "crackle"; TGS @ base
-339 Re-xl, tan
-344 Semi-re-xl, green-gray, "crackle" 340½-41½
-345 Re-xl, brown, TGS @ base
-351 Dol, lt-med green-gray, mott upper 2'
-354½ Dol, dk brown, scatt vug & wh gangue "crackle"
-356 Chert & lt green silica & green shale; some brown re-xl & increase green sh toward base
-361 Dol, med-dk brown-gray, wh gangue "crackle" throughout upper 2'; eyelets & wk "crackle" below
-363 Re-xl, brown, mott w/ green shale upper ½', 6" wh ch @ base
-364 Dol, med tan,
-367½ Dol, lt-med tan-gray, lt banding; scatt lt wh gangue "crackle"; green sh and/or dol @ base
-370 Chert, blue, brecc (rounded) sealed w/ mott tan re-xl some wh gangue; TGS @ base
-373 Re-xl, tan, siliceous @ top; scatt wh gangue "crackle" 373-376; siliceous 376 darker 277-78
-381½ Dol, tan, few scatt wh gangue fract; thin brecc w/ wh gangue @ 379½; pyrite & blk sh @ base FeS_2 est 5% 380-81½
-383 Dol, tan brecc & sealed w/re-xl & heavy pyrite some wh gangue FeS_2 est 4% 381-83
-385½ Re-xl, tan, scatt "crackle" 80% core loss 383-84
-386 Chert, blue brecc & sealed w/ re-xl & little gree silica FeS_2 est 1% 385-85½
-387 Re-xl, med gray, mott w/ blk sh; ss @ 386½; heavy pyrite lower 6"; ss @ 387 FeS_2 est 4% 386-87
-392½ Re-xl, tan; scatt wh gangue fract vugular; FeS_2 shines 388 & 389½

-393	Re-xl, tan-brown; lt banded	32° dip 292½' FeS_2 est 8% 390½-93'
-393½	Re-xl, gray, breec w/ wh gangue @ top;	FeS_2 est 5% 393-93½
-394	Re-xl, brown, siliceous; mott	
-395½	Re-xl, lt tan, breec & sealed w/re-xl, & brown silica, some green silica toward base TBS @ base	FeS_2 shines 394-95½
-396½	Re-xl, tan, brown & green silica @ base	
-398	Re-xl, lt gray, mott w/wh ch @ base	
-399½	Silica & some re-xl, greenish; scatt as upper 6"	
-400	Re-xl, brown, "crackle" w/wh gangue	
-410½	Dol, med gray, scatt wk fract w/ wh gangue TGS @ 404; lt wk scatt sh high angle	
-411	Dol, brown, saccharoidal, mott. scatt vugs	
-411½	Chert, blue to lt gray; oolite	
-412	Re-xl, tan, fine wh flecks of silica	
-418½	Dol, lt-med gray; mott w/ lt green; scatt "crackle" thin breec w/ wh gangue @ 412½, 415 & 416	
-420½	Dol, brown, saccharoidal, breec & sealed w/ wh gangue bottom half; vugular	
-423	Re-xl, gray, mott; TBS @ 422½; partly siliceous, pyrite & BS @ base	FeS2 est 2% 422½-423
-428½	Dol, lt-med gray; lt mott few scatt wh gangue fract	
-430	Dol, brown, lt mott, few scatt lt wh gangue fract	
-431	Re-xl, tan-gray; ch over pytite over heavy ss @ base	heavy FeS_2 shines @ 4303/4
-433	Semi-re-xl, lt-med gray, breec & sealed w/re-xl some chert TGS @ 433	
-436½	Re-xl, med-gray scatt "crackle" to breec w/ wh gangue & re-xl; siliceous above base TGS @ base	
-437	Dol, med tan-gray; blue ch @ base	
-438	Re-xl, brown mott	
-440	Semi-re-xl, gray-green, mott	

B. H. Putnam DDH-ST-16

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm - E - 1088

Hole No:	ST-16	Collared:	1-18-60
Farm:	W. D. Stapleton	Bottomed:	1-19-60
Location:	N 51,122.3	Depth:	190'
	E 48,095.96	Casing:	BX - 14'; AX - 30'
Elevation:	1,443.24	Reaming:	None
Drilled by:	Putnam Drilling Co.	Cement:	None
Logged by:	F. T. Fischer		

Top Kingsport	
Top "R" Bed	67'
Top "S" Bed	120½
Base Kingsport	162

0-14	Overburden
-16½	Dol, lt-med gray, banded, wh gangue "crackle", oxid; opening
-17½	Dol, med gray; brecciated w/ wh gangue Tr ZnS @ 17'
-21	Dol, lt-med gray, lt banded thin 3" brecc (?) "rock-matrix" @ top; scatt lt open shears, ½ wh gangue eyelets oxid 19½' thin chert below oxid open @ base
-22½	Dol, med gray, mott; open oxid @ oxid @ 21½; brecc 21½ t base w/ wh gangue "rock-matrix" @ base ZnS 21½-22½, Est 1%
-27	Dol, med gray, banded to 25°; wh gangue high angle fract w/ green dol ss @ 25' 6" wk breccia below w/ wh gangue; ch @ base 40° dip @ 24'
-30	Dol, lt-med gray; lt banding, few scatt gangue fractures
-34½	Dol, med gray, brecc w/ wh gangue; "mud-slip" @ 32 ±; gangue oxidized traces of zinc carbonate? 75% core loss 30-34'
-43	Dol, lt-med gray, weathered & oxed opening, some oxid wh/ gangue fract 60% core loss 34-45'
-45	Dol, lt-med to med gray, lt banding, brecc & sealed w/ wh gangue; strong oxid in gangue ZnS 43-45 Est 1%
-48½	Dol, lt-med tan-gray, scatt open shears
-54	Dol, med gray, lt banding, oxid TGS @ 52½ mott below TGS @ base oxid 40° dip @ 51'
-58½	Dol, lt-med tan-gray, scatt oxid open shears 55-56, scatt wh gangue eyelets below few scatt ss grains @ base
-59	Shale, green
-60	Semi-re-xl, kt-med gray, mott @ top TGS @ 60'
-63½	Dol, lt-med gray, lt mott, brecc 62-63½w/"rock-matrix"
-64½	Dol, med gray; banded TGS @ base
-67	Dol, lt-med gray, lt mott, TGS @ 66½ & @ base
-67½	Semi-re-xl, brown mott TGS @ base over thin breccia
-68	Re-xl, brown
-68½	Semi-re-xl, mott w/ green sh; 1" GS @ base
-70	Dol, tan lt mott stronger mott toward base
-71½	Chert blue brecc & sealed w/ wh gangue & some re-xl ss grains @ base
-73½	Dol, lt-med gray mott
-74½	Re-xl, tan to brown mott w/ lt "crackle" thin ch @ base
-75	Dol, tan, TGS @ base over heavy ss
-78	Re-xl, med tan-brown, ptly vugular, TGS @ base
-78½	Dol, lt tan-gray, banded 38° dip @ 78'
-79½	Re-xl, lt-med gray, mott
-86½	Re-xl, med tan-brown
-88½	Dol, lt-med tan-gray, lt banded, lt "crackle" & blue ch nod @ 88-88½
-89	Re-xl, brown-gray, TGS v near top, mott w/ wh eyelets, TGS @ base
-90½	Re-xl, dk grays
-92½	Semi-re-xl, med gray, mott; w/ lt "crackle"
-95½	Dol, lt-med green-gray, TGS @ 93
-97	Re-xl, brown, scatt vugs, few wh gangue fract; 1" GS @ base
-103	Dol, lt-med gray; lt "crackle" 98½-101 dker @ base; TGS @ base
-104	Re-xl, dk brown
-105½	Dol, med-dk brown-gray; scatt lt "crackle"; oxid green dol gangue in thin brecc @ 104 3/4-05'
-107	Shale, green, with 6" gray Ls in middle
-112½	Re-xl, brown-gray, scatt lt "crackle" & eyelets; TGS @ 110½ & @ base
-113½	Semi-re-xl, lt-med gray
-114	Re-xl, tan, mott TGS @ base
-120½	Dol, lt-med gray, scatt lt "crackle"; ch @ 116, eyelets below for 6"; banded 117½-120½ 46° dip @ 119'

ST-16 (Cont'd)

-124½	Re-xl, tan scatt wh gangue fract, high angle , v siliceous 122 to base; TGS to base	
-125	Re-xl, lt tan, TGS @ base	
-125½	Re-xl, lt-med gray, mott TGS @ base	
-129	Re-xl, lt gray, mott w/green sh oxid; ch @ top & @ 126½; TGS @ 128½ over ch over thin brecc re-xl, over ch @ base	
-130	Ls, tan-gray; blue ch @ base	
-139	Re-xl, tan-gray, mott; oxid gangue filled fract	
-142	Dol, lt-med gray, lt mott, scatt "crackle" ptly oxid ; scatt cs @ base	25% core loss 135-142'
-150	Ls, tan-gray, ½" GS @ 147	
-151	Re-xl, lt tan-brwon, "crackle", ch @ base	
-155	Ls, tan-gray, gray sh @ 151½, 152, 152½; ls brecc 153-154 sealed w sh & re-xl Ls sdy	
-155½	Re-xl, lt tan, TGS @ base	
-156	Ls, tan-gray	
-157	Re-xl, med gray, mott	
-160	Ls, tan-gray	
-162	Re-xl, brown, ptly siliceous, oxid	10% core loss 155-165
-166	Dol, lt-med gray, lt mott; fairly strong high angle shears (healed) 165 to base	
-167	Re-xl, tan-gray, mott	
-174½	Dol, med gray, scatt high angle shears (healed)	
-175	Re-xl, brown	40% core loss 170-175'
-184	Dol, lt-med gray, scatt shears (healed)	33° dip @ 177'
-185½	Re-xl, gray, mott	50% core loss 175-184'
-189	Dol, lt-med tan-gray, mott; oxid; scatt gangue fract	
-190	Semi-re-xl, tan gray, ch @ 189½	

B. H. Putnam DDH-ST-17

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm - E - 1088

Hole No:	ST-17	Collared:	1-21-60
Farm:	W. D. Stapleton	Bottomed:	1-25-60
Location:	N 51,047.20	Depth:	245'
	E 48,155.48	Casing:	BX - 56'; AX - 130
Elevation:	1,428.33	Reaming:	60' (70-130')
Drilled by:	Putnam Drilling Co.	Cement:	None
Logged by:	F. T. Fischer		

Top Kingsport	
Top "R" Bed	116'
Top "S" Bed	178
Base Kingsport	213

0-56	Overburden	
-65	Dol, lt-med gray, banded to mott; oxid opening near top, blue ch @ 59'; wh gangue eyelet above; more blue ch nod below; banding to 60; lt wh gangue "crackle" below siliceous, oxid 64' to base; darker 64-65	50% core loss 56-65 40% core loss 65-70 10% core loss 70-79
-66	Dol, med gray, mott; v strong oxid lower pt	35% core loss 79-83
-73	Dol, lt-med gray, banding; TGS @ base	25% core loss 83-85
-75	Dol, lt-med gray, lt mott @ top	40° dip @ 68'
-79	Dol, lt-med gray, banded, thin sed cong @ 77½; scatt ss grains @ 78'; ss over TGS @ base	
-83	Dol, lt-med gray, lt banded; vug wh gangue eyelet @ 79½; scatt oxid wh gangue fractures	
-84	Dol, med green-gray, wh gangue "crackle" oxid, upper pt;	
-85	Dol, lt-med gray	
-86½	Dol, lt gray, small vugs, scatt low angle shears wk	
-91½	Dol, med gray, lt mott, some wh gangue "crackle" & some oxid open shears	Opening 91½-99
-103	Dol, lt gray, lt mott	50% core loss 99-103
-104½	Dol, lt-med gray, opening	33% core loss 103-106
-106	Semi-re-xl, med gray, mott w/wh; strong oxid vugular TGS @ base	80% core loss 106-111
-113	Dol, lt-med gray; upper pt mott, w/ some oxid openings	60% core loss 111-115
-115	Dol, med gray, mott	55% core loss 115-121
-116	Dol, lt green, lt mott	75% core loss 121-129
-119	Re-xl, dk brown, vugular	50% core loss 129-131
-124	Dol, lt-med gray, strong fracturing open shears; Tgs @ 120; white ch w/ss @ 120½ oxid below	50% core loss 131-135
-126	Re-xl, dk brown, brecc & sealed w/wh gangue	80% core loss 135-140
-131	Re-xl, tan, wk brecc w/ wh gangue; some fract oxid & open	
-133	Dol, lt-med tan-gray, lt mott, much fracturing	
-139	Re-xl, tan-gray, mott, w/ wk "crackle"; opening	
-145	Dol, lt-med gray, scatt lt "crackle", vugular near base darker & lt mott @ base	60% core loss 140-145
-148	Dol, lt-med gray, brecciated & sealed w/dol, TGS @ 148	20% core loss 145-151
-151	Dol, lt-med gray; lt banded, scatt wh gangue fract, oxid;	lt mott 149-151 48° dip @ 150' 20% core loss 151-155
-152	Semi-re-xl, lt-med gray, mott, vugular;	10% core loss 155-161
-153	Dol, lt gray; scatt ss grains over TGS & green dol @ base	20% core loss 161-168
-153½	Dol, lt-med gray, lt mott few scatt wh gangue oxid fract	50° core loss 168-172
-158	Dol, lt-med gray; few open fract, oxid mott toward & @ base	40% core loss 172-180
-159	Dol, med gray	45% core loss 180-187
-160	Dol, dk brown-gray, sacchroidal, vugular, oxid, scatt gangue-filled fract, oxid shears	20% core loss 187-193
-166	Dol, med-dk gray, scatt wk shears & oxid gangue-filled fract; vugular 161-162 brecc 162-62½, sealed w/oxid wh dol; brecc 163-165 as above	75% core loss 197-201 10% core loss 201-210
-167½	Re-xl, tan-gray, mott, oxid	50% core loss 218-233
-168	Dol, med-dk gray, mott, few scatt small blue-gray ch nods	
-170	Dol, med gray, lt mott	
-171½	Dol, med-dk gray, open fract	
-178	Dol, lt gray; oxid " rock matrix" @ 174½ ch @ 174½ lt banded 174 to base; oxid thin brecc w/ rock matrix @ 174½, scatt high angle shears 177-78	35° dip @ 176'
-183	Re-xl, lt gray, mott; some oxid high angle fractures; siliceous toward base	
-186	White chert & gray re-xl, brecc & sealed w/ silica & re-xl, v highly oxid throughout	

ST-17 (Cont'd.)

-187 Re-xl, lt-med gray, brecc w/ wh gangue, some oxid

-191 Semi-re-xl, lt-med gray, mott, few scatt lt oxid fract; TGS @ 188 wh gangue fract w/ silica @ base

-194 Re-xl, med-dk tan-brown, mott, vugular, wh gangue "crackle" ptly oxid

-196½ Re-xl, lt gray, oxid vugular, TGS @ 195½, wh ch @ base

-197 Dol, med gray, vug wh gangue "crackle"

-198 Dol, med gray, brecc & sealed w/ rexl & silica, oxid throughout

-203 Re-xl, lt-med gray, scatt tiny vugs; wh ch @ base

-209½ Re-xl, gray; mott w/ sh?; TGS @ 213½; v strongly oxid throughout; sh @ 204 oxid; sh @ 209-09½?

-213 Re-xl, lt-med gray, mott w/wh gangue TGS @ 210; vugular silica (wh) @ base

-216 Dol, lt-med gray; lt mott; high angle gangue-filled, vugular oxid shears; fract wh ch @ base

-219 Dol, med gray; strong shearing open & oxid from top to 217½; intense shearing (fault) 217½-218½; wh ch over TGS @ base

-226 Dol, lt-med gray; lt mott @ top; strong open shearing 219½-220, scatt below; fault zone 223-223½, open shears below to strong @ base over TGS

-233 Dol, med gray; scatt wh gangue eyelets; fault(?) 228-28½; wh oolitic ch @ 233

-237½ Dol, lt-med gray, lt mott; scatt open oxid fractures 40% core loss 233-238'

-241½ Dol, lt-med gray, lt mott; strong shearing throughout; fault zone 237½-238,239-239¼, 240-240½, 241-41¼

-245 Dol, med gray, mott; scatt open oxid shears & fractures

B. H. Putnam DDH-ST-18

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm - E 1088

Hole No.:	ST-18	Collared:	1-26-60
Farm:	W. D. Stapleton	Bottomed:	1-29-60
Location:	N 51,080.83	Depth:	312'
	E 48,448.14	Casing:	BX - 31'; AX - 40'
Elevation:	1,475.37'	Reaming:	None
Drilled by:	Putnam Drilling Co.	Cement:	None
Logged by:	F. T. Fischer		

Top Kingsport	
Top "R" Bed	186½'
Top "S" Bed	234
Base Kingsport	266½

0-31	Overburden	
-34	Dol, lt-med gray, lt banded; blue chert @ top; oxid opening @ 34'; ss @ 32, TGS @ 33; scatt ss grains @ 33½, ss @ 34' one wh gangue fract normal to bedding	15% core loss 31-40' 48° dip @ 33'
-39	Dol, med gray, lt mott, scatt wh gangue "crackle"; brecc w/ wh gangue & blk jasperoid ch nod over ss @ base	ZnS shines 37-37½' Est 1%
-40	Dol, lt-med gray, brecc & sealed w/ wh gangue, scatt ss grains in matrix; fractured ch & green dol w/ss grains @ base	
-43	Dol, med gray to tan gray, w/ wh gangue "crackle" oxid; ss @ 42, siliceous @ base, CM ss @ base	30% core loss 40-43'
-45	Dol, lt-med gray; ss @ top (below CM above-mentioned); oxid TGS @ base	
-48	Dol, med-dk blue-gray, lt mott	
-50½	Dol, lt-med gray, lt mott, ch over TGS @ 49½ & TGS @ base	
-55	Dol, lt-med gray, TGS oxid @ 53, 54 & 55	
-58	Dol, med gray to lt-med gray, lt mott, oxid TGS @ 56½; oxid @ 57½	50% core loss 56-61'
-61	Dol, lt-med gray; oxid fract @ 60½ & @ base	10% core loss 61-66'
-65½	Dol, med gray, brecc w/ wh gangue from 63-65, oxid	50% core loss 66-59'
-68	Dol, lt-med gray, scatt wk fract open & oxid	60% core loss 69-73
-73	Dol, lt gray,	20% core loss 73-79
-74½	Dol, lt-med gray, brecc w/"rock matrix" & green shale from 73-73½ brecc w/ wh gangue below; oxid gangue; TGS @ base	30% core loss 79-84'
-77	Dol, lt-med gray; scatt lt banding lower pt	30% core loss 88-91'
-80	Dol, lt-med gray; brecc w/wh gangue, oxid in places	39° dip @ 77'
-82	Dol, med gray, brecc w/wh gangue; some blue ch in brecc	
-84	Dol, lt-med gray, lt banding	
-87	Dol, med gray, banded w/ interbedded blue ch, wh gangue brecc & crackle below 85'; ZnS shines & zinc carbonate in wh gangue nearly all oxid 69° dip @ 85' & removed	ZnS - 86-86½ est 2%
-91	Dol, med gray, band w/ oxid tan; brecc w/ wh gangue ss @ 91'	ZnS 87½-88½ est 4%
-91½	Dol, lt gray	
-92	Dol, med gray, & chert, blue, wh gangue eyelets & silica "blotches"	
-94½	Dol, med gray, brecc w/"rock matrix" to 93½ and wh gangue to base; ss @ base	
-99½	Dol, lt-med gray; lt shears, high angle; brecc w/"rock matrix" @ base	
-101	Dol, lt-med gray; oxid lower 1'	
-104½	Dol, lt-med blue-gray, brecc w/wh gangue	ZnS 102-103, est 1%
-106	Dol, lt-med gray, lt banded oxid @ base	ZnS shine 103'
-111	Dol, lt-med gray, brecc w/ wh gangue; ss @ 108½ & 110	heavy ZnS shine @ 107' ZnS 108-109½, est 4% ZnS 110-111, est 3%
-113	Dol, med gray, brecc w/ wh gangue	ZnS 111-113, est 2½%
-114	Dol, tan-gray, fine "blotchy" w/ wh silica	
-116	Dol, med gray, thin brecc w/ wh gangue @ 114½, 115-115½ & w/ "rock matrix" below	
-118	Dol, lt-med gray, brecc w/ wh gangue; lt banded dol;	ZnS 116½-118, est 1½%
-123	Dol, lt-med gray, banded; lt oxid "crackle" @ base	35° dip @ 122'
-125	Dol, med blue-gray; wh gangue "crackle" @ top; brecc w/wh gangue 124-24½ scatt open high angle fract @ base, T Gray S @ base	ZnS shines @ 124½-124½
-126½	Dol, med gray, banded, brecc w/ wh gangue, some blk jasperoid in lower part	heavy ZnS shines @ 125-125½, est 5%
-130	Dol, lt-med gray, brecc, w/wh gangue & clk jasperoid gangue vuguler "rock matrix" @ base	ZnS shines @ 126
-133	Dol, lt-med gray, brecc w/wh gangue; few scatt ss grains @ top	10% core loss 125-135
-135	Dol, med gray, weak "crackle" w/ wh gangue	FeS_2 shines 130½-131

-138 Dol, lt-med gray, brecc & sealed w/ wh gangue & green dol, little black jasperoid, T Gray S @ base
ZnS shines 130½-133, est ½%
ZnS shines 135½-137½, est ½%

-138½ Dol, lt-med gray, lt mott

-146 Dol, lt-med gray; "crackle" @ top; brecc w/"rock-matrix" below & some wh gangue scatt ss grains over TGS @ base over ch nod ZnS shines @ 142'

-148 Dol, med gray; lt "crackle" @ top, "rock matrix" breccia 146½-147; oxid wh gangue fract filling to 148

-149½ Dol, med gray, brecc w/green ch & wh gangue 148½-49; "crackle" & fract below

-151½ Dol, med gray, thin "rock matrix" brecc @ 150, 150½ & base; TGS @ base

-152½ Dol, lt-med blue gray w/ wh gangue "crackle" T Gray S @ base

-155 Dol, lt-med gray; lt mott

-159 Dol, lt-med tan-gray, brecc sealed w/ wh gangue & "rock matrix", oxid umbrecc from 156½-158 but with weak fract or shears 35% core loss 155-159

-162½ Dol, ltmed gray, brecc & sealed w/ wh gangue oxid

-164 Dol, med gray, lt banded oxid @ top; brecc w/ wh gangue (52° dip @ 163)

-167 Dol, lt-med gray, banded & oxid 30% core loss 163½-167

-172 Dol, lt-med tan-gray, mott & oxid; brecc w/green dol & wh gangue lower 1'; TGS @ base 40% core loss 167-171

-174½ Dol, med tan-gray mott sacchroidal; ting vugs lower 1' lt gray ch @ base 46° dip @ 165

-176½ Dol, lt-med gray, brecc w/ "rock matrix" & wh gangue; oxed opening about 176' TGS @ base

-178 Dol, med blue gray; mott w/ lt "crackle"; Green sh @ base FeS2 shines @ 177'

-180 Dol, lt-med blue gray; mott w/ green shale & oxid (?) orange-yellow re-xl

-181 Semi-re-xl, tan-brown, wh gangue "crackle" @ base

-183½ Dol, med-dk gray, lt mott w/wh gangue "crackle"

-185 Dol, lt-med blue; mott

-186 Dol, med-dk to med tan-gray, TGS @ base

-187 Dol, med gray, lt mott

-187½ Dol, lt-med gray, TGS @ base

-188½ Semi-re-xl, tan-gray, mott

-189 Chert, blue brecc & sealed w/ green sh & little re-xl; scatt ss grains @ top & @ base over 1" GS

-190½ Semi-re-xl, lt-med green-gray, mott w/green sh; green sh @ base

-191½ Semi-re-xl, tan, "crackle" w/ wh gangue & "rock matrix"; brecc @ base w/ green sh ss grains & small ch fragments

-192½ Semi-re-xl, tan, lower half mott, w/wh gangue "crackle" TGS @ base

-194 Re-xl, brown, scatt wh gangue-filled "crackle"; lower 6" brecc & sealed w/ green sh

-195 Re-xl, & dol, tan, TBS over TBS @ base

-196 Re-xl, tan; w/ green sh mott & ss grains in sh; brecc & sealed w/ rexl @ base

-197 Semi-re-xl, tan lt mott; oxid opening @ base

-198 Re-xl, tan and gray mott;

-200 Re-xl, tan-brown, mott; w/wh eyelets & gangue fract @ base oxid ½" GS @ base

-220½ Dol, lt-med tan-gray, wk wh gangue "crackle" TGS @ base

-203½ Dol, lt-med gray, lt mott & scatt wk "crackle" 20% core loss 200-05'

-205 Dol, med gray, blue ch over TGS @ base

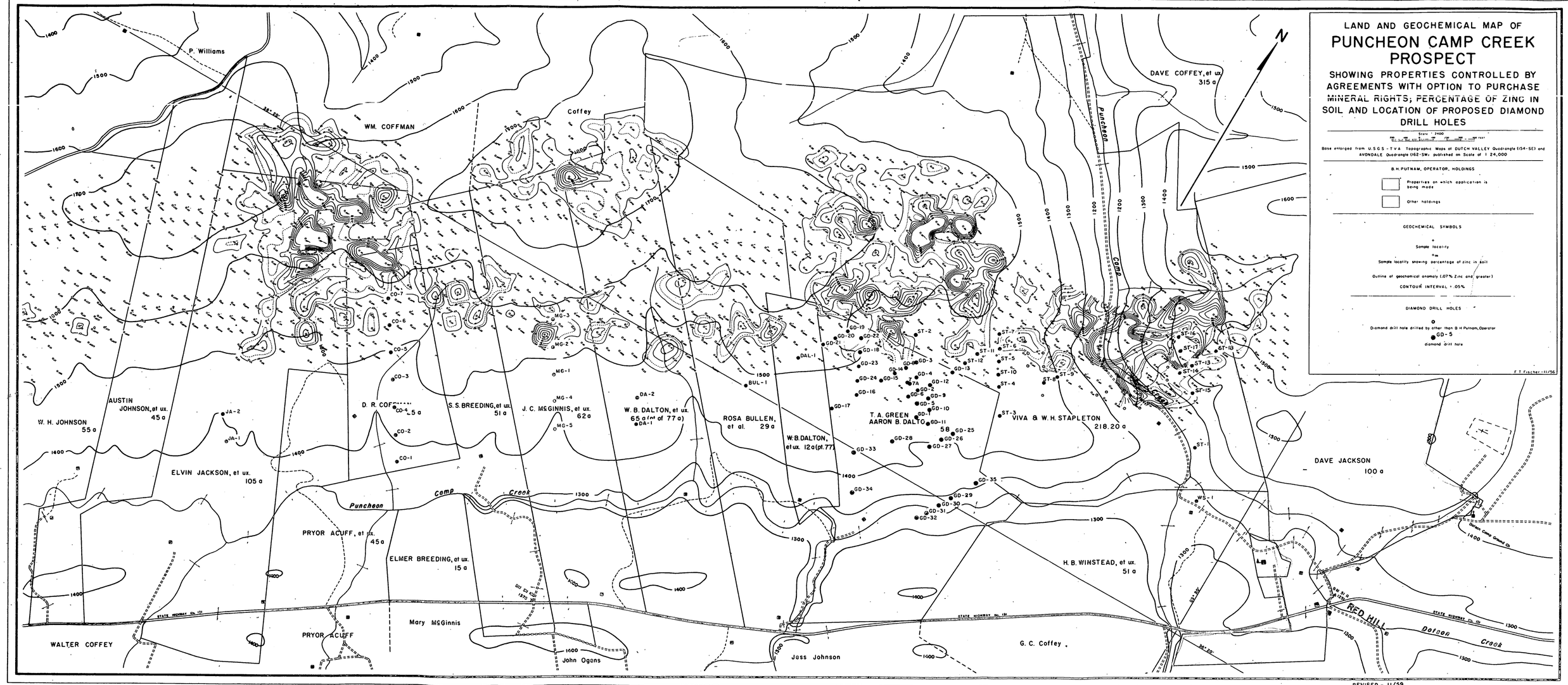
-208 Dol, lt-med & med gray, brecc w/"rock matrix" & green sh some chert brecc; 2" ptly oxid green sh @ base

-213½ Dol, med blue-gray; brecc w/wh gangue @ top 1'; wk scatt "crackle" below TGS @ 212'; brecc w/wh gangue basal 1'

-218½ Dol, dk gray; sacchroidal, upper 6" brecc & sealed w/white gangue; few scatt wh vugular eyelets below; "rock matrix" from 215½-16; ch nod @ 217; scatt wk "crackle" below

ST-18 (Cont'd)

-219	Re-xl, lt-med gray & green sh	
-220½	Dol, lt-med gray; ½" GS @ base	
-221½	Dol, dk gray, w/wh gangue "crackle", TGS @ base	
-223	Semi-re-xl, gray, oxid & green sh lower half all green sh	20% core loss 220-25'
-227½	Dol, med-dk gray, banded; thin brecc w/wh gangue @ 225',226 & 227 4" re-xl & GS @ base	44° dip @ 224'
-228	Re-xl, tan	
-228½	Dol, tan, mott; brecc w/ "rock matrix" @ top & @ base; brecc ch @ base	
-234	Dol, lt-med tan-gray; brecc w/ "rock matrix" 231-232, oxid TGS @ 232	
-241½	Re-xl, lt-med tan-gray, mott; TGS 238½	
-243½	Re-xl, brown, 3" GS @ base over 6" blue chert	15% core loss 243-255'
-251½	Re-xl, tan, mott; wh gangue "crackle" dry brecc 246½-347; brecc 250-51½	
-255	Dol, med gray, lt scatt "crackle"	
-257	Re-xl, lt gray, mott	
-258	Re-xl, tan, TGS @ base	
-261½	Re-xl, lt gray, mott; TGS oxid @ 258½, 259, 259½; ss @ 261'	
-264	Re-xl, gray, mott w/green shale; 1" GS @ 263½	
-266½	Re-xl, tan-brown,	
-269½	Dol, lt-med gray, lt mott; wh gangue "crackle" 268-69; ch @ 269 & 269½	
-276	Dol, med-dk gray, wh gangue "crackle"	
-279½	Dol, med-dk gray, brecc w/wh gangue 278-279; strong wh gangue healed shears below (low angle); blue oolite ch @ base	TR FeS_2 in gangue 278½
-280½	Re-xl, brown, mott, lt "crackle"	
-285½	Dol, lt-med green-gray, lt mott few scatt high angle shears; darker w/ stronger mott 281½ to base	
-286½	Dol, tan-gray, brecc w/ wh gangue upper half "crackle" to base FeS_2 shine @ 286'	
-287	Re-xl, dk gray, w/wh mott ("salt & pepper") 2" GS @ base	
-287½	Re-xl, brown	
-288	Dol, med-dk gray, mott	
-296	Dol, med gray, mott w/ scatt wk shears & crackle; ch @ 292½; med-dk gray 294 to base, oolitic blue ch @ base	
-299	Dol, med gray, lt mott; brecc w/wh gangue 298-base	35% core loss 294-300
-300	Re-xl, lt gray, mott, siliceous, vugular	
-310½	Dol, med gray, wh gangue #crackle#; ch nod @ 301; ss @ base	
-303½	Semi-re-xl, brecc w/wh gangue	
-304½	Re-xl, tan, upper half siliceous; TGS @ base	
-308	Dol, lt-med gray, brecc w/wh gangue	Heavy FeS_2 shines 305-305½, est 20%
-309	Dol, lt-med gray-green, mott w/green sh	FeS_2 306½-308, est 5%
-312	Dol, lt-med gray, brecc w/ wh gangue & some re-xl; ch nod @ base	FeS_2 309-312, est ½%


LAND AND GEOCHEMICAL MAP OF
PUNCHEON CAMP CREEK PROSPECT
SHOWING PROPERTIES CONTROLLED BY AGREEMENTS WITH OPTION TO PURCHASE MINERAL RIGHTS; PERCENTAGE OF ZINC IN SOIL AND LOCATION OF PROPOSED DIAMOND DRILL HOLES
Scale 1"=400'
Base enlarged from U.S.G.S.-T.V.A. Topographic Maps of DUTCH VALLEY Quadrangle (154-SE) and AVONDALE Quadrangle (162-SW), published on Scale of 1:24,000
B.H. PUTNAM, OPERATOR, HOLDINGS
Properties on which application is being made
Other holdings
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
GD-5
diamond drill hole
F.T. Fischer-11/56
N
P. Williams
WM. COFFMAN
Coffey
DAVE COFFEY, et ux. 315 a
W. H. JOHNSON 55 a
AUSTIN JOHNSON, et ux. 45 a
D. R. COFFEY 5 a
S. S. BREEDING, et ux. 51 a
J. C. McGINNIS, et ux. 62 a
W. B. DALTON, et ux. 65 a (of 77 a)
ROSA BULLEN, et al. 29 a
W. B. DALTON, et ux. 12 a (pt. 77)
T. A. GREEN
AARON B. DALTON 58
VIVA & W. H. STAPLETON 218.20 a
DAVE JACKSON 100 a
ELVIN JACKSON, et ux. 105 a
PRYOR ACUFF, et ux. 45 a
ELMER BREEDING, et ux. 15 a
H. B. WINSTEAD, et ux. 51 a
WALTER COFFEY
PRYOR ACUFF
Mary McGinnis
John Ogens
Jess Johnson
G. C. Coffey
Puncheon Camp Creek
Dotson Creek
RED HILL
STATE HIGHWAY No. 131
Dotson Camp Ground Ch.
REVISED - 11/59

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
REGION V

ELECTROTECHNICAL
EXPERIMENT STATION

P. O. BOX 217
NORRIS, TENNESSEE

January 15, 1960

Memorandum

To: E. D. Talbert, Office of Minerals Exploration, Interior Building, Washington 25, D. C.

From: Administrative Assistant, Norris, Tennessee

Subject: Monthly report and voucher

We are enclosing two copies of the following monthly report and voucher:

Idm-E1088 B. H.Putnam
Docket No. DMEA-4580
25th payment - month of December 1959
Amount $537.37

Helen Miller
Helen R. Miller

Attachments 2
/hbm
Copies to R. A. Laurence
V. J. Lynch
Norris files
Day files

OFFICIAL FILE COPY
O. M. E.
RECEIVED JAN 18 1960

DATE	INITIALS	CODE
1-18	gad	110
"	FL	110
1/20	[illegible]	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- 22

JAN 18 1960 O.M.E.

OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of December, 1959 Docket No. DMEA 2580 Contract No. Kn-E-1068
Operator's Name D. H. Putnam Minerals Zinc
Address 212 Third Street, Marietta, Ohio
Contract Amount, $170,125.00 Government Participation 50 % Amount, $85,062.50

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:						
Drilling	$1,008.00	$107,586.00	$109,594.00			
Bulldozing						
Crosscutting						
Drifting						
Reaming	—	2,316.00	2,316.00			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
Core Boxes	—	290.25	290.25			
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment	6.25	257.50	263.75			
Sampling and Analysis						
Payroll Taxes						
Liability Insurance						
(8) Contingencies (specify): Incidental Allowance @ 0.15/ Foot	60.48	6,455.16	6,515.64			
TOTALS	$1,074.73	$116,904.91	$117,979.64	1074.73	116,904.91	117,979.64

I certify that the above bill is correct and just and that payment therefor has not been received.
Date January, 1960 *Payee D. H. Putnam
Per Frederick J. Fischer 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:
$ 537.37
Signature Helen R. Miller
(Authorized Certifying Officer)
Date JAN 18 1960 Vou. No. 35
(See other side)

537.36

(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-1088 in accordance with the terms of the contract.

Signature [illegible] Title MINING ENGINEER U. S. BUREAU OF MINES Date JAN 14 1960

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert A. Lawrence Title EXECUTIVE OFFICER OME FIELD TEAM REGION V Date JAN 14 1960

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 December 1959 Docket No. DMEA 4580 Contract No. Idm - 8 - 1038
Operator's Name D. H. Putman 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	Feet	$1,008.00	336	$108,594.00	36,198	$ 3.00	50,000	$ 3.00
~~Churn~~ Reaming	Foot	—	—	2,316.00	1,158	2.00	5,000	2.00
~~Auger~~ Samples	Each	6.25	5	263.75	211	1.25	500	1.25
~~Stripping~~ Core Boxes	Each	—	—	290.25	150	1.935	150	2.00
Trenching								
Test Pits								
~~Roads and Trails~~ Incident. Allow. @ $0.18/Foot		60.48	336	6,515.64	36,198	0.18	50,000	0.18
TOTAL DISTRIBUTED COSTS		$ 1,074.73		$117,979.64				TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS		$ 1,074.73		$117,979.64				

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 January, 1960 Operator D. H. Putman

Per Frederick P. Fischer Title Superintendent

REMARKS:

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)

JAN 18 1960
O.M.E.

W. 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

A Progress Report on the Luncheon Camp Creek
Project, Grainger County, Tennessee

December 1959
by: F. F. Fischer

Docket No. 4580
Contract No. Idm - S - 1088

During the month of December one (1) hole was drilled on the Luncheon Camp Creek Project. Hole ST-13 was drilled 60[illegible] feet north of hole ST-1 on the dip fence. This hole collared in the Mascot formation and was drilled to a depth of 336 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-36	Overburden	----	----	----
36-37	Mascot	----	----	Dolomite; cavity below CM estimated @ 40'
43-322½	Kingsport	"P" @ 212½ "S" @ 279 "T" @ 322½	Trace ZnS @ 270½ Trace ZnS @ 287-3/4'	Dolomite & recrystalline Recrystalline & dolomite some breccia
322½-336	Longview	"U" @ 334½	----	Dolomite & recrystalline

ENGINEERING
FOUNDATIONS
INSPECTIONS
ANALYSES
SAMPLING
CONSULTING
RESEARCH

The Bruce Williams Laboratories

MAIN OFFICE AND LABORATORIES 618-624 JOPLIN STREET TELEPHONE MAYFAIR 9-1556

ESTABLISHED 1898

Joplin, Missouri

P. G. Lugan
Thorn Hill, Ronn.

12-7-59

				ZINC Zn
810383	SE #11	#1	210½ - 212½	0.54%
384		#2	214½ - 215½	0.36%
385		#3	217½ - 218½	[illegible]
[illegible]		#4	221½ - 223½	1.30%
387		#5	223½ - 224½	1.14%

cf-jf 71-792

THE ABOVE FIGURES ARE AS DETERMINED IN OUR LABORATORIES

Bruce Williams

Invoice

Marietta, Ohio

December 1959

E. H. Putnam
512 Third Street
Marietta, Ohio

In Account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Luncheon Camp Creek Project DMEA Contract No. 4580 - December 1959

Core Hole No. ST-13

Footage drilled 336' @ $3.00/ft. $ 1008.00

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

E.H.Putnam, Operator

by A. R. Eddy
A. R. Eddy
Drilling Superintendent

E. H. Putnam DDH-ST-13

Copper Ridge Project - Sunshine Camp Creek

DMEA Idm - S 1088

Hole No.	ST - 13	Collared:	12-23-59
Farm:	W. D. Stapleton	Bottomed:	12-31-59
Location:	N 50,332.28	Depth:	336'
	E 48,273.26	Casing:	BX - 36'; AX - 61'
Elevation:	1,445.22'	Reaming:	None
Drilled by:	Putnam Drilling Co.	Cement:	None
Logged by:	F. T. Fischer		

Top Kingsport	40' est.
Top "A" bed	212½
Top "B" bed	279
Base Kingsport	322½

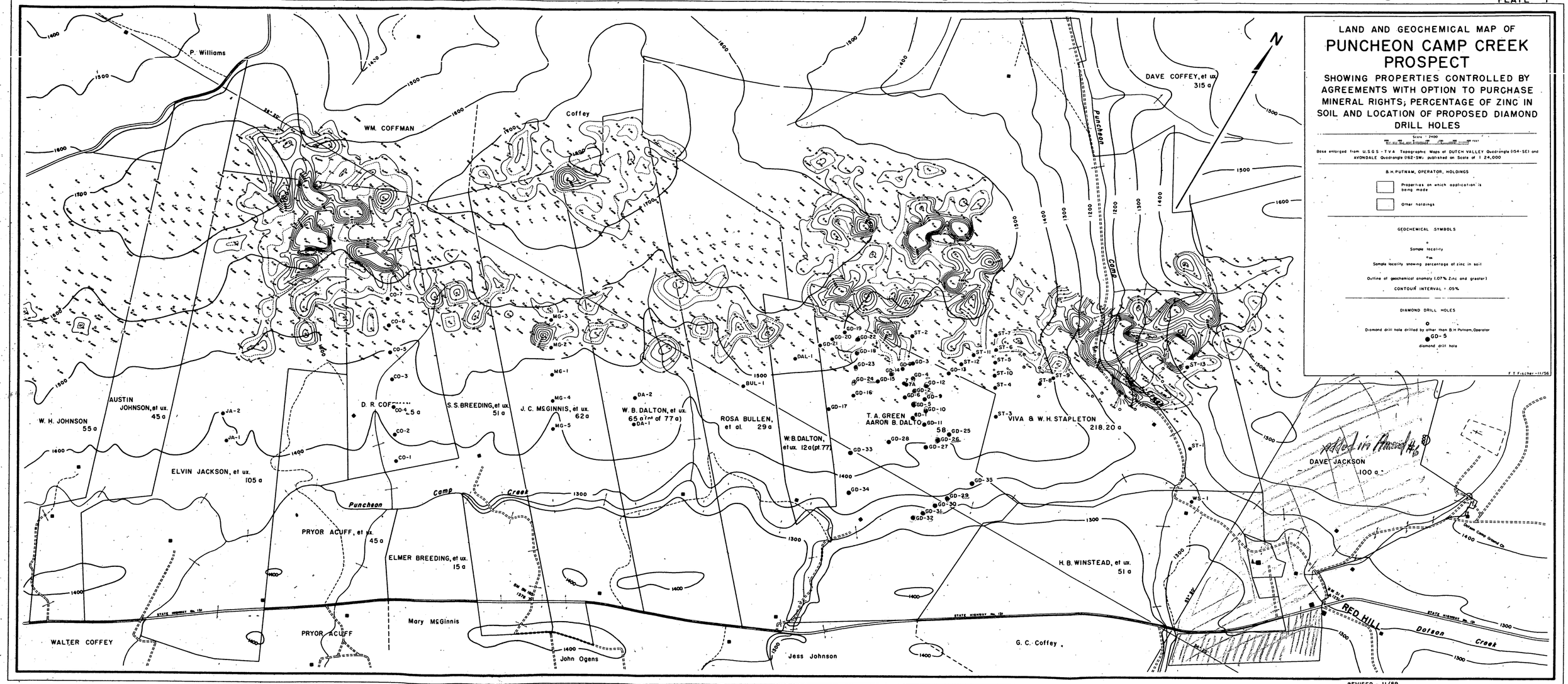
0-36	Overburden
-37	Dol, med gray
-42	Cavity
-46	Dol, lt-med gray
-48½	Dol, med gray, lt mott, some oxid
-49	Dol, buff, oxid
-51	Dol, lt-med gray, w/tan mott T Gray 3 @ base
-51½	Dol, med gray,
-52	Dol, med gray & heavy ss, brecciated & sealed w/wh gangue & semi-re-xl
-53	Dol, med gray, lt banded 41° dip @ 53'
-53½	Dol, lt-med gray, brecciated and sealed w/wh gangue
-54	Dol, med gray, mott, lt scatt ss grains over TBS @ base
-55	Dol, lt-med gray
-58	Dol, med gray, lt mott toward base TBS @ base
-60	Dol, med-dk gray, lt mott @ top, scatt wh shears 59 to base; brecc @ base & sealed w/wh gangue Tr FeS_2 @ base
-62	Dol, med-dk gray, w/vug wh gangue in "crackle" in upper 1', mott to banded below ch nod @ base
-66	Dol, med gray, banded, scatt wh shears normal to bedding; ch nod @ 64; some wh gangue-filled shears.
-68½	Dol, med gray, mott, gray ch @ 67; oxid fract w/wh gangue to base
-69	Dol, med-dk gray; gray ch @ base
-72	Dol, med gray; strong banding; TGS @ 70½
-73	Dol, med gray; v sdy throughout; T Gray 3 @ base
-74½	Dol, lt-med gray; lt banded, CM ss @ 74; heavy ss @ base
-81	Dol, lt-med gray, lt mott w/tan (oxid); "crackle" w/wh gangue @ base 25% core loss 72-84'
-82	Dol, med-gray; siliceous & oxid
-84	Dol, lt gray, oxid
-85	Dol, lt-med gray; mott
-85½	Chert, brown & gray; brown w/ss grains; brecciated & sealed w/chert & wh gangue dol,
-87½	Dol, lt-med brown; ss @ top CM ss @ base over ch over thin CM ss
-93	Dol, lt-med gray; mott 87½-89'; opening @ 89'; T Gray @ 90' mott @ base over TGS
-95½	Dol, lt-med tan-gray, mott w lt tan
-98	Dol, med gray, mott, wh gangue eyelets; lighter toward base; TGS @ base; oxid below 50% core loss 96-111'
-111	Dol, lt tan-gray; oxid
-116½	Dol, lt-med gray; strong banding throughout; ss from 115½ to Cm ss base over TGS 39° dip @ 114'
-120	Dol, med tan-brown mott; scatt oxid opening; dk @ base w/oxid opening; 1" GS over thin chert at base
-122	Dol, lt-med tan; lt "crackle" w/wh gangue
-130	Dol, lt gray; ch nod @ 123, 128 and blue chert @ base over ½" GS 50% core loss 122-1
-131	Dol, lt-med green -gray, mott upper pt, banded lower TGS @ base
-137	Dol, lt-med tan, scatt open fractures; blue chert @ 135 and 136 lt shears at base
-138	Dol, lt-med tan-gray, blotchy w/wh silica
-140	Dol, lt tan weathered; open fract & wh gangue frach normal to bedding
-146	Dol, lt tan-gray, lt banded, wh high angle shears w/ gangue @ 144½; ch nod @ base
-148	Dol, med green-gray, banded; T Gray 3 @ 146½, 147½ and @ base
-153½	Dol, lt-med tan-gray, banded to mott; 4" chert @ base
-155	Dol, med tan-gray; ch over TGS @ base

-156	Dol, med gray, brecc w/wh gangue	
-158½	Dol, lt-med gray, lt banded	
-159½	Dol, lt gray; wh ch @ base	
-160½	Dol, tan & brown mott	
-167	Dol, lt gray, banded to strong-banded; GS @ 166	
-168	Dol, med gray, lt "crackle"	
-171	Dol, lt-med gray, lt banded; scatt ss 170 to base; 1" GS @ base	25% core loss 161-170
-173	Dol, med gray; blue ch @ 172	50% core loss 170-175
-177	Dol, lt-med, green-gray; lt mott	
-189	Dol, lt-med tan-gray, scatt mott; siliceous 178-179; lt band 180-186; scatt open fract & some lt "crackle" 186 to base; gray ch @ base	37° dip @ 186'
-198	Dol, lt-med green-gray, scatt weak "crackle"; mott & vugular wh eyelets bottom 2 feet	
-200	Dol, med tan-gray, banded; some wh gangue fract TGS @ base	
-201	Semi-re-xl; med gray, mott; 1" GS @ base	
-202	Semi-re-xl; med gray-green, brecc w/ wh gangue	
-206	Dol, lt-med gray, sacchroidal, mott; brecc from 204 to base TGS @ base	
-208½	Dol, med gray-green, band to mott	
-211	Dol, lt-med gray, sacchroidal, wk brecc w/wh gangue; scatt shearing low angle	
-212½	Dol, lt green-gray, banded, lt high angle fract; oxid @ base	
-214	Dol, lt-med to med gray, brecc & sealed w/green shale, blue sh some chert; dry breccia oxid @ base	
-215	Re-xl, med gray, mott to banded, TGS @ base	
-217½	Re-xl, lt-med gray, mott w/ green sh	
-218½	Semi-re-xl, lt tan-gray	
-219	Re-xl, dk brown, lt "crackle"	
-220	Dol, lt gray; brecc & sealed w/ wh gangue & rexl BB & TGS @ base sh oxid	
-223	Re-xl, brown, "crackle" w/vug gangue	
-224	Re-xl, green-gray, fine mott	
-225	Dol, med to lt-med gray, lt banded	
-234	Re-xl, gray & tan mott, scatt wh gangue fract; some vug gangue	
-234½	Semi-re-xl, tan, blue ch @ base	
-238	Dol, med, tan-gray, sh @ 237	
-239½	Re-xl, tan-brown, "blotchy" w/lt gray, siliceous mottling	
-243	Re-xl, brown, gray mott, vugular	
-249	Semi-re-xl, lt-med gray, green	
-250	Re-xl, brown, vugular & mott; 1" GS @ base	
-255½	Dol, green-xray, lt "crackle" @ top; oxid 251½-252½	FeS_2 shines @ 255½
-256½	Dol, med-gray, brecc w/wh gangue	FeS_2 shines in gangue @ 256-6½
-259½	Dol, lt-med gray, scatt lt "crackle" w/ FeS_2	FeS_2 shines
-260½	Dol, med gray	
-261	Dol, v dk gray; mott	
-263	Dol, med-dk gray, gray ch @ base	
-265	Re-xl, dk gray; oxid	FeS_2 shines @ 265'
-269	Dol, dk gray, mott oxid at top; wh gangue w/ FeS_2	40% core loss 263-271'
-271	Dol, med-dk gray, mott; T Gray S @ base	Tr ZnS @ 270½
-272½	Re-xl, tan & white, mott	
-274	Re-xl, dk brown, siliceous, weathered @ 273½; "crackle" toward base; 4" wh chert @ base ofer TGS	
-276	Dol, lt-med gray, lt "crackle", ch @ 275, vug wh gangue eyelets, ch @ base	
-279	Dol, lt-med green-gray, banded upper 1'; TGS @ base	
-281	Re-xl, tan & wh mott; siliceous upper 6"	FeS_2 shines 280½-81
-282	Re-xl, & chert tan	

ST-13 (Cont'd)

-283	Dol, med gray, sherty, TBS @ base
-286	Chert & green sh fragments, sealed w/ blk & wh mott re-xl; TGS @ 285'
-287	Ls, lt gray & re-xl, lt tan mott
-287½	Re-xl, lt tan, mott
-288	Blue-gray chert, breec & sealed w/ re-xl
-291½	Re-xl, tan, w/"crackle" & wh/ gangue; TGS @ base
-292	Re-xl, lt gray, brecciated & sealed w/wh gangue
-298	Re-xl, tan; ptly siliceous breec, w/wh gangue from 293-94; gangue vugular & ptly wh silica; finely brecciated from 295-98, w/wh gangue vugular, Fe^{+2} shines 295 and 296-96½, and @ 297½
-299	Dol, med gray, scatt lt shears upper ½'; thin FeS_2 layer 294½; scatt thin layers re-xl
-300	Re-xl, tan-gray, mott; oxid @ base
-301	Re-xl, chert & blk sh; FeS_2 layer @ base
-304½	Re-xl, lt gray, scatt "crackle", blk sh @ base
-305	Re-xl, gray, mott; gray sh @ base
-305½	Sandstone, lt-green-gray, C!
-306	Chert, blue-gray, breec & sealed w/ re-xl
-309	Re-xl, tan-gray, mott, TBS @ base
-310	Re-xl, brownish, mott, blue sh @ base
-311	Re-xl, w/blk siliceous sh
-313½	Re-xl, lt-med gray, mott w/wh gangue
-321	Re-xl, tan, mott, TGS @ 319 & @ base
-322½	Semi-re-xl, med gray, mott w/ scatt wk "crackle"
-326	Dol, med gray; 1" GS @ base
-333½	Dol, med gray; lt fract; shearing 330½-331
-334½	Dol, dk gray
-335½	Re-xl, tan mott
-336	Blue chert, brecciated & sealed w/ re-xl & wh gangue

FeS_2 shines @ 311-311½
30% core loss 305-316



REVISED - 11/59

Form MF-104A
(April 1952)

Budget Bureau No. 42-R1151.2

JAN 14 1960
O.M.E.

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

Month of November 1959 Docket No. DMEA 4580 Contract No. Idm - E - 1088
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	$2,310.00	770	$107,586.00	35,862	$3.00	50,000	$3.00
~~Chuck~~ Reaming	Foot	30.00	15	2,316.00	1,158	2.00	5,000	2.00
~~Auger~~ Samples	Each	3.75	3	257.50	206	1.25	500	1.25
~~Stripping~~ Core Boxes	Each	—	—	290.25	150	1.935	150	2.00
Trenching								
Test Pits								
~~Roads and Trails~~ Incid. Allow. @ $.18 ft.		138.60	770	6,455.16	35,862	.18	50,000	0.18
TOTAL DISTRIBUTED COSTS		$2,482.35		$116,904.91				TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS		$2,482.35		$116,904.00				

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 November, 1959 Operator B. H. Putnam

Per Frederick J. Fisher 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)

GEOLOGIST, U. S. G. S.

DEC - 1 1959

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.

MME FORM 6 REFERENCE SLIP
REV. 2-59 OFFICE OF MINERALS EXPLORATION

TO:	DATE	INITIALS
1. 110	1/14	[illegible]
2. ~~Mr Murphy~~ 500	1/18	[illegible]
3.		
4.		
5.		
FROM: 110	1-14	gad

FOR: Check items for action desired

____ Action ____ Reply for signature of ____
____ Approval ____ Investigate ____ Surname
____ Comment ____ Recommendations ____ Signature
____ Conference ____ Rewrite ____ File
____ Instructions ____ Your information

REMARKS:

GPO 872894

(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-1088 in accordance with the terms of the contract.

Signature [illegible] Title MINING ENGINEER U. S. BUREAU OF MINES Date DEC 3 1959

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert A. Lawrence Title EXECUTIVE OFFICER OME FIELD TEAM REGION V Date DEC 3 1959

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-104 (Rev.)
(April 1952)

Budget Bureau No. 42-R1036.5

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

JAN 11 1960 FILED ON VOUCHER & SCHEDULE OF ... K- 21

OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of November, 1959 Docket No. DMEA 4580 Contract No. Idm -E- 1088
Operator's Name B. H. Putnam Minerals Zinc
Address 512 Third Street, Marietta, Ohio
Contract Amount, $170,215.00 Government Participation: 50% Amount, $85,062.50

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	$2310.00	$105,276.00	$107,586.00			
Bulldozing						
Crosscutting						
Drifting						
Reaming	30.00	2,286.00	2,316.00			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
Core Boxes	—	290.25	290.25			
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis	3.75	253.75	257.50			
Payroll Taxes						
Liability Insurance						
(8) Contingencies (specify): Incid. Allow. @ $.18/Foot	138.60	6,316.56	6,455.16			
TOTALS	$2,482.35	$114,422.56	$116,904.91	2482.35	114,422.56	116,904.91

I certify that the above bill is correct and just and that payment therefor has not been received.
Date November, 1959 Payee B. H. Putnam
Per Frederick J. Fisher 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:

$ 1241.17

Signature Helen R. Miller
(Authorized Certifying Officer)

Date JAN 12 1960 Vou. No. 33
(See other side)

124118

A Progress Report on the Puncheon Camp Creek
Project, Grainger County, Tennessee

November 1959
by: F. T. Fischer

Docket No. 4580
Contract No. Idm-E-1088

During the month of November two (2) holes were drilled on the Puncheon Camp Creek Project. Hole ST-11 was drilled half-way between holes GD-13 and ST-6 on a strike fence. The hole collared in the Kingsport formation and was drilled to a depth of 385 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-80	Overburden	—	—	—
80-354	Kingsport	"R" @ 244 "S" @ 314½ "T" @ 354	185-185½, est. 2% trace ZnS @ 205 & 208; 210½-211, est ½%; 214½-215, est ¾% 215½-216, est ½%; trace @ 218; 221½-223½, est 1¼% Zinc shine @ 286½ Traces of ZnS @ 331 and 331½; 341-342, est 1½%	Dolomite & recrystalline; some breccia
354-385	Longview	"U" @ 364	—	Dolomite & recrystalline

Hole ST-12 was drilled halfway between holes GD-13 and ST-11 on the strike fence. This hole collared in the Kingsport formation and was drilled to a depth of 385 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-93	Overburden	—	—	—
93-369	Kingsport	"R" @ 245 "S" @ 319½ "T" @ 369	Zinc shines @ 307½, 309½ and 319½	Dolomite, limestone and recrystalline; little breccia
369-385	Longview	"U" @ 379	—	Dolomite

ENGINEERING
FOUNDATIONS
INSPECTIONS
ANALYSES
SAMPLING
CONSULTING
RESEARCH

The Bruce Williams Laboratories

MAIN OFFICE AND LABORATORIES 618-624 JOPLIN STREET TELEPHONE MAYFAIR 3-1596

ESTABLISHED 1898

Joplin, Missouri

[illegible]
P. O. Box [illegible]
[illegible], Tennessee

10-29-59

[illegible]	[illegible]	Sample 1 (236½ - 237½')	1.16
[illegible]		2 (327½ - 329½')	1.56
[illegible]		3 (332½ - 333')	0.68

fc/jf

THE ABOVE FIGURES ARE AS DETERMINED IN OUR LABORATORIES 72-1[illegible]

Bruce Williams

Invoice

Marietta, Ohio

B. H. Putnam
512 Third Street
Marietta, Ohio

November 1959

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Puncheon Camp creek Project DMEA Contract No. 4580 - November 1959

Core Hole No. ST-11

Footage drilled 385' @ $3.00/ft. $1155.00

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

B. H. Putnam, Operator

by: A. R. Eddy
A. R. Eddy
Drilling Superintendent

Invoice

Marietta, Ohio

November 1959

B. H. Putnam
512 Third Street
Marietta, Ohio

In Account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Runcheon Camp Creek Project DMEA Contract No. 4580 - November 1959

Core Hole No. ST-12

Footage drilled	385' @ $3.00/ft.	$ 1155.00
Footage reamed	15' @ $2.00/ft.	30.00
	Total for ST-12	$ 1185.00

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

B. H. Putnam, Operator

By A. R. Eddy
A. R. Eddy
Drilling Superintendent

B.H. Putnam DDH-ST-11

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm - E 1088

Hole No.:	ST-11	Collared:	11-2-59
Farm:	W. D. Stapleton	Bottomed:	11-14-59
Location:	N 50,172.96	Depth:	385'
	E 46,847.08	Casing:	BX - 80'; AX - 120'
Elevation:	1439.41'	Reaming:	None
Drilled by:	Putnam Drilling Co.	Cement:	None
Logger by:	F. T. Fitcher		

Top Kingsport	77' est
Top "R" Bed	244'
Top "S" Bed	316½'
Base Kingsport	354'

0-80 Overburden
-82 Dol, lt gray, lt mott opening @ 82', weathered
-90 Dol, lt-med gray, lt banded, wh gangue-filled fractures @ 84½-85, oxid opening @ 87' mott from 88-90 wh eyelets @ 90' (36° dip @ 84')
-92 Dol, med gray, scatt wh eyelets
-96? Dol, med-dk gray, mott toward base (75% core loss 92-120)
Dol, lt-med gray, lt banded; scatt ss @ 100'? oxid in places
-120 Dol, med-gray, mott toward base
-122½ Dol, med gray, wh gangue fractures, some vugular; dk ch over TGS @ base
FeS_2 shines @ 121
-130 Dol, lt-med gray, lt mott; oxid 124½-126½; TGS @ 126; FeS_2 shines @ 128
-135 Dol, med gray, w/lt gray mott; scatt wh vug eyelets; lt shears, high angle oxid 134 to base; heavy ss over TGS @ base
-141 Dol, lt gray, mott w/lt-med gray silica upper 1'; gangue-filled fract. upper 1'; scatt lt oxid fract below; ch @ 136½; drusy vug @ 138; FeS_2 in fractures @ 128½; chert @ 140; 2" green sh @ base FeS_2 shines @ 128½
-144 Dol, lt gray
-144½ Dol, med gray; thin blue ch @ base FeS_2 shines @ 144,144½
-145 Dol, lt-med gray, wh gangue fract w/ FeS_2 @ 145½; gray ch @ base
FeS_2 est ½ % 144½-145
-145½ Dol, lt-med gray, lt banded, blue ch @ 145½
-146½ Dol, lt-med gray, FeS_2 in gangue-filled fract TGrayS @ base FeS_2 shine @ 146
-147 Chat, blue, brecciated, sealed w/wh gangue & silica
-148 Dol, lt gray, blue ch @ base
-149½ Dol, lt-med gray, wh gangue fractures @ 149 w/ FeS_2; oxid shears; chert @ base
FeS_2 shines @ 149,150
-156½ Dol, med gray, banded; blue ch @ 150; 1" GS @ 152½; TGS @ 153½,155 & 156 scatt ss @ 156' T Gray S @ base (41° dip @ 156')
-157 Dol, med gray, scatt ss grains, brecciated & sealed w/gray shale
-159 Dol, med gray, scatt ss throughout
-159½ Dk gray, sh & dk chert
-161 Dol, lt-med gray, ch nod @ 160 & 160½
-169½ Dol, lt gray, ch @ 166, 166½, 167½ and 168
-171 Dol, lt gray, banded; oxid high angle shear @ 170; ch @ 170½
-173 Dol, lt gray, mott (marbled); ss @ 172½; blue ch @ base
-180 Dol, lt tan-gray, scattered open fractures; blue-gray ch @ 175 is brecciated & sealed w/silica; ch @ 175½, 177, & 179 (50% core loss 175-180)
-182 Dol, lt-med gray, brecciated w/wh gangue FeS_2 shines 182
-185 Dol, lt-med gray, strong shearing @ 183' high angle; vugular siliceous @ 183½ shearing 185½-185
-185½ Dol, lt-med gray, mott, brecciated w/wh gangue <u>ZnS - 185-185½ est 2%</u>
-190 Dol, lt-med tan-gray, lt-banded, "crackle" w/wh gangue to 188' oxid; T Gray S @ 189½ & @ base
-191 Dol, lt-med gray, TGS @ base
-194 Dol, lt-med gray, banded, scatt gangue-filled fractures; lge vugular wh eyelets @ 193½'; "dry breccia" to 194 TGS @ base (39° dip @ 192')
-198½ Dol, lt-med tan-gray; lt band @ top ch nod @ 194½, vugular; scatt lt vertical shears; ch @ 197 & 197½; oxid 197-198½; thin CM ss @ 198½
-202 Dol, lt gray, banded,
-204½ Dol, lt-med gray, v. lt "blotchy"; mott to 204½ TGS @ base Tr FeS_2 @ 203½
-205½ Dol, lt-med blue-gray, lt fract normal to bedding; lt breccia w/wh gangue 205-205½
<u>ZnS shines @ 205'</u>

ST-11 (Cont'd.)

-214 Dol, lt gray, banded, scatted lt shears & vugular wh eyelets; ZnS in v lt "crackle"; TGS @ 209½; ZnS shines @ 208'
lt "crackle" to breccia from 210½-211; scatt ss @ 210½; strong shearing below ZnS 210½-211, est ½%
brecciated from 212½ - 213½ sealed w/ coarse wh gangue & re-xl T Gray S @ 213½ scatt ss below to base

-214½ Chert, blue & dol, lt-med gray, brecciated & sealed w/re-xl, green sh & silica "Dry Breccia" ZnS shine @ 214½

-215 Chert, blue-gray, brecciated & sealed w/coarse wh gangue & some lt gray re-xl ZnS 214½-215, est ½%

-217 Dol, lt-med gray, lt banded, "crackle" w/wh gangue TGS @ base ZnS 215½-216, est ½%

-219 Dol, lt-med green-gray, mott lt brecciated 218-219, sealed w/wh gangue TGS @ base FeS_2 shines @ 218½ ZnS shines @ 218

-220½ Dol, lt-med gray, lower half brecciated & sealed w/wh gangue & re-xl; tr FeS_2 in gangue Tr FeS_2 @ 220-220½

-225 Dol, med tan-gray, brecciated & sealed wh/ coarse wh gangue pltly vugular, ZnS in ganue lower 1' sealed w/re-xl & green dol. ZnS 221½-223½ est 1½%

-226½ Dol, lt-med tan-gray, lt band

-231 Dol, lt-med gray, mott @ base

-233½ Dol, med gray

-234½ Dol, lt-med gray, brecciated w/wh gangue FeS_2 shines @ 234

-237 Dol, lt-med gray, lt shears high angle, scatt SS grains @ 235½, ss @ 236½; brecciated @ 236½ & sealed w/very coarse wh gangue calcite & dol; T Gray S @ base FeS_2 shines @ 236½

-240 Dol, lt-med green gray, sacchroidal; lt "crackle"; TGS @ 238½, brecc. & sealed w/wh gangue, re-xl & silica 239-240

-243 Dol, lt-med gray, mott; scatt wh eyelets; vug @ 242

-243½ Dol, med tan-gray, brecc. sealed w/green shale

-244 green sh

-246½ Re-xl, brown, mott

-247 Dol, lt-med green-gray

-250½ Semi-re-xl, med gray-green; oxid fract. w/wh gangue @ 249

-253 Dol, lt-med gray, lt mott high-angle fract filled w/coarse wh gangue @ 251' (76°) other open un-healed fractures also 70-80° FeS_2 shines in gangue @ 251

-254 Dol, med tan-gray; few wh eyelets GS @ base

-255 Dol, med gray-green, argillaceous,

-258 Dol, med-dk gray, mott brecciated upper ½ ' w/wh gangue-filled fract @ 256; brecc 257-base

-259 Re-xl, brown, brecciated w/wh gangue & re-xl

-259½ Dol, med-brown-gray, GS @ base

-261½ Re-xl, brown, mott "crackle" scatt vugs

-262½ Dol, lt-med gray

-263 Re-xl, tangray, brecc @ base & ss @ base "Dry breccia" below for½'

-264 Re-xl, lt-med gray-green, strong mott

-266 Semi-re-xl, gray, w/green sh partings; large gangue filling w/ tr FeS_2 Tr FeS_2 @ 265

-269 Re-xl, brown, mott, vuggy; lt gray ch @ base

-270 Dol, med tan, lt banded

-270½ Dol, med tan & ch brecc & sealed w/ blk re-xl & silica "Dry Breccia" TGS @ base

-271 Dol, lt-med gray, banded

-272 Re-xl, lt-med tan-gray; scatt small vugs

-274 Re-xl, brown, scatt small vugs

-279 Re-xl, lt-med tan-gray, mott wh gangue-filled fract @ 274½; TGS over blue ch @ base

-279½ Dol, med gray

ST-11 (Cont'd.)

-282	Re-xl, lt-brown, mott w/wh	
-288	Re-xl, green-tan, mott w/green sh; scatt "crackle"	ZnS shine @ 286½
-289½	Re-xl, brown	
-290	Dol, lt-med gray, scatt ss over TGS @ base	
-291	Re-xl, tan-green w/green sh partings	
-295	Dol, lt-med gray-green, mott, w/scatt "crackle"	
-295½	Re-xl, brown & tan mott. TGS @ base	
-297	Dol, dk brown-gray, scatt vug eyelets & "crackle" ch @ 296½	
-298	Dol, terra cotta, brecciated, w/re-xl, & green sh TGS @ base	
-303	Dol, terra cotta, TGS @ 299 & @ base	
-303½	Re-xl, red-tan	
-304	Semi-re-xl, dark gray	
-305	Dol, med gray, TGS @ base	
-305½	Dol, terra cotta	
-311½	Dol, lt-med gray, mott, TGS @ 308, banded to base TGS @ base	
-314	Dol, reddish-tan	
-315½	Dol, lt-med gray, brecciated & sealed w/coarse wh gangue dol, vugular	
-316½	Dol, lt-med gray, lt banded, brecciated & sealed w/ re-xl & silica " Dry Breccia"	
-317½	Re-xl, tan	
-318	Re-xl, tan, & chert, blue gray, brecciated & sealed w/re-xl & silica "Dry Breccia"	
-323	Dol, lt-med gray, brecciated & sealed w/re-xl, silica & dk sh to green sh "Dry Breccia"	
-324	Re-xl, lt tan-gray, w/vugular wh mott; chert @ base	
-326	Dol, lt-med tan-gray, brecciated & sealed w/ silica, re-xl, & green sh " Dry Breccia"	
-327	Re-xl, med tan, mott	
-331	Re-xl, w lt tan-gray, mott w/wh TGS @ 327½, 328½ & @ base	
-338	Dol, terra cotta & med dk gray, breco & sealed w/re-xl, silica & green sh; scatt ss grains @ 332½ 1" GS @ base	Trace ZnS @ 331 & 331½
-334	Re-xl, lt green, v highly siliceous	
-337½	Re-xl, v lt gray, mott & "crackle"	
-339½	Re-xl, brown, "crackle" w/ wh gangue	
-340½	Re-xl, lt gray, w/vugular wh gangue "crackle"	FeS_2 shines @ 339½-40½
-341	Re-xl, brown	
-342	Re-xl, tan-gray, to lt gray, scatt ss @ base	ZnS 341-342 est 1½%
-343	Re-xl, tan-gray to lt; strong mott TBS @ base	
-344	Re-xl, lt tan-gray, scatt vug siliceous"blotches"	
-345	Re-xl, lt tan-gray; vugular	
-347	Dol, lt-med gray, lt band; upper pt vugular, scatt ss grains below to base	
-349½	Re-xl, lt gray, TBS @ 348½	
-350½	Chert, brown banded	
-351½	Re-xl, lt gray, coarse, mott; vugular wh eyelets; TBS @ base	
-352	Re-xl, brown & lt gray, mott, w/green sh stringers	
-354	Re-xl, lt-green-gray, w/green sh parting; blue chert @ 352½	
-358	Dol, brown-gray, scatt wh shears, siliceous from 356 60 base	
-362	Dol, med gray; lt crackle 359-60	
-364	Dol, med-dk gray; shearing 363½ & 364½	
-365	Chert, lt gray to dk gray	
-365½	Re-xl, tan, T Gray S @ base	
-366½	Semi-re-xl; lt-med gray	
-371½	Dol, lt-med gray, mott, ch @ 367½ TBS @ 368 Silicepus 368-69 w/scatt ss grains	
-375	Re-xl, brown, lt "crackle"	
-377	Re-xl, lt tan-gray, lt mott siliceous	
-380	Re-xl, med gray, mott, same silica	
-384	Dol, lt-med gray, scatt wk shears	
-385	Dol, med gray, vug wh eyelet	

B. H. Putnam

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm - E 1088

Hole No.	ST - 12	Collared:	11 - 16 - 59
Farm:	W. D. Stapleton	Bottomed:	11 - 21 - 59
Location:	N 50,089.84'	Depth:	385'
	E 46,793.94'	Casing:	BX - 93'; AX - 140'
Elevation:	1,427.36'	Reaming:	15'
Drilled by:	Putnam Drilling Co.	Cement:	None
Logged by:	F. T. Fischer		

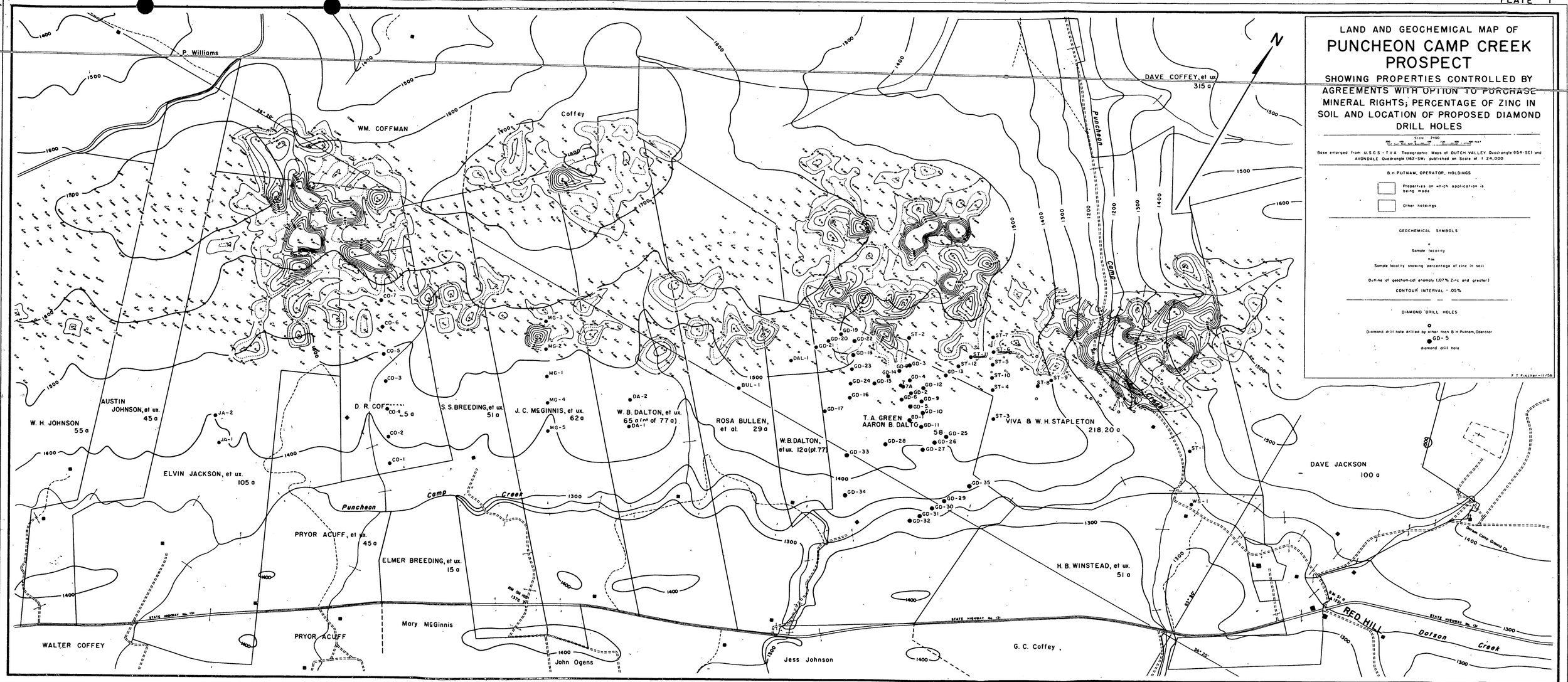
Top Kingsport	88' Est.
Top "R" Bed	245'
Top "S" Bed	319½'
Base Kingsport	369'

0-93	Overburden
-112	Dol, lt-med gray, heavy ss @ top? oxid throughout (90% core loss 93-112')
-117?	Dol, med-dk gray, mott openings
-125	Dol, lt-med gray; ss @ base (75% core loss 112-125')
-128	Dol, lt-med gray, lt banded @ top; oxid 128; scatt oxid fract 36° dip @ 135'
-131½	Cavity
-132½	Dol, med gray
-138	Cavity
-142	Dol, med gray, scatt lt "crackle" w/wh gangue & FeS_2 shines
-145	Dol, med-dk gray, wh "blotchy" & eyelets
-146½	Dol, med gray, scatt wh eyelets & traces FeS_2 in eyelets: GS w/ss grains @ base
-147½	Dol, lt-med gray, mott; TGS @ 147'
-152	Dol, lt gray, mott, scatt wh gangue w/ FeS_2
-155½	Dol, lt-med gray, lt "crackle" w/wh gangue & FeS_2
-157½	Dol, lt gray, chert @ 156½ and @ base
-161	Dol, med gray, brecciated and sealed w/ wh gangue FeS_2 shines in gangue FeS_2 157½-158½, Est 1%
-164	Dol, med gray, banded, scatt ss @ 162½ over lt "crackle"; ss scatt to base TGS over ch @ base
-165	Green shale (4") over dk chert; chert fractured & filled w/ green shale
-169½	Dol, lt-med gray, scatt lt high-angle fract some healed w/wh gangue; ch @ 167½ & 169; TGS @ base
-175½	Dol, lt gray, mott, scatt lt "crackle", blue ch @ 173½, lt band below; TGS over wh ch @ base
-179	Dol, lt-med gray, lt band to mott; ss @ 178½; ch over TGS @ base
-184	Dol, lt-med gray; ch @ 182½ & 183½
-185	Dol, lt gray, v highly siliceous; wh "blotchy", TGS @ base
-186½	Dol, med-dk gray; T Gray S @ base 36° dip @ 186'
-188	Dol, lt-med gray, vugular wh xl eyelets @ top
-189	Dol, med gray, lt band
-193½	Dol, lt gray, banded; ch nod @ 190, 191 & 191½; ss in TGS @ base
-197½	Dol, lt-med gray, TGS @ 194, banded toward base
-203	Dol, lt gray, mott, ss @ 198; ch @ 198½, 199, 199½ & 200; shear zone @ 200½ ch below & @ 202½ & 203; ss @ base
-205½	Dol, lt-med gray, lt banding
-207	Dol, lt tan-gray wh "blotchy"
-209½	Dol, med tan-gray, mott, T Gray S @ 207½; brecciated w/wh gangue from 209-209½
-213½	Dol, lt-med gray, banded, scatt eyelets; scatt ss over TGS over ch @ base 40° dip @ 210'
-215	Dol, lt gray, scatt lt "crackle"; oxid @ top
-218	Dol, lt-med gray, banded, thin breccia w/green sh & ss grains @ 216
-219½	Dol, med gray, scatt ss grains; blue fract ch @ base
-223	Dol, lt-med gray
-225	Dol, lt-med green-gray; lt mott, scatt wk FeS_2 shines @ base
-226	Dol, lt-med gray, wh coarse-gangue eyelets, vugular; "blotchy" w/lt gray silica to base; dk ch @ base
-230	Dol, lt-med brown-gray, ch nod @ 228, lt banded below to ch @ base
-238	Dol, lt gray, siliceous mott above TGS w/SS grains @ 231; T Gray S @ 234½; lt banding 236-base
-240	Dol, lt-med gray, mott, lt "crackle"
-244	Dol, lt-med gray, lt mott, wh breccia @ base, w/ few scatt ss grains
-245	Green & dk sh , brecciated & sealed w/ shale, dk
-246½	Re-xl, brown, mott "crackle" @ base , over GS
-247½	Dol, dk gray, mott
-251	Dol, lt-med gray, mott; small wh eyelets @ 250; 1" GS @ base

-252½	Dol, lt-med green-gray, lt mott scatt traces FeS_2 throughout, T Gray S @ base 40° dip @ 252'
-257	Dol, med-dk gray, sacchroidal, mott; to semi-re-xl @ 255-256; med brown- gray to base
-257½	Green shale & dk sh, brecc & sealed w/ dk sh; scatt frag re-xl,
-258½	Re-xl, med gray, banded, to lt-med tan-gray below
-259	Semi-re-xl, lt-med green-gray, lt band
-261	Re-xl, brown, vugular wh eyelets & cracks throughout
-262	Dol, lt-med gray, ½" GS @ base
-262½	Chert, blue-gray, brecc & sealed w/ lt-med tan re-xl & ss grains
-263	Re-xl lt tan-gray, green & dk sh @ base
-264	Re-xl, med-tan-gray, w/ v lt "crackle"
-265½	Semi-re-xl, lt-med green-gray
-267	Semi-re-xl, lt-med gray, mott, wk "crackle" @ top; brecc lower 6" & sealed w/ re-xl
-268	Re-xl, brown, mott, w/ wh gangue eyelets
-268½	Dol, lt-med tan; ss grains in base; basal pt brecc sealed w/green sh
-269	Shale, green; dk sh @ base
-270	Dol, lt-med gray, TGS @ base
-273	Re-xl, lt-brown, mott
-277½	Re-xl, tan, mptt
-279	Semi-re-xl, lt tan lt crackle to vug gangue breccia-filling @ base
-279½	Dol, lt-med tan; chert nod in middle, TGS @ base
-280	Re-xl, tan
-281	Re-xl, lt gray, v. strong fine mott, T Gray S @ base
-282	Re-xl, tan, to brown
-284½	Re-xl, tan, mott w/ green
-286½	Dol, lt-med gray, lt mott
-287	Re-xl, brown, fine breccia w/ vug wh gangue
-292½	Dol, lt-med gray-green, TGS @ 288, few scatt ss grains above; lt "crackle" below
-294	RE-xl, dk brown, strong mott, thin gray dol brecc w/coarse wh gangue @ 293; FeS_2 shines in gangue
-297	Dol, dk gray, lt "crackle" throughout & scatt wh shears; ch @ 295½; brecc below w/ wh gangue, vugular
-299½	Dol, dk gray, lt "crackle"
-300	Ls, lt gray brecc & sealed w/ silica & blk jasperoid
-301½	Ls, lt tan gray, w dk sh partings, T Gray S @ 301½ thin brecc w/ wh gangue below dk sh & jasperoid @ base
-302	Ls, tan-gray plty fragmental
-303	Ls, brown, w/ blk sh partings 2" black sh @ base
-303½	Re-xl, ran w blk sh ptings
-307	Semi-re-xl, dk gray, mott few scatt wh eyelets — ZnS shines 307½
-308½	Re-xl, lt tan-gray, brecciated w/ wh gangue — FeS_2 307-308½, Est 2%
-310	Dol, sacchroid, lt-med gray, "crackle" — ZnS shines 309½
-311	Semi-re-xl, brown, bfecc ch & re-xl, @ base sealed w/ FeS_2 wh gangue re-xl & silica — FeS_2 310½-311, Est 5%
-314½	Dol, med gray, brecc w/wh gangue, re-xl — FeS_2 shines 311½, 312 & 312½
-318½	Dol, lt-med gray, "crackle"; thin brecc @ 316 " dry w/ FeS_2; brecc w/ wh gangue from 317-18, and w/ re-xl, blk jasperoid & wh gangue @ base — FeS_2 shines @ 316
-319½	Dol, med gray, brecc & sealed w/ re-xl, silica & blk jasperoid; pre-brecc "crackle" throughout — ZnS traces @ 319½
-321	Re-xl, lt-med tan-gray, scatt "crackle"
-326	Ls, lt tan-gray, frag to mott

ST-12 (Cont'd.)

-327	Dol, med-dk gray, scatt ss & ch @ base	360 dip @ 326½
-339½	Ls, lt tan-gray, TGS @ 332'	
-341	Re-xl, tan	
-341½	Dol, med gray	
-346	Ls, tan-gray, banded	
-349	Ls, lt tan-gray	
-350	Re-xl, lt tan, vug, "crackle"	
-367½	Ls, lt tan-gray; banded w/ scatt ss 350-351; banded 355-356; TGS @ 358, 359 & 360	
-369	Semi-re-xl, med gray	
-373½	Dol, lt-med gray, scatt wh high angle shears; v highly siliceous 372-372½	
-374	Dol, med gray, T Gray S @ 373½	
-378½	Dol, med tan-gray, lt scatt shears	
-379½	Chert, blue, 1" bedded silica in middle; TBS @ base	
-385	Dol, lt-med gray, mott, scatt wh gangue fract	


LAND AND GEOCHEMICAL MAP OF
PUNCHEON CAMP CREEK PROSPECT
SHOWING PROPERTIES CONTROLLED BY AGREEMENTS WITH OPTION TO PURCHASE MINERAL RIGHTS; PERCENTAGE OF ZINC IN SOIL AND LOCATION OF PROPOSED DIAMOND DRILL HOLES
Scale 1:400
Base enlarged from U.S.G.S.-T.V.A. Topographic Maps of DUTCH VALLEY Quadrangle (154-SE) and AVONDALE Quadrangle (162-SW), published on Scale of 1:24,000
B.H. PUTNAM, OPERATOR, HOLDINGS
Properties on which application is being made
Other holdings
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
GD-5
diamond drill hole
F.T. Fischer-11/56
N
P. Williams
WM. COFFMAN
Coffey
DAVE COFFEY, et ux.
315 a
Puncheon
Camp
Creek
W. H. JOHNSON
55 a
AUSTIN JOHNSON, et ux.
45 a
ELVIN JACKSON, et ux.
105 a
D. R. COFFEY
5 a
S. S. BREEDING, et ux.
51 a
J. C. McGINNIS, et ux.
62 a
W. B. DALTON, et ux.
65 a (pt of 77 a)
ROSA BULLEN, et al.
29 a
W. B. DALTON, et ux.
12 a (pt. 77)
T. A. GREEN
AARON B. DALTO
58
VIVA & W. H. STAPLETON
218.20 a
DAVE JACKSON
100 a
PRYOR ACUFF, et ux.
45 a
ELMER BREEDING, et ux.
15 a
H. B. WINSTEAD, et ux.
51 a
WALTER COFFEY
PRYOR ACUFF
Mary McGinnis
John Ogens
Jess Johnson
G. C. Coffey
STATE HIGHWAY No. 131
RED HILL
Dotson Creek
Dotson Camp Ground Ch
REVISED - 11/59

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RECEIVED JAN 14 1950

DATE	INITIALS	CODE

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O. M. E.
RECEIVED DEC 9 1959

DATE	INITIALS	CODE
12-9	gad	220
12/10	[illegible]	110
12/10	[illegible]	800
		Y
		500

OFFICE OF MINERALS EXPLORATION
INTERIM REPORT

DMEA-4580, Idm-E1088-zinc

Operator: B. H. Putnam, Box 65, Thorn Hill, Tennessee-Assignee

Location: Puncheon Camp Creek area, Grainger County, Tennessee

Summary of drilling completed

	Since last inspection	Todate
Number of holes.....	2	67
Footage.....	770	35,862
Footage reamed.....	15	1,158

Number of holes showing:

a)	Commercial-grade zinc ore.....	11
b)	Non-commercial zinc mineralization..	34
c)	No zinc mineralization.....	22

Data on the two holes completed since the last inspection on November 13, 1959 are summarized as follows:

Hole ST-11: Location on the Stapleton tract at coordinates: N-50,173; E-46,847 (approximately mid-way between Holes GD--13 and ST-6). Collar elevation: 1,439 feet A.T. Drilling started: 11/2/59; completed: 11/14/59. Total depth: 385 (no reaming). Summary log: 0-80 overburden; 80-354 Kingsport formation (top of Kingsport estimated @ 77; TR @ 244); 354-385(bottom of hole) Longview dolomite. Mineralization: 1/2' (185-185½) @ 2%; 1/2' (210½-211) @ ½%; 1/2' (214½-215) @ 1/4%; 1/2' (215-216) @ ½%; 2' (221½-223½) @ 1 1/4%; 1' (341-342) @ 1½% ; also shines @ 205, 208,218, and 286½. Shine hole.

Note: All percentages given are estimated values of Zn.

Hole ST-12: Located on Stapleton tract at coordinates: N-50,090; E-46,794 (approximately midway between Holes GD-13 and ST-11). Collar elevation: 1,427 ft. A.T. Drilling started: 11/16/59; completed: 11/21/59. Total depth: 385 feet (15 ft. of reaming from 125-140). Summary log: 0-90 overburden; 90-369 Kingsport formation (top of Kingsport estimated @ 83; TR @ 245); 369-385 (bottom of hole) Longview dolomite. Mineralization: Shines of ZnS @ 307½,309½, and 319½.

Drilling in progress

At the time of inspection no drilling was in progress as the drilling equipment was again down for repairs to the hydraulic system. It is estimated that drilling will again be resumed within 1 to 2 weeks. Meanwhile, data are being reviewed to selec t the next hole site.

Inspected: November 24, 1959

Helmuth Wedow, Jr., Geologist

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DATE	INITIALS	CODE
11-27	gad	000
"	[illegible]	110
11/30	[illegible]	800
	~~Murphy~~	~~500~~

OFFICE OF MINERALS EXPLORATION

INTERIM REPORT

DMEA-4580, Idm-E1088-zinc

Operator: B. H. Putnam, P.O. Box 65, Thorn Hill, Tennessee

Location: Puncheon Camp Creek area, Grainger County, Tennessee

No drill holes have been completed since the last inspection of this project. Hole ST-11, started November 2, had reached a depth of 341 feet on November 5 when equipment breakdown forced a recess of the drilling. It is anticipated that drilling will be resumed on November 14 or 16. This hole will probably be a shine hole as strong but not ore-grade mineralization has been encountered in the lower part of the upper member of the Kingsport just above the R-bed. On the completion of Hole ST-11 the drill will be moved to a site midway between Holes ST-11 and GD-13. The new hole will be ST-12.

Inspected: November 13,1959

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

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DATE	INITIALS	CODE
11-12	gad	110
4		110
11/13		800
11/13	Murphy	50

INTERIM REPORT

DMEA-4580, Idm-E1088-Zinc

Operator: B. H. Putnam, Thorn Hill, Tennessee-Assignee

Location: Puncheon Camp Creek area, Grainger County, Tennessee

Summary of drilling completed

	Since last inspection	To date
Number of holes.....	3	65
Footage.....	1,256	35,092
Footage reamed.....	72	1,143

59 Total

Number of holes showing:

a) Commercial-grade zinc mineralization.... 11
b) Non-commercial zinc mineralization..... 32
c) No zinc mineralization..... 22

The data on the three holes completed since the last previous inspection are summarized as follows:

Hole ST-8 : Located on Stapleton tract at coordinates: N-50,274; E-47,350 (375 feet up rake on strike fence from point about midway between Holes St-4 and -5). Collar elevation: 1,407 feet A.T. Drilling started: 10-7-59; completed : ;0-17-59. Total depth: 433 feet (reamed to 72 ft.) Summary log: 0-31 overburden; 31-164 Mascot dolomite; 164-426 Kingsport formation (TR @ 315); 426-433 (bottom of hole) Longview dolomite. Mineralization: Trace hole; shines of sphalerite @ 180 and 388-388½, and a trace at 401½.

Hole ST-9: Located on Stapleton tract at coordinates: N-50,366; E47,402. Collar elevation: 1,391 feet A.T. Drilling started: 10-19-59; Completed: 10-23-59. Total depth: 392 feet (no reaming). Summary log: 0-24 overburden; 24-114½ Mascot dolomite; 114½-375 Kingsport formation (TR @ 268); 375-392 Longview dolomite.

Mineralization:: Shine hole with mineralized runs as follows: 1' (236½-237½), 1.16% Zn; ½' (294-295), est. ½% Zn; 2' (327½-329½), 1.56% Zn; ½' (332½-333), 0.68% Zn; also traces of ZnS @ 292, 299½, 303, 304½, 305½, 334½, and 339.

Hole ST-10: Located on Stapleton tract at coordinates: N-50,164; E-47,048. Collar elevation: 1,429 feet A.T. Drilling started: 10-26-59; completed 10-31-59. Total depth: 431 feet (no reaming).

Summary log: 0-50 overburden; 50-142 Mascot dolomite; 142-423 Kingsport formation (TR at 312½); 423-431 (bottom of hole) Longview dolomite. Mineralization: Non--barren hole.

Drilling in progress

Hole ST-11, currently drilling on the Stapleton tract, is located approximately midway between Holes GD-13 and St-6 on a strike fence running between holes GD-2 and ST-6. The objective of this hole is to test for a mineralized shoot raking at a high angle into the dip from a surface zinc soil anomaly and roughly parallel to the Green-Dalton shoot already discovered. At the time of inspection the hole was still setting casing in overburden.

Inspected: November 2, 1959

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

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Form 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

NOV 19 1959 PAID ON VOUCHER & SCHEDULE OF PAYMENTS 15

Month of October, 1959 Docket No. DMEA 4580 Contract No. Idm-E 1088
Operator's Name D. H. Putnam Minerals Zinc
Address 512 Third Street, Marietta, Ohio
Contract Amount, $170,215.00 Government Participation: 50% Amount, $85,062.50

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	$3768.00	$101,508.00	$105,276.00			
Bulldozing						
Crosscutting						
Drifting						
Reaming	144.00	2,142.00	2,286.00			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
Core Boxes	—	290.25	290.25			
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis	—	253.75	253.75			
Payroll Taxes						
Liability Insurance						
(8) Contingencies (specify): Incid. allow. @ .18/ Foot	226.08	6,090.48	6,316.56			
TOTALS	$4,138.08	$110,284.48	$114,422.56	4,138.08	110,284.48	114,422.56

I certify that the above bill is correct and just and that payment therefor has not been received.
Date October 1959 *Payee D. H. Putnam
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:
$ 2069.04
Signature Helen R. Miller
(Authorized Certifying Officer)
Date NOV 17 1959 Vou. No. 25
(See other side)

2069.04

(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-1088 in accordance with the terms of the contract.

Signature [illegible] Title MINING ENGINEER U. S. BUREAU OF MINES Date NOV 12 1959

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert H. Lawrence Title EXECUTIVE OFFICER OME FIELD TEAM REGION V Date NOV 12 1959

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

NOV 19 1959
O.M.E.

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

Month of October 1959 Docket No. DMEA 4580 Contract No. Ica-E 1088
Operator's Name R. 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	$3768.00	1256	$105,276.00	35,092	$3.00	50,000	$3.00
~~XXXX~~ Churn Reaming	Foot	144.00	72	2,286.00	1,143	$2.00	5,000	2.00
~~XXXX~~ Auger Samples	Each	—	—	253.75	203	$1.25	500	1.25
~~XXXXX~~ Core Boxes	Each	—	—	290.25	150	$1.935	150	2.00
Trenching								
Test Pits								
~~XXXXXXXXX~~ Incid. allow. @ .18/Ft		226.08	1256	6,316.56	35,092	$0.18	50,000	0.18
TOTAL DISTRIBUTED COSTS		$4138.10		$114,422.56				TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS		$4138.00		$110,284.48				

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.

Date October, 1959 Operator R. H. Putnam

Per Frederick L. Fischer Title Superintendent

REMARKS:

→ 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)

GEOLOGIST, U. S. G. S.
NOV - 6 1959

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.

MME FORM 6 REFERENCE SLIP
REV. 2-59 OFFICE OF MINERALS EXPLORATION

TO:		DATE	INITIALS
1.	110	11/19	[illegible]
2.	500		
3.	~~Mr. Murphey~~	11/20	[illegible]
4.			
5.			
FROM:	VVO	11-19	gad

FOR: Check items for action desired

____ Action ____ Reply for signature of ____
____ Approval ____ Investigate ____ Surname
____ Comment ____ Recommendations ____ Signature
____ Conference ____ Rewrite ____ File
____ Instructions ____ Your information

REMARKS:

GPO 872894

A Progress Report on the Puncheon Camp Creek Project, Grainger County, Tennessee

October, 1959
by: F. T. Fischer

Docket No. 4580
Contract No. Idm-E-1088

During the month of October three (3) holes were drilled on the Puncheon Camp Creek Project. Hole ST-8 was drilled 750 feet east of GD-25 on a strike fence. The hole collared in the Mascot formation and was drilled to a depth of 433 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-31	Overburden	—	—	—
31-164	Mascot	CM @ 164	—	Dolomite
164-426	Kingsport	"R" @ 315 "S" @ 385½ "T" @ 426	Trace ZnS @ 180 ZnS shines 387-387½ Trace ZnS @ 401½	Dolomite, limestone & recrystalline; some breccia
426-433	Longview	—	—	Dolomite

Hole No. ST-9 was drilled 100 feet east of ST-8 on the strike fence. This hole collered in the Mascot formation and was drilled to a depth of 392 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-24	Overburden	—	—	—
24-114½	Mascot	CM @ 114½	—	Dolomite
114½-375	Kingsport	"R" @ 268 "S" @ 336½ "T" @ 375	237-237½, est. 1½% Trace ZnS @ 292;294½-95 est. ½%; shine @ 299½; shines @ 303,304½ & 305½; 327½-329½ est. 1½%; shines @ 332½ & 334½ shine @ 339 —	Dolomite, recrystalline & limestone; some breccia
375-392	Longview	—	—	Dolomite & recrystalline

Hole ST-10 was drilled 100 feet south of ST-5 on a dip fence. The hole was collared in the Mascot formation and was drilled to a depth of 431 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-50	Overburden	—	—	—
50-142	Mascot	—	—	Dolomite
142-423	Kingsport	"R" @ 312½ "S" @ 380 "T" @ 423	— — —	Dolomite, recrystalline & some limestone; some breccia & "dry" breccia
423-431	Longview	—	—	Dolomite

B. H. Putnam DD-ST-8

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm-E 1088

Hole No.:	ST-8	Collared:	10/7/59
Farm:	W. D. Stapleton	Bottomed:	10/16/59
Location:	N 50,274.10'	Depth:	433'
	E 47,349.83'	Casing:	BX-30'; AX-120'
Elevation:	1,407.23'	Reaming:	72'
Drilled by:	Putnam Drilling Co.	Cement:	None
Logged by:	F. T. Fischer		

Top Kingsport	164'
Top "R" Bed	315'
Top "S" Bed	385½'
Base Kingsport	426'

ST - 8

0-31	Overburden	
-32	Dol, med-dk gray, fractures, some open shears	
-34?	Dol, lt gray, mott	(60% core loss 31-37')
-37 D	Dol, med gray, mott, eyelets @ 35-36'	(66% core loss 37-40')
-40	Dol, med gray, scatt wh eyelets, lt shears	
-42½	Dol, lt-med gray, strong shearing 40-40½, scatt shears to base, ch nod@ 42, blotchy ch to base, T G S @ base	(50% core loss 49-54')
-43½	Dol, lt-med gray, siliceous strong mott, wh silica is blotchy	(85 % core loss 54-60'
-44	Dol, lt gray, mott. T G S @ base	(70% core loss 60-66½')
-45	Dol, lt-med gray, lt mott	(60% core loss 66½-69')
-46½	Dol, med gray, mott, T G S @ base	(50% core loss 70-72')
-49	Dol, lt-med gray, scatt shears, ch @ base (39°dip @ 38')	
-52	Dol, lt med gray, mott	
-66½	Dol, med-gray, scatt ss @ 54' ch nod @ 59½; strong shears 60-61½ 66	
-72	Dol. lt- med gray, lt banding, few scatt ss grain @ 71-72	
-76½	Dol, lt-med gray; ch @ top, eyelets @ 74' lt banding 74-base	
-79½	Dol, med-dk gray, lt mott, scatt ss grains basal 1'	
-83½	Dol, lt-med gray, shearing @ 81½' normal to bedding mott basal 1'	
-84	Dol, med-dk gray, mott wh gangue blotches	
-85½	Dol, med gray, strong mott basal ½'TGS @ base	
-100	Dol, lt-med grav, heavy ss @ top; mott 86-88; strong shears 86½' sed breccia @ 89' over TGS; scatt open oxid shears 90-93 lt blotches 96½-98, open shear to 100	
-		(30% core loss 87-90')
-102	Dol, lt-med gray, fault breccia; open	(40% core loss 95-102')
-102½	Dol, dk gray, strong shearing throughout	
-103	chert, wh; vuguler	
-119	Dol, med-dk gray, vugular mott oxid	(cavity 103-118')
-119½	Dol, dk gray, siliceous to dk gray chert	
-121½	Dol, med dk gray, high angle shearing	(50% core loss 119½-121½)
-122	chert, oolitic	
-122½	sand, CM, blue ch @ base	
-123½	chert, banded, porous	
-128	Dol, lt gray, open shears, oxid, vug @ base	(70% core loss 123½
-130	Dol, med gray, tan mott, med-dk 129-base; vug over TBS @ base	-128)
-138	Dol, lt-med gray, banded, ss @ 132 & 132½; tan 132-133; siliceous & mott @ 132½-133½ scatt ss & vug @ 136 over TBS; scatt ss 136½ to 137½; at 137½ TBS over ss over TBS	
-140	Dol, med gray, lt banded, TBS @ base	
-144	Dol, med-dk gray, banded; FeS_2 shines oxid @ base over 1" Gray S over FeS_2	
-145½	Dol, dk gray, mott.	
-146½	Dol, ltmed gray, open shears light	
-147	Dol, lt-med tan gray, w orange mott siliceous @ top	
-148	Dol, lt gray, lt banded some oxid bands	
-153	Dol, med gray, banded @ top, TBS @ 150 & 150½; lt mott 150½ base	
-154	Dol, brown, strong banded h mott, oxid	
-160	Dol, med-dk gray, lt mott. oxid 167- 168 and eyelets; asphaltic 158-base	
-161½	Dol, dk gray, mott, asphaltic	
-164	Dol, med gray, banded, heavy ss @ base	
-168	Dol, lt-med gray, mott over BS @ base	
-170	Dol, med to med-dk gray, mott to strong mott BS @ base	
-173½	Dol, lt gray, open fracture @ 172, 172½, lt mott @ base	
-176½	Dol, med gray, lt mott T Gray S @ 175½, 176½	
-180	Dol, lt-med gray, mott TBS @ base	

ST-8 (Cont'd)

-181	Dol, med- dk gray, banded, TBS @ 180½ and @ base	ZnS shine @ 180'
-185	Dol, med gray, ss @ 181½ darker @ base	
-190	Dol, lt gray, scatt small eyelets TGray S @ 187, lt mott to base	
- 192	Dol, med-dk gray, banded	
-195	Dol, lt-med gray, lt banded, CM type ss @ 193½; scatt ss @ base	
-196½	Dol, med-dk gray, strong mott	
-198½	Dol, lt-med gray, wh gangue eyelet @ 197 (vugular)	
-200	Dol, med-dk gray, banded	
-205	Dol, med-dk gray, lt mott, BS @ 200½, blk ch nod @ 204, congl ch @ base	
-206	Dol, lt-med gray	
-206½	Dol, lt gray	
-211	Dol, lt-med gray, CM @ 208, ch @ 208½, banded to 210; CM ss w/ch nod @ 210	
-219½	dd, med gray, mott 215-220, T Gray S @ 216 & 218	
-221½	Dol, med-dk gray	
-229	Dol, lt gray, mott to 226, ch @ 222½; GS @ 226; ch @ 228 FeS_2 @ base	
-233½	Dol, med gray, ch nod w/FeS_2 @ 229½, Gray S & FeS_2 @2293/4; FeS_2 shines 230½ & 231 Dolomite banded, lt mott @ base	
-237	Dol, lt-med gray, banded, scatt ss 235½ & 236-237	
-238½	Dol, med-dk gray, crackle breccia to semi-rexl @ base	
-242	Dol, lt gray, mott ch over 1" GS @ base	
-244	Dol, med gray, strong mott	
-248	Dol, lt gray, lt mott & banded from 245-247; ch nod @ 248' weathered blue ch @ base	
-251	Dol, lt-med tan-gray, banded scatt ss over TBS @ base	
-255	Dol, lt-med gray, ch nod @ 252, 254&255	
-258	Dol, lt-med tan gray, dense; ch nod @ 255½,256½& oolitic ch @ 257, wh gangue fill below oolite Frag ch bed from 257½-258; 1" BS @ base	
-259	Dol, dk gray, mott, TBS @ base	
-271	Dol, lt gray, eyelets @ top, upper 1½ blotchy; sdy ch @ 262; wh ch @ 264; banded 265-266, lt mott below; banded to base; blue ch over TGS @ base	
-285½	Dol, lt-med gray, lge wh eyelet @ 271½; banded over blue ch @ 272½; banded to 276, sugary mottled 276 to 279; banded to base TGS @ base	
-290	Dol, lt-med gray, lt banding 287 to 289; 1" GS over dk ch @ base	
-292½	Dol, lt gray, lt band	
-299	Dol, lt-med gray, disseminated specks of FeS_2; mottled, scatt eyelets stronger mott & dker @ base FeS_2 shines @ base over blue ch	
-315	Dol, med gray, lt band; ch nod @ 300' & 301½, lighter color 302 to 308½, TGS @ 308½, Lt mott w/ vugular wh eyelets	
-316½	Green shale, w blk & wh rexl & pyrite shines in sh	
-321	Semi-rexl, med-dk gray, w gray mott, TGS @ 317	
-322	Dol, med-dk, sugary, brecciated sealed w wh gangue	
-323	rexl, lt gray-green w 6" GS over TBS w/ pyrite @ base	
-325	rexl, med gray-green brecciated 323½, mott below	
-328	rexl, med brown-gray brecciated w/ open wh gangue fractures TGS @ 326; ch nod @ 327; brecc. dol, to base	
-329	rexl, siliceous, lt-med tan-gray, dk ch @ base over CM ss	
-333½	rexl, lt greenish-gray, w/ TGS scatt & wh gangue filled fractures Brecc. basal foot	
-334	rexl, med to dk brown-gray, brecciated	
-334½	chert, blue to wh, brecciated sealed w/ rexl	
-337	rexl, dk brown-gray, highly siliceous, GS @ 335; ch @ base	
-341	rexl, lt-med tan gray, mott upper foot siliceous crackle @ base	

ST-8 (cont'd)

-345½ re-xl, to semi-re-xl, brecciated w/ opening in wh gangue FeS_2 over blue ch @ base
-347 Dol, med gray, B&W re-xl over TGS @ base
-351 re-xl, lt green-tan-gray, crackle 348-50'
-352½ re-xl, med tan & brown mott; ~~opening in~~ gangue fractures TGS @ base
-359 Dol, lt-med gray-green, scatt fractures w/wh gangue brecc 356-358 Mott @ base
-362 Dol, med-dk brown-gray, brecciated & scaled w/wh gangue 1" GS @ base
-363 Ls, lt-tan w/dk sh partings
-366 Dol, med-dk gray, brecciated
-367 re-xl, lt gray-green, crackle
-369 chert, brecciated
-371 chert, wh weathered, porous
-372 re-xl, med tan gray, crackle
-374 Ls, lt tan gray, siliceous
-375 re-xl, med tan gray, brecc wh/gangue ch @ base
-385½ Ls, tan gray, brecc 375½ & 376½ Sed brecc @ 377½, blk ch @ 378 scatt fractures w/ re-xl; ch nod blk @ 382, blk ch over TBS @ 383 (26' dip @ 383')
-388 re-xl, med-tan-gray, crackle to 388, ch @ base ZnS shines 382-382½
-389 re-xl, med-dk brown gray, siliceous TGS @ base
-393 Ls, tan-gray
-393½ re-xl, med tan-gray, brecc scaled w/ wh gangue
-394 Dol, med gray, crackle, TBS @ base
-400 Ls, lt tan-gray w sh partings, fractures w coarse wh gangue
-403½ re-xl, tan-gray, brecciated @ base w ch ZnS shines 401½
-406 Ls, lt tan-gray TGS @ 404 & 405; many sh parting from 405½- base
-407 re-xl, tan-gray
-408½ Ls, lt tan-gray, dolmitic @ base
-411 re-xl, tan-gray
-413 re-xl, lt tan-gray, strong mott from 411-411½; crackle w wh gangue; 1" GS @ 411½
-419½ Ls, lt tan-gray, dolomitic to 416½, GS partings 417½ - base
-424½ re-xl, tan-gray, mott, wh gangue fractures
-426 semi-re-xl, lt-med gray, wh gangue fractures
-433 Dol, med gray, Gray S & TGS @ 428 over ch, lt fractures upper 2' GS @ 431'

Invoice

Marietta, Ohio

B. H. Putnam
512 Third Street
Marietta, Ohio

October 1959

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Puncheon Camp Creek Project DMEA Contract No. 4580 - October 1959

Core Hole No. ST-8

Footage drilled	433' @ $3.00/ft.	$1299.00
Footage reamed	72' @ $2.00/ft.	$ 144.00
	Total for ST-8	$1443.00

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

B. H. Putnam, Operator

by: A. R. Eddy
A. R. Eddy
Drilling Superintendent

B. H. Putnam DDH-ST-9

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm-E 1088

Hole No.: ST-9	Collared: 10/19/59
Farm: W. D. Stapleton	Bottomed: 10/23/59
Location: N 50,366.35'	Depth: 392'
E 47,401.97'	Casing: BX -23'; AX-40'
Elevation: 1391.24'	Reaming: None
Drilled by: Putnam Drilling Co.	Cement: None
Logged by: F. T. Fischer	

Top Kingsport	114½'
Top "R" Bed	268
Top "S" Bed	336½
Base Kingsport	375

ST - 9

0-24	Overburden
-28	Dol, lt-med gry, mott 26-28, open fracture @ base
-30½	Dol, med tan-gray, mott w/wh eyelets Greenish ss @ base
-31	Dol, lt-med gray, lt mott w/scatt ss @ top
-31½	Dol, lt gray, w/dk mott & eyelets @ top scatt lt shears @ base
-32	Dol, lt-med gray, siliceous (20%) blotchy Oxid parting @ base
-40	Dol, lt-med gray, scatt lt shears from 32-33; open sh @ 33½; lt shears @ 34½ & 35; lt banding 36-38 oxid parting @ 38 lt high angle shears @ 38 (Dip 35° @ 37)
-45	Dol, med gray, oxid parting mott to blotchy; scatt lt shears (open)
-47	Dol, med-dk gray, scatt wh eyelets
-47½	Dol, lt gray, porous chert @ base
-48	Dol, med-dk gray, ss @ 48 (50% core loss 40-58)
-61	Dol, lt-med gray, ss @ 56% oxid scattered eyelets lt mott; oxid parting @ 60½ TGS @ base
-65	Dol, med gray, scatt eyelets & blotches; oxid @ 63
-66½	Dol, dk gray, few scatt wh eyelets; intense shearing @ base (bedding plane)
-67½	Dol, med gray, blotchy; TBS @ base
-68	Dol, med-dk gray, mott to banded
-69	Dol, med tan-gray
-69½	Chert, blue-wh, oolitic w/scatt ss grains, & tan ch below
-72	Dol, lt-med tan-gray, siliceous, oxid & mott lt high angle shears & low angle shears & bedding plane shears
-73½	Dol, med brown; mott to orange, oxid open @ 73
-79	Dol, med gray, lt mott
-80	Dol, med-dk gray, ch @ base, wh open @ 81
-82½	Dol, lt-med gray, scatt ss @ 82; CM ss @ 82½; weathered lt shrs below to base
-83	Dol, dk gray, oxid, strong mott brecciated dk ch @ base
-84	Dol, lt-med gray, siliceous, blotchy
-88	Dol, lt gray, lt banded; scatt ss 87-88
-93	Dol, med gray, lt bnaded, TBS @ 89½
-93½	Gray sh & med dol
-98	Dol, lt-med tan-gray, mott @ top, banded @ base
-102	Dol, lt-med gray, lt banded
-104½	Dol, med gray, lt mott @ base
-106	Dol, med-dk gray, 2" Gray S @ 105
-109½	Dol, med gray, T Gray S @ 108; scatt high angle shears 108 to base
-110½	Dol, dk gray, mott, open shrs @ 110½
-111½	Dol, med gray, few scatt wh eyelets
-112	Dol, dk gray, asphattic, w dk ch nod in middle
-114½	Dol, lt tan-gray, banded, scattered ss over heavy ss over CM ss @ base (38° dip @ 114
-116½	Dol, lt tan-gray, scattered filled fractures
-117	Dol, med- dk gray
-119	Dol, med gray, Blk sh @ base
-121	Dol, med brown-gray, strong mott, oxid
-123	Dol, lt tan, weathered
-124½	Dol, lt-med gray
-126	Dol, med gray, mott
-127½	Dol, dk gray, mott, 1" BS @ base
-131	Dol, lt-med gray, mott TBS @ base
-132½	Dol, mdd gray, banded, heavy oxid. @ base
-135	Dol, med gray, scatt ss over TBS @ 133, few scatt high angle shears 133½ to base
-142½	Dol, med-dk gray, lt banding to mott; strong mott 138½-140½, heavy banding to base, ch nod @ 142

SE-9 (Cont'd)

-144 Dol, lt-med gray, lt banding, ch nod @ 143; open fractures below
-146 Dol, dk gray
-150 Dol, med-dk to med gray, heavy banding; scatt ss @ 148½ & 149½; heavy ss @ 150 T Gray S @ base
-150½ Dol, lt-med tan-gray, oxid
-151½ Dol, med gray, lt mott, T Gray S @ 151½
-155 Dol, lt-med gray, lt mott; TBS @ base
-162 Dol, lt gray, lt mott @ top, heavy ss @ 159 CM ss @ 160½
-165½ Dol, med-dk gray
-171 Dol, med gray, lt mott, T Gray S @ 168 & 170 & @ base
-173 Dol, lt-med gray, lt mott Gray S @ base
-183 Dol, lt gray, lt mott to 177; T Gray S @ 177; ch nod @ 180,181,181½, 182½ and @ base
-188 Dol, lt-med gray, banded T Gray S @ 183½ & 185; scatt ss 187 to base TGS over wh mott blue ch @ base
-190 Semi-re-xl, med tan-gray, mott to banded; wh ch over TGS @ base
-206½ Dol, lt-gray, wh ch nod over TGS @ 193½; porous wh ch @ 197½; T Gray S @ 198½; lt banding 198½ to 201½; T Gray S @ 201½; lt gray to wh ch 203½ & 204, blue-gray ch nod @ 204½, 205½ & @ base
-207 Dol, lt-med gray, sacchroidal, TGS @ base
-219 Dol, lt gray, lt banded; strong healed shears normal to bedding @ 210½; lt gray ch nod @ 212; Fault breccia @ 218, stronger banding to base; blue ch breec sealed w/green sh @ base
-221½ Dol, lt-med gray, brecciated & sealed w/wh gangue
-222 Dol, lt-med gray, brecc & sealed w/wh gangue & ch TGS @ base (36° dip @ 227)
-228½ Dol, lt gray, ss & sed congl @ 224; wh ch @ 224½; scatt fractures; lt blotches 227-228
-229 Dol, lt-med gray, dk ch @ base
-230½ Dol, lt-med blue-gray, mott
-231½ Dol, lt-med gray, crackle w/wh gangue-ptly open
-236 Dol, lt-med gray, banded, scatt crackle, lt shearing w/ breccia @ 235½, ss over TGS @ base
-239 Dol, lt-med gray, brecciat sealed w/wh gangue <u>ZnS - 237-237½ Est 1½%</u>
-241 Dol, lt-med gray, lt banded @ top; scatt ss 240½ to base
-242 Dol, med gray, brecciated, sealed w/wh gangue
-250 Dol, lt-med gray, scatt open fractures to 234 TBS @ base
-253 Dol, med gray, lt fractures @ 251-252 thin blue ch @ base
-268 Dol, lt-med gray; crackle and open fractures to 255½; lt crackle 265-base
-268½ Green sh
-269½ Dol, lt-med gray, & blk ch; brecciated & sealed w/ green sh, re-xl, chert & some wh gangue
-270 Green sh
-274½ Semi-re-xl, med tan-gray, mott; 1" GS @ 272
-276 Semi-re-xl, med greenish gray, mott; crackle
-280½ Re-xl, brown-gray, brecciated & sealed w/wh gangue GS @ base
-284 Semi-re-xl, med green-graym crackle from 282 to base
-286 Re-xl, brown-gray, crackle; vertical open fractures, vugs; ch nod @ base
-287 Dol, lt-med gray, brecciated & sealed w/wh gangue @ base
-288 Chert, blue-gray, brecciated sealed w re-xl, chert ss @ 287½
-288½ Re-xl, lt green-gray, mott
-290½ Dol, med blue-gray, sacchroidal, crackle; FeS_2 in gangue <u>FeS_2 shines 289½-290 Est 2</u>
-292½ Dol, lt-med gray, brecciated, FeS_2 in wh gangue @ 291, ZnS in gangue <u>ZnS shines @ 292</u>
-294 Re-xl, brown, brecciated to crackle; vug in gangue @ 293

ST-9 (Cont'd)

-295 Re-xl, lt brown-gray, brecciated, scatt vugs; sealed w/wh gangue, re-xl & chert
ZnS 294½-295 Est ½%
-296 Chert, black, brecc, sealed w/gangue, re-xl chert & green shale Gray S @ base
FeS₂ @ 295¼
-296½ Re-xl, lt brown
-297½ Dol, lt-med gray, crackle
-301 Re-xl, tan-gray, lt crackle to strong
ZnS @ 299½
-305½ Dol, lt-med gray, sacchroidal, brecc w/wh gangue, lt open fractures, brecciated ch @ base
ZnS @ 303, 304½ & 305½
-306½ Dol, med gray, lt banded GS @ base
-312½ Re-xl, lt brown, w/green sh mottling, vugs 311 to base Tr FeS_2 @ 309½
-313 Dol, lt-green-gray TGS @ base
-314 Re-xl, med-dk green-gray
FeS_2 @ 313-313½ Est ½%
-316 Dol, lt-med gray, scatt open fractures
-318 Dol, med green-gray, brecc
-319 Re-xl, brown-gray, strong mott
-322½ Dol, dk gray, brecc w/wh gangue from 320 to base, vugs in gangue FeS_2 shine @ 321
-323 Brecciated dol, sealed w/re-xl & green shale
-326 Ls, lt tan-gray, T Gray S @ 324, TGS @ 325, 325½ and @ base
-330 Dol, dk gray, brecciated
ZnS 327½-329½ Est 1½%
-331 Re-xl, lt green-gray, mott
FeS shine @ 328½
-332½ Re-xl, lt tanggray, brecc, w/wh gangue, brecc ch sealed w/wh gangue @ base
ZnS shine @ 332½
-335 Dol, lt-med gray, brecc vugs in gangue
ZnS shine @ 334½
-336½ Dol, lt-med gray, TGS @ base
-339 Re-xl, lt tan-gray, strong mott; siliceous to base ch @ base ZnS shine @ 339
-340 Re-xl, tan-gray, ch @ base
-340½ Dol, lt-med gray, crackle TGS @ 340½ and @ base
-341 Dol, med-gray, re-xl & chert; brecciated sealed w re-xl, blk and green sh Dry Breccia
-342 Dol, lt-med gray, ch nod over G S @ base
-343 Ls, brecciated (sed breccie?) Green sh @ base
-344 Ls, lt-tan-gray, mott
-344½ Chert, black thin banded
-345½ Chert, ltblue-gray, in pt brecc & sealed w tan silica
-349½ Re-xl, lt tan-gray, upper 1½' highly siliceous
-352½ Re-xl, lt brown-gray, scatt open fractures; GS over dk blue to blk ch @ base
-353 Re-xl, lt-tan-gray, strong mott
-355 Dol, med gray, crackle TGS @ base
-357 Dol, med brown w green shale mott, brecc at base sealed w/ GS
-360½ Re-xl tan-gray, mott vugular, blue ch @ base
-365 Re-xl, lt-tan, crackle TGS @ 361, 361½-362, & @ 363½
-370 Re-xl, green-gray, darker @ base
-372½ Re-xl, v lt gray, mott, siliceous
-375 Re-xl, lt-tan-gray, mott
-380 Dol, med gray, gangue-filled fractures 375-76 & 378-80½; TGS @ base
-385 Dol, med-dk gray, TGS @ 381; gangue-filled fractures 381-83
-387 Semi-re-xl, brown-gray, gangue-filled fractures and few open fractures blue ch nod @ base
-388 Re-xl, lt-brown-gray, w/wh gangue wh ghert @ base
-392 Dol, lt-med green-gray, mott scatt fractures

Invoice

Marietta, Ohio

B. H. Putnam
512 Third Street
Marietta, Ohio

October 1959

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: Fr 4-6761

Statement for drilling Puncheon Camp Creek Project DMEA Contract No. 4580 - October 1959

Core Hole No. ST-9

Footage drilled 392' @ $3.00/ft. $1176.00

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

B. H. Putnam, Operator

by: A. R. Eddy
A. R. Eddy
Drilling Superintendent

B. H. Putnam DD-ST-10

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm - E 1088

Hole No.:	ST-10	Collared:	10-26-59
Farm:	W. D. Stapleton	Bottomed:	10-30-59
Location:	N 50,164.18	Depth:	431'
	E 47,048.43	Casing:	BX - 50'; AX - 112'
Elevation:	1428.84'	Reaming:	None
Drilled by:	Putnam Drilling Co.	Cement:	None
Logged by:	F. T. Fischer		

Top Kingsport	142
Top "R" Bed	312½
Top "S" Bed	380
Base Kingsport	423

0-50	Overburden
-55	Dol, lt-med tan-gray, scatt lt shears, some oxid, wh gangue eyelets (60% core loss 50-53)
-65?	Dol, lt gray, shears oxid (83% core loss 53-62) (95% core loss 62-94)
93-94	Dol, lt-med gray, lt open shears
-96½	Dol, med gray, mott; vugs & wh eyelets
-97½	Dol, med-dk gray; mott; wh eyelets
-99	Dol, dl gray, mott; wh eyelets (25% core loss 94-102)
-102	Dol, lt gray, ss @ 102'? Opening @ 102½; siliceous below
-109	Dol, med gray, lt banded (75% core loss 102-108)
-111	Dol, lt gray, ss @ 110' approx. oxid
-118	Dol, med gray, scatt ss @ 118'
-130	Cavity
-132	Dol, lt gray; scatt ss 130½-131; ch nod @ 131; lt open shears; CM ss @ base oxid (39° dip @ 132)
-133	Dol, dk gray, asphaltic
-142	Dol, med-dk gray, mott scatt open shears; some oxid; few scatt eyelets @ base over little congl
-146	Dol, lt gray, to tan, scatt open fract; shear zone @ 144½, low angle T Gay S @ 145
-147½	Dol, med gray, TBS @ base
-150	Dol, med-dk gray, mott, oxid to brown 149½-150 Shale @ base
-153	Dol, lt-med gray, TBS @ base
-155	Dol, med-dk gray, lt banding; lt shears normal to bedding T Gray S @ base
-160	Dol, med gray, TBS @ 158½ mott to base
-164	Dol, med-dk gray, mott, siliceous to base brown ch @ base
-165	Dol, med-dk gray, banded & blotchy siliceous ch @ 165
-169	Dol, lt-med gray, banded, ch @ 166, eyelets @ 167½
-177	Dol, med gray, banded T Gray S @ 172½, ss @ 175,175½ & over T Gray S @ base (20% core loss 175-184)
-184	Dol, med gray, GS @ 180 mott from 180-183½
-188½	Dol, lt gray, ch nod @ 185½, banded from 187-188 Heavy ss & congl over ch @ 188½
-190	Dol, lt tan-gray, ch nod @ 189 w/scatt ss grains; ss over ch @ base
-198	Dol, med-gray, T Gray S @ 193; TGS @ 196½ & @ base
-200	Dol, lt-med gray, mott TGS @ 199½
-203	Dol, med gray, TGS @ 201 & @ base
-204½	Dol, lt-med gray, mott TBS @ base
-212½	Dol, lt gray, lt mott upper part ch @ 209, 1" GS @ 209½; ch @ 212 & @ base
-224	Dol, med gray, lt crackle; ch @ 213½, 214 & 214½; lt banded below; ch @ 216½ & 217; banded to base, ss @ scatt ss to 224, heavy ss @ 224
-227½	Dol, lt gray, ch nod @ 226½, crackle @ base over blue ch nod
-232	Dol, lt-med gray, lt crackle, @ top scatt shears weak; TGS @ base
-234	Dol, lt gray, mott
-236½	Dol, lt-med gray, lt crackle @ top; ch nod 234½, 235½, & 236; lt banded to mott ss over TGS @ base (36° dip @ 236)
-245½	Dol, med tan-gray, ch nod @ 239½, 240½, 244 & 245; scatt ss @ 245; highly siliceous 245 to base TGS @ base
-246½	Dol, med gray, mott, T Gray S @ base
-257	Dol, lt-med gray, scatt wh eyelets upper 1', lt banding to base, ch nod @ base (40% core loss 252-257)
-259½	Dol, lt-med gray, strong banding, scatt ss, over ch @ base (30% core loss 257-260)
-262½	Dol, lt-med gray, vuggy wh eyelets; upper part blue ch @ 260 wh ch @ 262

-263½ Dol, lt-med gray, highly siliceous w ch, mott
-265 Dol, lt gray, lt banding, scatt fract normal to bedding ss over T Gray S @ base
-267½ Dol, lt gray, banded
-270 Dol, lt-med gray, mott, TGS @ base
-271 Dol, med blue-gray, mott
-276 Dol, lt-med gray, banded w vugular eyelets in upper 1½', TGS @ base
-281 Dol, med to lt-med gray, banded 278-280, few scatt fractures normal to bedding; scatt ss over 1" GS @ base; chert & little med-gray, re-xl beneath shale
-283 Dol, lt-med gray, scatt fractures, brecciated 282-82½ and sealed w/green dol
-286½ Dol, med gray, crackle w/wh gangue & blk jasperoid @ base sealed w/re-xl & blk jasperoid
-288 Dol, med green-gray, mott
-291 Dol, med gray, occasional crackle w/gangue & re-xl & little jasperoid; ch @ base
-295 Dol, med tan-gray, few wh wyelets, blue ch mod, @ 293, crackle w/wh gangue & blk jasperoid beneath; ch @ base
-299 Semi-re-xl, lt-med gray, highly siliceous 298½-299
-305 Dol, lt-med tan-gray, sacchroidal, lt banding; few high angle chears scatt; ss over TGS @ base
-310 Dol, med gray-green, lt mott; scatt lt crackle, vuggy wh eyelets 308½ to base
-312½ Dol, lt-med gray, lt mott to lt banded 3" GS @ base
-314 Re-xl, brown, mott @ top w/wh gangue & @ lower part w blk jasperoid; 1" GS @ base
-315 Dol, med gray-green
-316½ Dol, med tan-gray, mott; scatt tiny vugs
-321 Re-xl, lt gray-green, mott to banded w/green ch
-325 Semi-re-xl, med gray, mott
-325½ Re-xl, brown, mott
-326 Dol, brown, v lt crackle; 2" GS @ base
-332 Re-xl, tan, mott w/green sh; crackle @ 328½ & 330½-331½ sealed w/ wh gangue & blk jasperoid;
-333 Re-xl, brown, crackle w/wh gangue
-333½ Re-xl, tan-gray, brecciated, sealed w/wh gangue, blk jasperoid, green dol
-334 Semi-re-xl, lt green-gray, lt crackle, scatt ss grains over black jasperoid over thin dry breccia @ base
-335 Re-xl, lt tan-gray, brecciated, sealed w/green sh & blk jasperoid, Dry Breccia, ch @ 335½
-339½ Semi-re-xl, lt-med gray, 2" black jasperoid @ 337'
-340½ Re-xl, brown, mott, lt crackle
-341½ Dol, tan-gray; 3" blk jasperoid @ base, brecciated & filled w FeS_2 & wh gangue Some grn jasp crackle filled w/wh gangue
-342 Chert, brecciated sealed w grn shale, re-xl, scatt ss in matrix
-345½ Re-xl, brown, brecciated & sealed w/re-xl, green shale and chert 2" GS @ base
-351 Re-xl, brown-gray, lt mott, crackle 349 to base, lt blue ch @ base
-354½ Re-xl, lt tan-gray, brecc & sealed w/re-xl, green shale wh gangue & black jasperoid dry breccia 1' GS @ base
-360½ Dol, lt-med gray, crackle 356½-57
-361½ Semi-re-xl, med-gray, brecciat w/wh gangue Tr FeS_2
-362 Re-xl, tan-gray, strong mott
-364½ Dol, dk gray, crackle w/wh gangue TGS @ base
-365 Dol, dk brown-gray, brecc sealed w/green dol, re-xl & green shale
-367½ Dol, dk brown-gray, asphaltic odor, wh gangue eyelets, vugalar banded lt chert @ 366½, TGS @ base

-368½ Re-xl, gray, mott; ch over ¾" GS @ base
-371 Ls, lt tan-gray, TGS @ 370,370½ & @ base
-376½ Dol, dk gray (25% core loss 361-377)
-377½ Dol, med gray, and chert, brecciated w/wh gangue
-378 re-xl, tan gray, brecciated w/chert & re-xl
-380 Dol, lt-med gray, lt banded, TGS @ base
-385 Re-xl, lt brown-gray, strong wh mott ch @ 382,282½ & 384
-388 Re-xl, brown-gray, mott TGS @ 387; TGS over ch @ 388
-388½ Re-xl, brown, ch @ base
-389 Dol, med gray
-390 Green shale, w/ch nods
-391½ Re-xl, lt tan-gray, & ch, brecciated and sealed w/re-xl & green shale
-392 Ls, lt gray, brecciated & sealed w ch & green sh TBS @ base
-392½ Ls, brown w/grn sh blue ch over TGS @ base
-392½ Ls, lt gray
-396½ Re-xl, lt brown, mott, ch @ 393½ and 396
-397 Blue ch, & re-xl, brecciated sealded w/re-xl, ch green sh, Dry Breccia
-400 Dol, med-gray, lower 1½' crackle w/wh gangue TGS @ base
-402 Dol, med-gray, & re-xl, lt tan mott, brecciated & sealed w/wh gangue re-xl green sh
-406 Re-xl, lt gray-tan, stron mott, GS @ 402½ and 403, vuggy sh gangue eyelet @ 404½; wh gangue crackle 404½-406
-409½ Re-xl, brown
-411½ Re-xl, brecc w/wh gangue & green sh
-418 Re-xl, green-gray, mott
-423 Re-xl, gray-brown
-431 Dol, med gray, scatt high-angle fractures; ptly siliceous 427,428 approx (6' core loss 424-431)

Invoice

Marietta, Ohio

B. H. Putnam
512 Third Street
Marietta, Ohio

October 1959

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Puncheon Camp Creek Project DMEA Contract No. 4580 - October 1959

Core Hole No. ST-10

Footage drilled 431' @ $3.00/ft. $1293.00

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

B. H. Putnam, Operator

by: A. R. Eddy
A. R. Eddy
Drilling Superintendent

OFFICIAL FILE COPY
O. M. E.
RECEIVED OCT 26 1959

DATE	INITIALS	CC
10-26	gad	VVO
1	JE	110
10/27	[illegible]	800
10/28	Rhyzedei	500

INTERIM REPORT

DMEA-4580, Idm-E1088 (Zinc)

Operator: B. H. Putnam, Box 65, Thorn Hill, Tennessee

Location: Puncheon Camp Creek area, Grainger County, Tennessee

Summary of drilling completed

	Since last inspection	To date
Number of holes	1	62X
Footage	904	33,836*

Number of holes showing:

a) Commercial-grade zinc ore 11
b) non-commercial zinc mineralization 30
c) No zinc mineralization 21

* Footage corrected from last interim report to eliminate 1,309 feet previously carried for Holes GD-7, -7a, -8, -9, -10, and -11 which were drilled by the Operator at his own expense. Also to correct a 3-foot error in reporting the depth of Hole BUL-1 in the interim report of 3/9/59 (i. e., BUL-1 reported as 613 feet corrected to 610 feet).

Data on the one hole completed since the last inspection on September 16, 1959 is summarized as follows:

Hole GD-35: Located on the Green-Dalton tract at coordinates N-49,402; E-47,318. Collar elevation: 1,311 feet A. T. Drilling started: 9/17/59; completed: 10/5/59. Total depth: 904 feet. Summary log: 0-12 overburden; 12-625 Mascot dolomite; 625-887 Kingsport formation (TR @ 779); 887-904 (bottom of hole) Longview dolomite. Mineralization: Trace hole. Traces of sphalerite @ 853½ and 866, both in "S" bed.

Drilling in progress

Drilling is now in progress on Hole ST-8 (Stapleton property), located on strike fence 350 feet northeast of point midway between Holes ST-4 and -5 on dip fence. Objective of exploration at this site is to test for mineralized shoot paralleling that on the Green-Dalton property. At the time of inspection the hole had reached a depth of 72 feet.

Inspected: October 9, 1959

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 EXPORATION ADMINISTRATION

PAID ON VOUCHER & SCHEDULE OF PAYMENTS K-

OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of September, 1959 Docket No. DMEA 4580 Contract No. Idm-E 1088
Operator's Name B. H. Putnam Minerals Zinc
Address 512 Third Street, Marietta, Ohio
Contract Amount, $ 170,125 Government Participation: 50 % Amount, $ 85,062.50

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	$2712.00	$ 98,796.00	$101,508.00	10/28/59 W.J.K.		
Bulldozing						
Crosscutting						
Drifting						
Reaming	—	2,142.00	2,142.00			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
Core boxes	—	290.25	290.25			
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis	—	253.75	253.75			
Payroll Taxes						
Liability Insurance						
(8) Contingencies (specify):						
Incid. allow. @ .18/ft.	162.72	5,927.76	6,090.48			
TOTALS	$2874.72	$107,409.76	$110,284.48	2874.72	107,409.76	110,284.48

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

Date September 1959 *Payee B. H. Putnam

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:

$ 1437.36

Signature Helen R. Miller
(Authorized Certifying Officer)

Date OCT 23 1959 Vou. No. 20
(See other side)

1437.36

(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-1088 in accordance with the terms of the contract.

Signature [signature] Title MINING ENGINEER U. S. BUREAU OF MINES Date OCT 22 1959

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert A. Lawrence Title EXECUTIVE OFFICER OME FIELD TEAM REGION V Date OCT 22 1959

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

OCT 26 1959 O.M.E.

Month of September 1959 Docket No. DMEA 4580 Contract No. Man-E 1088
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	$2712.00	904	$101,508.00	33,836	$3.00	50,000	$3.00
~~Shot~~ Reaming	Foot	—	-	2,142.00	1,071	2.00	5,000	2.00
~~Assay~~ Samples	Each	—	-	253.75	203	1.25	500	1.50
~~Stripping~~ Core boxes	Each	—	-	290.25	150	1.935	150	2.00
Trenching								
Test Pits								
~~Reduced Tails~~ Incld. allow. @ .18/ft.		162.72	904	6,090.48	33,836	0.18	50,000	0.18
Total Distributed Costs		$2874.72		$110,284.48				Total Costs Authorized by Contract
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
Total Costs		$2874.72		$110,284.48				

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.

Date September 1959 Operator B. H. Putnam

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 22 1959

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 Puncheon Camp Creek
Project, Grainger County, Tennessee

September 1959
by W. T. Hill

Docket No. 4580
Contract No. Idm-E-1088

During the month of September one hole was drilled on the Puncheon Camp Creek Project. Hole GD-35 was drilled 200 feet east of GD-29 on a strike fence. The hole collared in the Mascot formation and was drilled to a depth of 904 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-12	Overburden	—	—	—
12-625	Mascot	CM @ 625	—	Dolomite
625-887	Kingsport	"R" @ 778½ "S" @ 842 "T" @ 887	— Trace ZnS @ 853½ Trace ZnS @ 866	Dolomite, limestone & recrystalline; some breccia & "dry" breccia
887-904	Longview			Dolomite

RECEIVED

B. H. Putnam DD-GD-35

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm-E 1088

Hole No.: GD-35 Collared: 9/17/59

Farm: Green-Dalton Bottomed: 10/5/59

Location: N 49,402.45 Depth: 904'

E 47,317.99 Casing: BX-5'; AX-22'

Elevation: ~~1317.30~~ 1311.01 Reaming: None

Drilled by: Putnam Drilling Co. Cement: None

Logged by: F. T. Fischer

Top Kingsport	625
Top "R" Bed	778½
Top "S" Bed	842
Base Kingsport	887

0-11½	Overburden
-12	Dol, lt grey, oxid
-15	Dol, med grey, mud filled solution parting @ 13; solution cavity @ 14 & 14½
-16	Dol, lt grey to yellowish-grey; highly siliceous, wavy banding
-17	Dol, dk grey
-22	Dol, med grey, strong mott @ top, weathered (oxid) shears 20-22, pinkish doloration throughout (1' core loss 20-22); vug @ base
-23	Chert, med grey, oxid
-26½	Dol, lt-med grey, oxid
-27½	Dol, dk grey, oxid @ base
-30½	Dol, lt-tan grey, mott to lt band, (1' core loss 27-33½), weathered
-32	Dol, dk grey, lt band to mott
-33	Dol, med tan grey, mott
-34½	Dol, med tan grey, strong band, eyelets @33½
-35½	Dol, dk grey
-43	Dol, lt-med grey, lt oxid @ top & base
-44	Dol, med grey, banded (1' core loss 40-46)
-50	Dol, lt-med grey, chert & oxid @ base (1' core loss 46-49)
-65	Dol, dk grey to blk, lt band to 59, scatt sh 53-54, fault breccia @ 54, intense sh 56-57, fault breccia @ 57 (fault plane 41), oxid shrs @ 54, 60-61½, 63½, 38° dip @ 58
-74	Dol, med-dk grey, mott @ top, lt oxid shrs @ 67
-78	Dol, dk grey, reddish fracts @ 75½
-82½	Dol, med-dk grey, banded, scatt ss @ base (50% core loss 75-83)
-90	Dol, lt-med tan grey, sed breccia to 85 w. ch 82½-84, lt banding 85½-88, ch nod 88 & 88½, wavy banding to base, ch wh @ base (40% core loss 89-94)
-100½	Dol, med grey, blotchy @ 98½, sed congl 99½-100 (30% core loss 94-100)
-104½	Dol, lt-med grey
-109½	Dol, med grey, lt pinkish mott, TGS @ base
-121	Dol, lt-med grey, pink mott @ top & from 113½-base, reddish banding 112-113
-125½	Dol, med grey, lt oxid shears @ 125
-127	Dol, med-dk grey, lt mott (50% core loss 126-30)
-137	Dol, med grey, mott, TBS @ 131 & 133, pinkish color lower half, eyelets @ 132½
-138½	Dol, lt-med grey, mott, TBS @ base
-141½	Dol, med grey, band @ base
-143½	Dol, med-dk grey, lt mott
-151½	Dol, med grey, ch nod @ 144½, scatt ss @ 145, ch beneath, ch nod @ 148, scatt ss beneath, thin ch nod @ base
-153	Dol, med grey, strong mott
-159	Dol, lt grey, lt banding, open fract @ 157½, (20% core loss 149-159)
-162	Dol, med grey, eyelets 160½, strong mott 160½-162
-165	Dol, dk grey, mott
-168	Dol, med-dk grey, eyelets & vugs @ 166, 167-68
-175	Dol, dk grey, mott, wh gangue fract 171-172, sed breccia @ base over blue ch over ss, some CM
-176	Chert, wh, some green sh
-184½	Dol, med grey, lt mott 181-182½, few scatt grains 183½, scatt ss 184, lge eyelets 184-185
-188	Dol, med-dk grey, banded, asphaltic, blk sh @ 186
-190½	Dol, dk grey, mott. asphaltic
-193	Dol, med-dk grey, mott, blotchy 192-193
-194½	Dol, med grey, mott, silicoeous @ base, eyelet @ 194
-195	Dol, v. dk grey, asphaltic

-197 Dol, med-dk grey, v. strong mott @ base, blk sh @ 196½ & base
-199 Dol, med grey, mott
-202 Dol, lt-med grey, banded @ base, ch @ 200, 200½ & 201, TBS @ base
-205 Dol, med grey, TBS @ base
-208 Dol, med grey, mott to strong mott
-216½ Dol, med grey, banded to mott 214-base, hvy ss @ 215, TBS @ base
-218½ Dol, med grey, v. strong mott 216½-217 and 217½-218½
-220 Dol, lt-med grey, banded
-222½ Dol, dk grey, asphaltic, TBS @ 221½
-226 Dol, med grey, strong mott, scatt eyelets
-230½ Dol, med grey, partially gangue-filled vug @ 228, blk sh @ base
-235½ Dol, med-dk grey, TGS @ base
-242 Dol, med grey, ss @ 237 over TGS, lt mott beneath for 1'
-245 Dol, lt-med grey, scatt ss @ 244, v. lge eyelet beneath ss, 40° dip @ 243
-250½ Dol, med grey, shearing 248, strong shearing 248½-249 (little fault breccia) high angle, hvy ss over blk sh @ 249½, small v. low angle fault @ 250 (breccia) mott @ base
-252½ Dol, dk grey, blk sh @ 251, eyelets @ 252, TBS over ss @ base
-256½ Dol, med grey, TBS @ base
-258 Dol, dk grey, TBS over blk ch over TGS @ base
-262½ Dol, med-dk grey, TGS @ 260½, CMSS @ 261, banded dol over blk dol @ base
-263½ Dol, med grey, strong mott, tan mott ch over TBS @ top
-265½ Dol, lt-med grey, lt banding, 40° dip @ 265
-267 Dol, med-dk grey, TBS @ base
-269 Dol, med-grey, banded, ss @ 267½, hvy ss 268-268½, ss & congl over 1-inch blk sh @ base
-270 Dol, blk, asphaltic
-272 Dol, med grey to tan grey, mott
-276½ Dol, dk grey, mott to 274½, wh ch over TGS @ base
-277½ Ch, wh banded
-279 Dol, lt grey, lt banded
-280 Dol, med-dk grey, mott TGS @ base
-282 Dol, lt-med grey, mott to banded, 1" gry sh @ base
-289 Dol, med-dk grey, mott to 286½, banded to base, ss @ base, trace FeS_2 @ 284½
-292½ Dol, v. lt tan-grey, thin ss over TGS @ base
-295 Dol, med grey, lt mott, TGS @ base, FeS_2 traces @ 294½
-303½ Dol, lt-med grey, scatt wh gangue fract @ 299, mott 300-302, TGS @ base
-305 Ch, wh & brn, strong mott
-310½ Dol, med grey, TGS @ base, ch @ 307½
-315½ Dol, med grey, strong mott, FeS_2 shine @ base
-322½ Dol, lt-med grey, banded, vug @ 317, scatt ss @ 319 & 322½
-325 Dol, med grey, mott
-332 Dol, med-dk grey, lt mott, scatt ss over ch over TGS @ base
-332½ Dol, lt-med grey, sacchroidal
-339 Dol, med grey, lt banded, blue ch nod @ base
-345½ Dol, med tan grey, mott to 340½
-350 Dol, med-dk grey, scatt ss over ch @ base
-353 Dol, lt-med grey, banded lower half
-354½ Chert, wh, upper and lower third brecciated & sealed with wh gangue, small vug in breccia, FeS_2 shine @ 353½ & 354½, TGS @ base
-357 Dol, lt-med grey, wk sh @ top, ch nod @ 356, scatt ss over TGS @ base
-361½ Dol, med tan-grey, strong mott, hvy ss @ base over TGS, eyelets @ 361
-364 Dol, lt-med tan-grey, banded to mott, strong fine mott @ base
-367½ Dol, med grey, TGS @ 365½, scatt ss 366-367, TGS @ 367, TGS @ base
-370 Dol, med-dk grey, lt mott

-376½ Dol, dk tan-grey, mott, sdy ch over TGS @ base
-382 Dol, lt grey, lt band
-386 Dol, med grey, brn ch @ 383, strong mott 384-385½
-391½ Dol, lt-med grey, small vug @ 391
-394 Dol, med grey, mott, slightly blotchy, ss over TGS @ base
-401 Dol, med grey, lt mott to 396½, blotchy to 398½, ss over TGS over ch @ base
-403 Dol, med grey, mott
-406 Dol, lt-med grey, ½" GS @ base
-409 Dol, med-dk grey, eyelets scatt, 41° dip @ 407
-415 Dol, dk grey, mott, prominent wh gangue eyelets 412-base, scatt FeS_2 shines
-427 Dol, med grey, mott @ top, eyelets @ top & 417-418, ss @ 416, TGS @ 418, eyelets 419-423
-429½ Dol, med grey, lt banded
-430½ Dol, lt grey, banded, CMSS over ch @ base
-438 Dol, lt-med grey, banded @ top, lt shears @ 433, 436 & 436½
-442½ Dol, lt grey, lt banded, scatt ss 441-base, CMSS over wh ch @ base
-449 Dol, med grey, wh ch @ base
-451 Dol, lt-med grey, v. siliceous and blotchy, scatt ss @ 449½-450½, TGS @ base
-452 Dol, med grey, sed congl over blue grey oolitic ch over CMSS @ base
-455 Dol, med-dk grey, siliceous, mott basal 1-foot nearly all ch
-459 Dol, med grey
-461 Dol, med-dk grey, sacchroidal, mott to banded, eyelets @ 460½
-463 Dol, med grey, ss @ 462-462½
-469 Dol, lt-med grey, mott, small vugs 465-66, ss @ 466-67
-471 Dol, med grey, st mott, sed congl @ 471, 10% silica
-482 Dol, med-dk grey, lt mott to 472
-483 Fault, low angle (bedding plane), extremely intense shearing, dol, med grey
-488½ Dol, med grey, dk from 483½-484½, mott 486-88, ch nod @ base, FeS_2 shines below ch in eyelets
-493 Dol, lt-med grey, lt mott scatt ss to hvy ss @ base
-497 Dol, med grey, mott, few scatt eyelets
-502½ Dol, med-dk grey, mott @ top, scatt eyelets
-508 Dol, med grey, blotchy 503½-504½, ch @ 503, 505, mott lower half, blue ch @ base
-513 Dol, lt grey, lt banded, scatt ss @ 512, fine wh ch frag @ 512, cherty to 513, 42° dip @ 509
-514 Dol, med grey
-515 Dol, lt-med grey, ch nod @ 514½
-519 Dol, med grey, mott
-521 Dol, med-dk grey, mott, blue ch @ base
-524 Dol, med tan grey, ch @ base
-529½ Dol, med grey, ch nod @ 527, ch over ss over ch @ base
-530 Dol, lt-med grey, blotchy
-531 Chert, blue-grey with fine wh "specks"
-536 Dol, lt-med gun grey, lt banding, eyelets & ch @ 534½
-541 Dol, med grey, mott, TGS @ 537½, slightly darker basal 2', TGS @ base
-544 Dol, med grey, lt mott @ top
-546½ Dol, med grey, mott, scatt eyelets
-549 Dol, med-dk grey, strong mott scatt ss @ base
-551 Dol, med grey, mott, scatt small vugs, cherty @ base
-557½ Dol, lt-med grey, wk FeS_2 shines @ 551½ in dol, ch nod @ 553, 40° dip @ 556
-568½ Dol, med grey, TGS @ 558½, lt mott 563-564½, 1" gr sh @ base
-574½ Dol, lt-med grey, ch @ 572½, siliceous 573-base, sdy congl @ base
-577 Dol, med grey, scatt eyelets, TGS @ base
-579½ Dol, med-dk grey, TGS @ 579½

-586 Dol, med grey, scatt eyelets, few blotches, TGS @ 585½
-588 Dol, med-dk grey, ch @ 586½, scatt ss @ 587, hvy ss @ 587½, scatt ss below to ch over 4" gr sh @ base
-592 Dol, med grey
-594 Dol, med-dk grey
-595 Dol, dk grey
-598½ Dol, med grey, ss @ base over blue-grey sh
-605 Dol, lt-med grey, scatt ss @ 601-601½, ss over TBS @ 602½, TBS @ base
-608 Dol, med grey, 1" GS @ base
-609 Dol, med-dk grey, mott, TBS @ base
-611 Dol, lt-med grey, congl ch @ 609½, lt banded
-622 Dol, med-dk grey, TBS @ 611½ & 614, mott 615-620, GS @ 616½, TBS over dk asphaltic dol over TBS @ base
-640 Dol, lt-med grey, scatt ss over CMSS @ 625, sdy ch @ 626, eyelets @ 628, TGS @ 628½, 629½ & 630, ch 630-630½, mott 630-632, TGS @ 638½ & @ base
-643 Dol, lt grey, mott, TGS @ base
-644 Dol, lt-med grey, TGS @ base
-648 Dol, lt grey, ss @ 644½, TGS @ base
-653 Dol, med grey, grey s @ 649½, mott lower half, eyelets @ 652½
-660 Dol, lt-med grey, blue ch nod @ 654, lt banding, ch over wh gangue eyelet @ 656½, ch nod @ 659½, 660, TGS @ base
-669½ Dol, med grey, scatt ss @ 663½, 664, 40% core loss 659-664, 44° dip @ 662 TGS @ 665, lt mott 665-base, thin congl over TGS over ch over ss @ base
-670½ Dol, med tan grey, siliceous sh @ top, crackle @ base over ss
-672 Chert, lt grey to wh, scatt ss grains
-673 Conglomerate, sdy dol & ch
-674 Dol, med tan grey, scatt ss @ top, ss over ch over ss @ base
-686½ Dol, med grey, TGS @ 676, blue oolitic ch @ 679, mott 679-680, lt mott 684-base
-698 Dol, lt grey, lt mott, ch nod @ 689½ & 691½, TGS @ 691, ch nod 694, 695, 696, banded 696-base, ch nod @ base
-704 Dol, med grey, banded, 1" gr sh @ 699½, TGS @ 702½, TGS @ 703, hvy ss 703 to 1" GS over ch nod @ base
-712 Dol, lt grey, ch @ 705½, lt shrs 710 open, ch @ 711, 30% core loss 704-709, ch over TGS @ base
-717 Dol, lt-med, siliceous, wh ch flecks
-742 Dol, lt-med, ch @ 722, vugs below, 2" GS @ 722½, lt banding 724½-729, TGS @ 728 & 728½, banding 732-735, scatt ss @ 735, ch @ 735½, 736½, 737, ss @ 737 below ch, lt band 737-739, lt blotches lower 1', TGS @ base
-748 Dol, lt-med, lt bands 744-747½, TGS @ base
-752 Dol, med grey, lt banding 749½-752, ch @ 749½, scatt ss @ base
-756 Dol, med grey, lt mott upper pt, 40° dip @ 756
-761 Dol, lt-med grey, TGS @ 758, eyelets 759-760½, ch @ base
-765½ Dol, med grey, eyelets upper pt, high angle shear zone @ 763
-768 Chert, wh, brecciated @ base
-772½ Dol, med grey, brecciated @ top, shear zone, TGS @ base
-776 Dol, lt-med grey, lt mott
-777½ Dol, med grey
-778½ Green sh w. some included re-xl
-785 Dol, med grey, sacchroidal, lt mott
-787½ Dol, lt-med tan grey, crackle, 1" grey & gr sh @ base
-791 Semi-re-xl, med tan grey, mott, ch @ base
-796 Semi-re-xl, mott, ch @ 792
-797½ Dol, med grey, crackle @ base
-799½ Semi-re-xl, brecciated (dry)
-801 Dol, med tan-grey, brecciated, sealed w. grn sh, re-xl, etc., dry breccia

Re-xl, med brn, GS @ 802, brecciated w/wh gangue 804-805, semi-re-xl to base
Dol, med grey, mott, crackle @ 807, ch @ 810, thin gangue-filled fracture @ 809 w. FeS_2 shines, brecciated @ base, brn & gr sh @ base
Re-xl, lt tan greenish (shaly?) crackle 811½-818
Dol, lt-med grey, open shrs @ 819½, shears @ 820½, eyelets @ 823
Dol, med-dk grey, brecciated sealed w. lt grey dol
Dol, dk grey, "crackle", vugs & eyelets, fault gorge @ 827 & 828
Dol, lt-med grey, TGS @ base
Ls, lt grey, fragmental w. numerous gry sh partings, grey sh @ base
Ls, med grey, fragmental (fossil fragments), ls & grn sh @ base
Dol, med-dk grey, "crackle"
Dol, lt-med grey, gangue-filled fracts, TGS @ base
-847½ Re-xl, lt-med tan-grey, ch @ 846 & base
-849½ Ls, lt-grey, fragmental @ base, TGS @ base
-853 Dol, med grey, brecciated sealed w/wh gangue, FeS_2 shine in gangue, open @ 852½
-857 Dol, lt-med grey, brecciated sealed w. gangue, re-xl, sh, ch (trace ZnS @ 853½) "dry breccia"
-859½ Ls, lt grey, fragmental, TGS @ base, "dry breccia" 859-859½
-865 Re-xl, lt-tan grey, lighter from 863½-base
-866 Dol, lt-med grey, brecciated, sealed w/wh gangue and lt dol
-867½ Dol, med grey, brecciated, sealed w/re-xl, ch, sh & wh gangue, ch @ base
-868 Re-xl, lt-med grey, brecciated, trace ZnS @ 866
-870 Dol, lt-med grey, brecciated sealed w/re-xl & wh gangue, 1" GS @ base
-872½ Re-xl, med tan-grey, brecciated sealed w/sh, ch, re-xl, 871-871½
-874 Dol, lt-med grey, brecc, dry breccia, TGS @ base
-887 Re-xl, lt tan-grey, strong shearing 879½-880, high angle, highly siliceous, (2' core loss 877-887) 886-887
-890 Dol, med grey, brecc, sealed w/wh gangue, ch @ base (66% core loss 887-890)
-892½ Re-xl, med tan-grey, highly siliceous (50% plus) from 891-891½, ch wh @ base
-898 Dol, med-dk grey, basal 1' highly siliceous w. vugs & ch, 34° dip @ 900
-904 Dol, med grey, mott TD 904

Invoice

Marietta, Ohio

B. H. Putnam
512 Third Street
Marietta, Ohio

September 1959

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Puncheon Camp Creek Project DMEA Contract No. 4580 - September 1959

Core Hole No. GD-35

Footage drilled 904' @ $3.00/ft. $2172.00

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

B. H. Putnam, Operator

by: A. R. Eddy
A. R. Eddy
Drilling Superintendent

OFFICIAL FILE COPY
O. M. E.
RECEIVED OCT 1 1959

DATE	INITIALS	CODE
10/1	RCW	225
"	"	110
10/1	[illegible]	800

INTERIM REPORT

DMEA-4580, Idm-E1088 - (Zinc)

Operator: B. H. Putnam, Operator, Box 65, Thorn Hill, Tennessee

Location: Puncheon Camp Creek area, Grainger County, Tennessee

Summary of drilling completed

	Since last inspection	To date
Number of holes.....	2	* ~~61~~ 55
Footage.....	1,886	~~36,286~~ 32,932'

Number of holes showing:

a) Commercial-grade zinc ore..... 11
b) Non-commercial zinc mineralization..... 29
c) No zinc mineralization..... 21

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

Hole GD-33: Located on the Green-Dalton tract at coordinates: N-49,132; E-46,442. Collar elevation 1413 feet A.T. Drilling started August 10, 1959; completed August 26, 1959. Total depth 864 feet. Summary log: 0-16 overburden; 16-561½ Mascot dolomite; 561½-831 Kingsport formation (TR @ 730) 831-864(bottom of hole) Longview dolomite. Mineralization: Barren hole.

Hole GD-34: Located on Green-Dalton tract at coordinates: N-48879; E-46586 (approxi. 300 ft. south of GD-33). Collar elevation: 1331 feet A.T. Drilling began 8/27/59; completed 9/15/59. Total depth 1022 feet. Summary log: 0-11 overburden; 11-717 Mascot dolomite; 717-987 Kingsport formation TR @ 880); 987-1022(bottom of hole) Longview dolomite. Mineralization: Barren hole.

Drilling in progress

Drilling is now in progress on Hole GD-35 at a site approximately 200 feet east of Hole GD-29 on a strike fence. At the time of inspection it was still in overburden.

Inspected: September 16, 1959

Helmuth Wedow, Jr., Geologist
Geological Survey (OME)

* Erroneously includes holes GD-7, 7A, 8, 9, 10, + 11 not accepted by the Bd.

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

Budget Bureau No. 42-R1036.5

PAID ON VOUCHER & SCHEDULE OF PAYMENTS K-

National Lead Co.

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

SEP 24 1959 O.M.E.

Month of August, 1959 Docket No. DMEA 4530 Contract No. Idm-3 1069
Operator's Name B. H. Putnam Minerals Zinc
Address 512 Third Street, Marietta, Ohio
Contract Amount, $ 170,125.00 Government Participation 50% Amount, $85,062.00

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:						
Drilling	5658.00	93,138.00	98,796.00	9/24/59		
Bulldozing						
Crosscutting						
Drifting						
Reaming	40.00	2,102.00	2,142.00			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
Core boxes	—	290.25	290.25			
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis	6.25	247.50	253.75			
Payroll Taxes						
Liability Insurance						
(8) Contingencies (specify): Incld. allow. .18/ft.	339.48	5,588.28	5,927.76			
TOTALS	$6,043.73	$101,366.03	$107,409.76	6043.73	101,366.03	107,409.76

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

Date August 1959 *Payee B. H. Putnam

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:

$ 3021.87

Signature [signature] (Authorized Certifying Officer)

Date SEP 22 1959 Vou. No. 16

(See other side)

3021.86

(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-1088 in accordance with the terms of the contract.

Signature T. J. Lynch Title MINING ENGINEER U. S. BUREAU OF MINES Date SEP 21 1959

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert A. Laurence Title EXECUTIVE OFFICER OME FIELD TEAM REGION V Date SEP 21 1959

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

SEP 24 1959
O.M.E.

UNITED STATES
DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION

OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of August 1959 Docket No. DMEA 4520 Contract No. Zdm-S 1080
Operator's Name D. 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	05658.00	1886	98,706.00	32,932	03.00	50,000	03.00
~~[illegible]~~ Reaming	Foot	40.00	20	2,142.00	1,071	2.00	5,000	2.00
~~[illegible]~~ Sampling	Each	6.25	5	253.75	203	1.25	500	1.50
~~[illegible]~~ Core boxes	Each	—	—	290.25	150	1.935	150	2.00
Trenching								
Test Pits								
~~[illegible]~~ Incld. allow. @ .18/ft.	Foot	332.40	1886	5,927.76	32,932	0.18	50,000	0.18
TOTAL DISTRIBUTED COSTS		06043.73		107,409.76				TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS		06043.73		107,409.76				

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 1959 Operator D. H. Putnam

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.

SEP 18 '59

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

The Bruce Williams Laboratories

ENGINEERING
FOUNDATIONS
INSPECTIONS
ANALYSES
SAMPLING
CONSULTING
RESEARCH

MAIN OFFICE AND LABORATORIES 818-824 JOPLIN STREET TELEPHONE MAYFAIR 3-1556

ESTABLISHED 1898

Joplin, Missouri

B. H. Putnam
Box 65
Thorn Hill, Tennessee

8-17-59

		ZINC
811859	Sample #GD-32-1 1011 - 1013	3.66
860	#GD-32-2 1013 - 1015	0.64
861	#GD-32-3 1015 - 1019	1.64
862	#GD-32-4 1019 - 1023½	1.70
863	#GD-32-5 1034 - 1037	1.70

12½ @ 1.8% ZN.

Hb 5

fc/jf 70-736

THE ABOVE FIGURES ARE AS DETERMINED IN OUR LABORATORIES.

Bruce Williams

Invoice

Marietta, Ohio

B. H. Putnam
512 Third Street
Marietta, Ohio

August 1959

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Puncheon Camp Creek Project DMEA Contract No. 4580 - August 1959

Core Hole No. GD-33

Footage drilled	864' @ $3.00/ft.	$2,592.00
Footage reamed	20' @ $2.00/ft.	40.00
		$2,632.00

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

B. H. Putnam, Operator

by: A. R. Eddy
A. R. Eddy
Drilling Superintendent

Invoice

Marietta, Ohio

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

August 1959

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Puncheon Camp Creek Project DMEA Contract No. 4580 - August 1959

Core Hole No. GD-34

Footage drilled 1022' @ $3.00/ft. $3066.00

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

B. H. Putnam, Operator

by: A. R. Eddy
A. R. Eddy
Drilling Superintendent

A Progress Report on the Puncheon Camp
Creek Project, Grainger County, Tennessee

August 1959
by W. T. Hill

Docket No. 4580
Contract No. Idm-E 1088

During the month of August two holes were drilled on the Puncheon Camp Creek Project. Hole GD-33 was drilled 400 feet south of GD-17 on a dip fence. The hole collared in the Mascot formation and was drilled to a depth of 864 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-16	Overburden	---	---	---
16-561½	Mascot	CM @ 561½	---	Dolomite
561½-831	Kingsport	"R" @ 730 "S" @ 787 "T" @ 831	---	Dolomite & recrystalline; some "dry" breccia
831-864	Longview	"U" @ 843	---	Dolomite & recrystalline

Hole GD-34 was drilled on the dip fence 300 feet south of GD-33. The hole collared in the Mascot formation and was drilled to a depth of 1022 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-11	Overburden	----	---	--
11-717	Mascot	CM @ 717	---	Dolomite
717-987	Kingsport	"R" @ 880 "S" @ 936 "T" @ 987	---	Dolomite, re-crystalline & limestone
987-1022	Longview	"U" @ 999	---	Dolomite, re-crystalline & limestone

B. H. Putnam DD-GD-33

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm-E 1088

Hole No.: GD-33 Collared: 8/10/59

Farm: Green-Dalton Bottomed: 8/26/59

Location: N 49,131.70 Depth: 864'

E 46,442.49 Casing: BX-10'; AX-70'

Elevation: 1412.65 Reaming: 20'

Drilled by: Putnam Drilling Co. Cement: None

Logged by: W. T. Hill

Top Kingsport	561½
Top "R" bed	730
Top "S" bed	787
Base Kingsport	831

0-16	Overburden
-17	Dol, lt grey, mott, blotchy
-19	Dol, dk grey, conglomeratic
-21	Dol, med grey
-37	Dol, lt grey, pink mott., some oxidation
-42	Dol, med grey, lt pink bands, ch nod @ 38, 40½
-50	Dol, lt-med grey, oxidized, broken core, silic near base
-51	Dol, med grey, sed congl with ss (2" core recovery 50-57)
-57	Dol, lt-med grey
-59	Dol, med-dk grey, ch nod @ 58½, few oxid fracts
-76	Dol, lt grey, mott (1' core loss 71-76)
-77	Dol, med-dk grey
-78½	Dol, med grey, hvy mott
-84	Dol, med-dk grey
-86	Dol, med grey, mott
-92	Dol, dk grey, hvy mott, grn sh @ base
-93	Chert, white
-103	Dol, med-dk grey, v. lite crackle with grn shale fillings
-106½	Dol, lt-med grey, oxidized, ch @ 108½
-118	Dol, med-dk grey, broken, lt mott, blotchy
-124	Dol, lt grey, banded, lt ss @ 120
-127½	Dol, lt-med grey, banded & mott
-129	Dol, med grey
-130	Dol, med grey, banded, scatt ss (1' core loss 129-135)
-135½	Dol, lt-med grey, lt ss @ 133½, TGS @ 134
-136	Chert, thin blue band
-139	Dol, lt-med grey, lt bands
-142	Dol, dk grey, thin vert. shear
-159	Dol, lt grey, mott 142-144, TGS @ 144, v. lite bands 144-base, some pink lt ss @ 150½, 159, TGS @ base
-160	Dol, med grey
-162	Dol, lt grey, mott
-164	Dol, med-dk grey, blotchy
-166½	Dol, lt-med grey, banded, hvy ss plus ch @ 166
-168½	Dol, med grey, shaly, brn ch nod @ 167
-169½	Dol, dk grey
-179	Dol, alternate lt & med grey, scatt ss 169½-170, hvy ss plus TGS @ 170, oxid shale @ base, some banding
-182½	Dol, lt grey, v. lite bands, thin ch plus lt ss @ base
-185½	Dol, lt grey, hvy bands, scatt ss, GMSS @ base
-188	Dol, med grey, mott, oxid, few chert filled fracts
-194	Dol, med-dk grey, sugary, calcaremite 192, TGS @ base
-196	Dol, lt grey, sed congl @ base, lt fracts
-202½	Dol, dk grey, asphaltic, TBS @ base
-204½	Dol, med-dk grey, TGS @ base
-209	Dol, lt grey, hvy ss @ 205½, hvy grn sh @ base
-213	Dol, med grey, lt mott, TBS @ base
-214	Dol, dk grey, hvy mott
-220	Dol, med-dk grey, mott & banded, TGS @ 215½, ch @ 218, v. lite ss @ base
-221	Chert, white
-228	Dol, med grey, ch @ 226½
-231	Dol, med-dk grey, hvy mott, calcarenite
-239½	Dol, lt-med grey, banded, lt ss 233-234

-245½	Dol, dk grey, hvy mott, porous
-246½	Chert, white
-251½	Dol, lt grey, banded, ch nod @ 247½
-254	Dol, med grey, hvy mott, siliceous
-270	Dol, med grey, very vuggy, steep angle, shears throughout, core badly broken, some core loss
-272	Chert, white (272-278, 3' core loss)
-276	Dol, lt grey, ch nod plus ss @ base
-279½	Dol, lt grey, mott, v. lite ss plus TGS @ base
-280	Re-xl, mott, TGS @ base
-282½	Dol, lt grey, banded, scatt ss 281-282½, TGS @ base
-286½	Dol, lt-med grey, mott, spotted, TGS @ base, thin shear @ 286
-293½	Dol, med-dk grey, mott, v. lite ss plus ch @ base
-294	Re-xl, med grey, hvy mott, <u>trace ZNS</u>
-300	Dol, lt grey, mott, few eyelets
-303	Dol, med grey, hvy mott, lt ss @ base
-318	Dol, med grey, mott 312-316, v. lite ss @ base
-321	Re-xl, brn, very siliceous
-326	Dol, lt grey, lt BP gangue fracts, TGS @ base
-346	Dol, med-dk grey, lt shear 329½, hvy mott 331-335, blotchy 335-346, spotted 341-346, lt shear @ base, ch nod @ base
-358½	Dol, lt grey, lt bands
-362	Dol, v. lt grey, banded, ss 358½, 359½ (some CM)
-367½	Dol, med grey, steep angle shear @ 362½, scatt ss @ base
-370	Dol, lt-med grey, semi-xl, silic, oolite @ top, lite ss throughout, hvy grn sh @ base
-379½	Dol, med grey, mott, vuggy 375½
-382½	Dol, lt grey, mott, ss 379½-381½, spotted
-394½	Dol, dk grey, lt mott
-401	Dol, med-dk grey, mott, hvy BP fault @ 394½, shears 394½-397, v. lite ss @ base
-417½	Dol, med-dk grey, mott, spotted, ss @ 403, lt shears @ base
-424½	Dol, med grey, mott, lt ss 418½, silic 422½-424½
-425½	Dol, med-dk grey, sugary, sandy
-430	Dol, lt grey, banded, lt ss @ base, scatt shears throughout
-430½	Chert, white
-432	Dol, lt grey, very siliceous, shear @ base
-435	Dol, med grey, mott, 1/2 silica 432-433, blue ch @ base
-438½	Dol, lt grey, very fine-grained, shaly, sheared @ 436, blue ch @ base
-443	Dol, med grey, steep angle fault 439
-444	Chert, dolomitic, blue lite ss
-446½	Dol, med grey, mott, lt fracts with grn shale filling
-453	Dol, lt grey, banded, lt ss @ base over grn sh & brn ch nod
-457½	Dol, med grey, mott
-459½	Dol, dk grey, mott
-465	Dol, lt-med grey, hvy blue mott, steep angle shears 463-465
-466½	Dol, med grey, banded, scatt ss @ base
-469	Dol, med grey, hvy mott, ss 466½-467½, lt ss @ base
-478½	Dol, lt-med grey, shear @ 471½, ch nod @ 473½
-486½	Dol, med grey, mott, blotchy
-489½	Dol, med grey, banded, lt ss @ base
-492½	Dol, lt grey, mott, ch nod (sheared) @ 490, silic 492-492½
-499	Dol, med grey, lt mott, spotted, lt ss plus congl @ 494
-508	Dol, dk grey, spotted, mott 506-508, ch @ 507

-509	Chert, oolite, brecciated, sandy
-511	Dol, lt-med grey, mott, sed breccia with grn sh & ss
-513	Dol, med grey, hvy mott
-519	Dol, med grey, darker toward base, TGS @ base
-522	Dol, lt-med grey, grn sh plus hvy ss @ base
-536½	Dol, med grey, few spots, scatt ss 524-525½, hvy ss @ 525½, mott 534-536, ch oolite @ base
-551	Dol, med grey, ch nods 537½, mott 544-545½, spotted 545½-base
-552	Dol, dk grey, mott, ch nod @ 551½, 552
-558	Dol, med grey, hvy grn sh @ 553, darker toward base
-559	Dol, dk grey, brecciated
-560½	Dol, med grey, banded, lt crackle (dry), TBS @ base
-567	Dol, med grey, hvy ss in dol breccia @ top, lt ss 563-564½, dry breccia 564½-565½, sed congl @ base
-568	Dol, v. lt grey, hvy mott, siliceous
-571½	Dol, lt grey, lt bands, ss @ 569
-589	Dol, med grey, dry breccia 577-584, ss @ 583, 586, TGS @ base
-594½	Dol, med-dk grey, spotted, ch @ base
-610	Dol, med grey, mott 594½-596, banded 599-603½, mott 606-610, scatt ss 603-604, ss plus TGS @ base
-617	Dol, lt grey, banded, sed congl plus ss 615-616, darker 616-617
-622	Dol, dk grey, ss @ 617½
-628	Dol, med grey
-632½	Dol, dk grey, spotted, ss @ base
-642	Dol, lt grey, mott 632½-636½, hvy grn sh 636½, ch @ 636, lt bands 636½-base, ch @ 641½, base
-650	Dol, lt-med grey, well banded, hvy ss 647-650, TGS @ 650
-650½	Chert, blue
-654	Dol, med grey, silic @ top, lt ss, ch plus TGS @ base
-655½	Dol, med grey, mott
-661	Dol, lt grey, mott, ch @ 658½, 661, lt ss 661
-669	Dol, med grey, ch @ 667, 667½, 668, sil 668-669, hvy grn sh @ base, crackle (dry) @ 666
-677	Dol, lt grey, lt bands, ch nod @ base
-683	Dol, med grey, lt bands, lt ss @ base
-683½	Chert, blue
-691½	Dol, lt-med grey, ch nods @ 685, 685½, 686½, v. lt ss @ 687½
-693	Dol, med-dk grey, hvy mott, cherty @ top & base
-698	Dol, lt grey, banded, scatt ss 697½-698, grn sh @ base
-702½	Dol, med grey, lt mott, scatt ss 702-702½, hvy grn sh @ base
-706½	Dol, med grey, banded & mott, few spots, ch nod @ 699
-709½	Dol, med grey, hvy mott, ch nod @ base
-714½	Dol, med-dk grey, few spots, ch band 710½
-730	Dol, med grey, mott, dry breccia 719, 722-724, 728½-730
-737	Dol, med grey, v. hvy mott, dry breccia 730-731½
-738	Dol, v. lt grey, banded, v. lt ss plus grn sh @ base
-740	Re-xl, dk grn'ish brn, shaly
-741	Dol, lt grey, banded, lt ss @ base
-746½	Re-xl, grn'sh, dk brn, hvy mott, silic 741-741½ plus ss, vuggy near base
-749½	Dol, lt grey, banded, hvy grn sh 748 plus lt ss
-755½	Re-xl, dk brn, hvy mott, hvy grn sh plus ss @ 755-755½
-756½	Dol, lt grey, banded, lt ss @ base
-758½	Re-xl, dk brn, hvy mott
-760	Dol, lt grey, mott, ch nod @ 760
-767	Re-xl, greenish brn, hvy mott

-772	Dol, med grey, hvy mott, few spots, v. lt crackle
-782½	Dol, dk grey, spotted, some crackle, hvy grn sh & frag ch @ 779-779½, dry breccia 780-782½
-786½	Dol, med-dk grey, thin re-xl @ top, hvy mott, dry breccia @ base
-788½	Ls, brn, brecciated
-800	Dol, med grey, 788½-789½ dry breccia, 790½-791½, 798-800, banded @ 800
-801	Re-xl, dk brn, silic, thin lt grey dol @ base
-802	Chert, blue
-807½	Dol, med grey, mott, ~~dry~~ ch @ 803, 804, 806½-807
-812½	Dol, med grey, mott, dry breccia
-814	Re-xl, black, med-grained
-815½	Re-xl, brn, mott, hvy grn sh @ base
-818	Dol, lt grey, brecc (dry)
-831	Re-xl, black, med-grained, scatt ss, some reddish coloring top plus some ch nods
-834	Dol, med grey, mott
-843	Dol, med grey, lt brecc near base, ch nods 839
-843½	Chert, oolitic, brn, thin re-xl @ base
-850	Dol, med grey, hvy mott
-851	Limestone, shaly, hvy grn sh @ base
-862	Dol, med grey, ch nod @ 853, 859 (green), thin re-xl @ 859, hvy mott, v. hvy ss @ base plus grn sh
-864	Re-xl, banded, brown, ch @ 862, 862½

B. H. Putnam DD-GD-34

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm-E 1088

Hole No.: GD-34 Collared: 8/28/59

Farm: Green-Dalton Bottomed: 9/15/59

Location: N 48,879.20 Depth: 1022'

E 46,585.64 Casing: BX-10'; AX-20'

Elevation: 1331.38 Grnd Reaming: None

Drilled by: Putnam Drilling Co. Cement: None

Logged by: W. T. Hill & F. Fischer

Top Kingsport	717
Top "R" bed	880
Top "S" bed	936
Base Kingsport	987

0-11	Overburden
-24	Dol, med grey, mott, ch @ 24
-33½	Dol, med grey, banded, oxid @ 30
-35	Dol, med-dk grey
-35½	Chert, white
-37½	Dol, med grey, (brecc (sed) sealed with sand & grn sh
-41	Dol, med grey, hvy bands, brecc from 40-41 sealed with blue chert
-50	Dol, dk grey, mott & spotted, asphaltic
-55	Silica, black (calcarenite?), porous, 90% SiO_2
-60	Dol, med-dk grey, hvy mott, spotted
-69	Silica, arenite, med grey, in part bleached
-78	Dol, med grey, mott
-92	Dol, med grey, darker toward base, v. lt bands, ch @ base
-96	Dol, med grey, banded, cherts @ 93, 94
-103	Dol, med grey, mott, TGS @ 99, 101, 102
-105	Dol, med-dk grey
-113½	Dol, med grey, pink mott
-119	Dol, med grey, mott
-124	Dol, lt grey, dry brecc 120-121, lt scatt shears throughout
-130	Dol, dk grey, banded, lt scatt shears
-138	Dol, med grey, spotted 135½-138
-152½	Dol, med grey, mott 142½, some pink coloring, banded 150-base, TGS @ base
-161	Dol, lt grey, lt bands, ch @ 153, 153½, 158
-167	Dol, med grey, ch @ 161½, TGS @ 165½
-171	Semi-xl, hvy mott
-180	Dol, med grey, TGS @ 171½
-183½	Dol, lt grey, banded, spotted
-186	Dol, med grey, banded, lt ss @ 184½
-192	Dol, med grey, mott, pink coloring, hvy grn sh @ base
-192½	Chert, blue
-198	Dol, lt-med grey, crackle, few lite shears
-208	Dol, med-dk grey, rubble brecc @ 198½, mott
-209½	Dol, lt-med grey, calcarenite, sandy
-216	Dol, med grey
-220	Dol, med-dk grey, mott, lt ss 219-220, ch @ 219½
-226	Dol, med grey
-235	Dol, lt-med grey, mott, ch @ 228½, 229½, 232
-237½	Dol, med grey, hvy mott, sugary
-245	Dol, dk grey, v. lite bands @ top
-250	Dol, black, hvy mott 245-247, lt mott base
-252	Silica, porous, some grn sh, ss @ base
-259	Dol, med grey, few spots, lt bands, ch @ 256, 257
-259½	Dol, med grey, hvy mott, ch @ base
-265	Dol, med grey, banded, v. lite ss @ 261½, TGS @ base
-277½	Dol, dk grey, mott, blotchy, ch band @ base
-278½	Dol, med grey, mott
-279½	Dol, lt grey, banded, ss over chert oolite @ base
-284	Dol, med grey, few spots, TGS @ base
-289½	Dol, med grey, banded
-290½	Dol, lt-med, hvy bands, scatt ss throughout
-295½	Dol, med grey, blue mott, lt bands, hvy grn sh @ 293 under ss
-299	Dol, med grey, hvy mott
-304	Dol, lt grey, banded, ch nod @ 300

-309 Dol, med grey, hvy mott, TGS @ base, spotted
-318½ Dol, med grey, banded, ss @ 313, hvy ss @ base
-329½ Dol, med-dk grey, mott 318½-325, banded 325-base, ss plus TGS @ base
-331 Dol, lt-med grey, hvy mott
-345½ Dol, med grey, ch nod plus TGS @ 340, hvy ch band @ base
-346½ Dol, dk grey, hvy mott
-353 Dol, med grey, lt bands, hvy bands 351-353, hvy ss plus sed congl @ base
-362 Dol, dk grey (1½' core recovery 354-358), ss over chert @ base
-365 Dol, med grey, oxid @ base, mott
-370 Dol, med-dk grey
-371 Dol, med grey, mott, conglomeratic
-373 Dol, med grey, banded, hvy ss @ 372, 372½-373, scatt ss, TGS @ base, scatt shears 371½-372½
-377½ Dol, lt grey, TGS @ base, lt shears @ 376, scatt open fracts 376-base
-386 Dol, med grey, mott, lt scatt ss @ 384 over TGS
-388½ Dol, med-dk grey, spott, mott
-389 Chert, in part white
-394½ Dol, med grey, lt bands, thin wh ch band @ 389½
-400 Dol, med grey, hvy mott, sugary, from 398 to base very siliceous
-406½ Dol, lt grey, banded, ss @ 402½
-417½ Dol, med grey, darker from 412½-base, mott 412½-base, vugs 414½-416
-418 Chert, white
-420 Dol, lt-med, TGS @ base
-426 Dol, med grey (30% core loss 420-423), banded 420-421, mott 421-426 ch nod @ 421½, lt shears 425-426
-435 Dol, med grey, ch @ 435
-437½ Dol, lt-med grey
-438 Chert, white (437½-440½, 2' core loss)
-448 Dol, med grey, mott 442-base, scatt ss @ 445, 1" grn sh @ base, ch nod under sh
-451½ Dol, lt-med grey, banded, scatt ss @ 449, 449½-450
-455 Dol, med grey, eyelets
-461½ Dol, dk grey, mott 456-458, lt banding 458-460, mott 461
-462 Dol, med grey, hvy mott, ch @ base
-467 Dol, lt grey, mott, eyelets
-470 Dol, med grey, mott 468, TGS @ 468, stronger mott 468-base
-475½ Dol, lt-med grey, mott 473
-481 Dol, med grey, mott, eyelets 477-478½
-485 Dol, med-dk grey, eyelets 483, weak shears 481-482, intense shearing 484-485½, ss @ 485½
-487½ Dol, med grey, mott, ch nod @ 486
-493 Dol, med grey, lt bands 495½-496, lt mott 497-497½, TBS @ base
-501 Dol, dk grey, mott, scatt ss 500½-base, hvy @ base
-511½ Dol, med-dk grey, mott, blotchy, scatt eyelets, ch @ base
-526½ Dol, lt-med grey, CMSS @ 514½, 515, ch @ 515, mott 519½-520, scatt ss 520-520½, 521, sed congl @ 522, scatt ss @ 525½-base, ch over CMSS over TGS @ base
-533 Dol, med grey, ch nod @ 528½, large eyelets @ 538, ch nod @ 538½, lt scatt ss @ base
-535 Dol, lt-med grey, mott (strong), hvy ss @ 533½, scatt ss 533½-base, 10% SiO_2
-536 Chert, white, blue-grey ch @ base
-542 Dol, med grey, bands @ top, mott throughout, TGS @ base
-547½ Dol, med-dk grey, mott 545, eyelets 545, blotchy 545-545½, banded base, scatt ss @ 546-547½
-550 Dol, lt grey, mott, hvy ss 548, scatt ss-base
-555 Dol, med grey, mott
-570 Dol, med-dk grey, vug @ 555½, lt shears @ 565, mott 565-base
-572 Dol, med grey, mott

-575½ Dol, lt-med grey, mott, scatt ss 574½-575, hvy ss @ base
-585 Dol, med-dk grey, mott, ch @ base
-586½ Dol, lt grey, highly siliceous
-590 Dol, med grey, mott
-591 Chert, white
-594½ Dol, lt grey, banded, scatt ss 593½-base
-595½ Chert, white
-598 Dol, med grey, ch @ 596, mott 597½-base, TBS @ base
-601½ Dol, med-dk grey, mott, ch 600½-601
-609 Dol, lt grey, banded
-609½ Chert, white
-618 Dol, med-lt grey, mott, lower 3' banded, TGS @ base
-624½ Dol, med grey, mott
-627 Dol, med-lt grey
-630 Dol, lt-med grey, mott, scatt ss @ base
-648½ Dol, lt-med grey, scatt ss @ top, 631, 633½, silic 633½, mott 630-638½, 642-base
-652 Dol, med-dk grey
-653 Dol, med grey, scatt ss @ top, scatt ss over ch @ base, intense shearing at base
-655 Dol, lt grey
-660 Dol, med grey, ch 657-657½ (white), scatt ss 656½-657½, 658
-671 Dol, med-dk grey, TGS @ 663½, spotted, ch @ 670
-679 Dol, lt-med grey, spotted @ top, ss @ 671½-672, banded 673-675
-684 Dol, med-dk grey, ch @ base
-686 Dol, med grey, spotted 685-base, hvy ss @ 685
-695½ Dol, lt-med grey, lt bands, ch @ 696, scatt ss @ 697-697½
-699 Dol, med grey, mott, ch @ base
-707 Dol, med grey
-713 Dol, med-dk grey, mott 707-709
-714 Dol, dk grey, mott, ch @ base
-717 Dol, lt-med grey, lt banded, ss @ 716½, CMSS @ base
-729 Dol, med grey, mott 721-722, scatt ss @ top, ch nod @ 719, banded 721-721½, TBS @ 722, mott @ base
-743 Dol, lt-med grey
-746 Dol, med grey, mott throughout, ch @ base
-753 Dol, lt-med grey, lt band, intense shearing fault 749-751, ch nod 751, 751½, base
-764 Dol, med grey, banded top to 755, shears 754, 755½-756½, scatt ss @ 755½-756, 756½, 757, Dip 36° @ 753½, (25% core loss 755-765)
-770 Dol, lt-med grey, lt banded, ch @ 767, ss & cong @ 767½, ss over ch over ss @ base
-785 Dol, med grey, TGS over scatt ss over TGS @ base
-796 Dol, lt-med grey, shears @ 787, 789, 790, blue ch @ base
-802 Dol, lt-med grey, banded, scatt ss @ 800½ & 801-802, ch nod @ base
-806 Dol, lt-med grey, mott @ top, ch @ 805½, 2" GS @ base
-810 Dol, lt-med grey, mott throughout, ch nod @ 809
-811 Chert, siliceous gr sh @ top, ch nod w. ch matrix, mm scatt ss
-816 Dol, lt-med grey, mott @ top, ch nod @ base
-819 Dol, med-dk grey, ch nod @ 817½
-820 Dol, med grey, wh ch frags (sed breccia), TGS @ base
-821 Dol, med-dk grey, mott TGS @ base (1/2")
-824 Dol, lt grey
-825½ Dol, med grey
-831½ Dol, lt grey, TGS @ 828, ch @ base

-835 Dol, lt-med grey, banded, scatt ss @ 832½, blue ch 833-834
-841 Dol, lt-med grey, ch @ 836½ & 838, scatt ss @ 838½
-845 Dol, med grey, mott 843-base (37° dip @ 845)
-850 Dol, lt-med grey, banded, scatt ss 849½-850, TGS @ base
-855 Dol, lt-med grey, lt banding 851½-853½, scatt ss 854, 2" GS over ch @ base
-862 Dol, lt-med grey, mott 858-860, eyelets 861-862
-880 Dol, med grey, ch @ 862, TGS @ 862½, scatt ss @ 873½, TGS @ below ss, lt mott 874-base, eyelets @ 876
-880½ Sh, red and green over green
-881½ Dol, dk grey, mott
-883½ Dol, lt-med grey, mott @ top
-888 Dol, med grey, mott red & green, 1" GS @ base
-891 Semi re-xl, med-dk grey, mott
-892½ Re-xl, lt-med grey, re-xl mott
-894½ Dol, med grey, GS & ch nod @ base (ch brecc sealed w. ls)
-894½ Ls, white
-899 Re-xl, sealed w. gr sh, ch, etc. "dry brecc", brecciated ls sealed w. red and green sh @ base
-904½ Ls, lt grey, red & ochre sh @ 902
-905½ Dol, dk grey to reddish, banded @ base
-911 Ls, lt grey, some red coloring
-913½ Re-xl, lt-med grey, TGS @ 912½
-917½ Dol, lt-med grey, mott
-921 Dol, med-dk grey, brecciated, sealed w. white gangue and gr sh
-927 Ls, lt-med grey, TGS @ 921½, 922½, 923½ & base
-929 Dol, med-dk grey
-932 Dol, lt-med grey, mott, brecciated "dry breccia"
-933½ Ch, brecciated
-936 Dol, lt-med grey, brecciated, FeS_2 shines, vug @ 935½
-941½ Re-xl, lt-med grey, brecc (10% core loss 923½-941½)
-951½ Ls, lt grey, ch @ 943½, 950½
-953½ Re-xl, med grey, mott
-954½ Re-xl, lt-med grey
-956 Re-xl, med grey, mott
-959 Re-xl, lt-med grey, mott
-962 Dol, lt-med grey, mott, brecc 960-961, ch @ 961½, ls, lt grey, TBS @ 962½, re-xl 972½-973½, TRS @ 974½
-979 Red coloration to partly re-xl to 976
-980 Re-xl, med grey
-984 Ls, lt grey
-987 Re-xl, med grey, TGS @ 986½
-988 Dol, lt-med grey, blue ch @ base
-1004 Dol, med grey, brecciated, brecciated ch @ 989, red color @ 992½-994, 999, and 1001, vug @ 999½, mott 1000-1004
-1007½ Chert, some re-xl
-1010 Ls, lt grey
-1011 Chert
-1013 Ls, lt grey (30% core loss 1011-1014) Dip 37° @ 1012
-1014 Re-xl, med grey
-1017 Dol, med grey, brecc, sh @ 1014½, GS @ base
-1018½ Re-xl, med grey
-1019 Dol, med grey
-1020½ Re-xl, med grey, mott, sh @ base
-1022 Dol, lt-med grey, ch @ 1021, hvy CMSS over ch @ base

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DATE	INITIALS	CODE
9-14	gad	VVO
		VVO
9/14		800
9-15		500

INTERIM REPORT

DMEA-4580, Idm-E1088-Zinc

Operator: B. H. Putnam, Operator, Box 65, Thorn Hill, Tennessee

Location: Puncheon Camp Creek Area, Grainger County, Tennessee

Summary of drilling completed

	Since last inspection	To date
Number of holes	1	59 53
Footage	1,125	34,400 31,046

Number of holes showing:

(a)	Commercial-grade zinc mineralization	11
(b)	Non-commercial zinc mineralization	29
(c)	No zinc mineralization	19

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

Hole GD-32: Located on the Green-Dalton property approximately southwest from Hole GD-31. Coordinates: 48,960-N; 47,062-E. Collar elevation: 1,242 feet A.T. Drilling started: 7/2/59; completed: 8/7/59. Total depth: 1125 feet. Summary log: 0-10 overburden; 10-27 Chickamauga limestone; 27-763 Mascot dolomite; 763-1039 Kingsport formation (TR @ 935); 1030-1125(bottom of hole) Longview dolomite. Mineralization: Shine hole. 1011-1023½ (12½') estimated at 1.25% Zn; 1034½-1037 (2½') estimated at 2.5% Zn.

Drilling in progress

Drilling is now in progress on Hole GD-33, located approximately 400 feet south of Hole GD-16 on a dip fence extension. It was collared in the Mascot dolomite and at the time of inspection was drilling in Mascot at a depth of 195 feet.

Inspected: Aug. 13, 1959

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey (OME)

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

Budget Bureau No. 42-R1036.5

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

AUG 26 1959 O.M.E.

PAID ON VOUCHER & SCHEDULE OF PAYMENTS K-

OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of July, 1959 Docket No. DMEA 4580 Contract No. Idm-E-1088
Operator's Name B. H. Putnam Minerals Zinc
Address 512 Third Street, Marietta, Ohio
Contract Amount, $170,125.00 Government Participation: 50 % Amount, $85,062.00

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:						
Drilling	$3375.00	$89,763.00	$93,138.00	9/8/59. W.H.K.		
Bulldozing						
Crosscutting						
Drifting						
Reaming	—	2,102.00	2,102.00			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
Core boxes	—	290.25	290.25			
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis	—	247.50	247.50			
Payroll Taxes						
Liability Insurance						
(8) Contingencies (specify): Incid. allow. @ .18/ft.	202.50	5,385.78	5,588.28			
TOTALS	$3577.50	$94,788.53	$98,366.03	3577.50	97,788.53	101,366.03

I certify that the above bill is correct and just and that payment therefor has not been received.
Date July 1959 *Payee B. H. Putnam
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:
$ 1788.75
Signature [signature] (Authorized Certifying Officer)
Date AUG 24 1959 Vou. No. 9
(See other side)

1788.75

(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. E-1088 in accordance with the terms of the contract.

Signature [signature] Title MINING ENGINEER U. S. BUREAU OF MINES Date AUG 20 1959

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert A. Lawrence Title EXECUTIVE OFFICER OME FIELD TEAM REGION V Date AUG 20 1959

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

AUG 26 1959
O.M.E.

OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of July 1959 Docket No. DMEA 4580 Contract No. Idm-E-1088
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	$3375.00	1125	$93,138.00	31,046	3.00	50,000	3.00
Reaming	Foot	—	—	2,102.00	1,051	2.00	5,000	2.00
Sampling	Each	—	—	247.50	198	1.25	500	1.50
Core boxes	Each	—	—	290.25	150	1.935	150	2.00
Trenching								
Test Pits								
Incid. allow. @ .18/ft.	Foot	202.50	1125	5,588.28	31,046	.18	50,000	.18
Total Distributed Costs		$3577.50		$98,366.03				Total Costs Authorized by Contract
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
Total Costs		$3577.50		$98,366.03				

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 1959 Operator B. H. Putnam

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)

[signature]

GEOLOGIST, U. S. G. S.

AUG 20 '59

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 Puncheon Camp
Creek Project, Grainger County, Tennessee

July 1959
by W. T. Hill

Docket No. 4580
Contract No. Idm-E 1088

During the month of July one hole was drilled on the Puncheon Camp Creek Project. Hole GD-32 was drilled on a strike fence 100 feet southwest of GD-31. The hole collared in the Mascot formation and was drilled to a depth of 1125 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-10	Overburden	----	----	--
10-763	Mascot	CM @ 763	----	Dolomite
763-1039	Kingsport	"R" @ 935 "S" @ 994 "T" @ 1039	1011-1023½, Est. 1½% ZN; 1034½-1037, Est. 2½% ZN	Dolomite & re-xl; some brecciation
1039-1125	Longview	"U" @ 1051 "V" @ 1070	----	Dolomite, re-xl, limestone; 1104-1113, Est. 2½% FeS

Drilling is now underway at site GD-33, located on a dip fence 400 feet south of GD-16.

EXTRA COPY
O. M. E.
RECEIVED AUG 26 1959

DATE	INITIALS	CODE

B. H. Putnam DD-GD-32

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm-E 1088

Hole No.: GD-32 Collared: 7/3/59

Farm: Green-Dalton Bottomed: 8/7/59

Location: N 48,960.21 Depth 1125'

E 47,062.08 Casing: BX-10'; AX-30'

Elevation: 1242.33 Reaming: None

Drilled by: Putnam Drlg. Co. Cement: None

Logged by: W. T. Hill

Top Kingsport	764
Top "R" Bed	935
Top "S" Bed	982
Base Kingsport	1039

0-10	Overburden
-27½	Ls, Mosheim, some greenish color, good chert and dol congl @ base
-44	Dol, med grey, mott 27½-29, ch nod 42, 42½, 43½
-47½	Dol, dk grey, mott, vuggy, hvy ch band @ base
-49½	Dol, med-dk grey
-53½	Dol, med grey, greenish mott, grn sh @ 52
-58	Dol, lt-med grey, lt bands, oxid @ 54½, ch @ 55½, BP fault @ base
-59½	Dol, med grey, banded, ch band @ 58½
-61	Dol, lt & dk grey, conglomeratic
-63½	Dol, lt grey, mott
-66	Dol, dk grey, mott, bands @ base
-69	Dol, med grey, lt bands, vuggy, TGS @ base
-71	Dol, med grey, ch nod @ 70, TGS plus ch @ base
-73	Dol, med grey, hvy mott, TGS @ base
-79	Dol, lt-med grey, dk toward base, banded, sed brecc @ top
-81	Dol, med grey
-82½	Dol, black
-85½	Dol, med grey, spotted (2' core loss 82-88), ch Nods @ base
-86	Chert, grey & white
-92	Dol, med grey, ch nods 87, broken core
-99	Dol, dk grey, mott, and spotted
-105	Dol, black, asphaltic, hvy mott & vuggy 99-102, mott - base
-111½	Dol, dk grey mott, asphaltic
-114	Chert, med-dk grey, looks like calcarenite
-115½	Dol, med grey, calcarenite
-119½	Chert, some dol, med grey, looks like calcarenite, some asphalt, porous
-121	Dol, med grey, calcarenite, porous, conglomeratic near base
-125½	Dol, dk grey, mott
-131	Dol, med grey, spotted, TGS @ base
-134	Dol, lt grey, lt bands
-138	Dol, med grey, blue mott, TGS @ 136, 136½, 138
-139½	Dol, lt grey, cream colored, red breccia @ base
-144	Dol, med grey, banded, ch nod @ 140, hvy ch band @ base
-149	Dol, med grey, hvy bands, ch nod @ 146
-153	Dol, med-dk grey, lite mott
-154	Chert, grey
-155	Dol, lt-med grey
-164	Dol, med grey, mott, hvy grn sh @ base, dip - 35°
-168½	Dol, med-dk grey, banded, TGS under brown ch congl @ base
-169½	Dol, dk grey
-171	Shale, green, dolomitic
-175	Dol, lt grey, cream colored, siliceous @ top
-178	Dol, lt-med grey, TGS under ch @ base, shears @ 176½
-186	Dol, dk grey, banded, few calcite eyes, scatt shears 184-185
-194	Dol, med-dk grey, congl @ base
-207	Dol, med-dk grey, pinkish mott 195-197, 202-base, v. lite ss @ base
-211	Dol, med grey, banded, hvy grn sh plus v. lite ss @ base
-217	Dol, lt grey, banded 211-213, ch nods @ 211, 212, 213, 213½, very cherty 215-216½, ch nod @ base
-223½	Dol, med-dk grey, TGS @ 220½, 221½, 222½
-224½	Dol, med grey, hvy mott
-234	Dol, med grey, lt bands, thin ch band 228½, TGS @ 230, hvy blk sh @ base
-238	Dol, dk grey, TGS @ base
-240½	Dol, lt-med grey, banded, TGS @ base

-242 Dol, lt-med grey, hvy bands, spotted, lt scatt ss plus TGS @ base
-246 Dol, lt-med grey, lt mott, grn sh @ base
-255 Dol, med grey, banded, ch nod @ 249, 255, grn sh @ 250½
-265½ Dol, med grey, mott, dk from 255-256
-266½ Dol, med grey, sed congl with lt ss
-271½ Dol, med grey, lt mott, TGS @ 269
-273½ Dol, dk grey, lt mott
-275½ Dol, med grey, banded, v. lite crackle with some grn sh, TBS @ base
-277½ Dol, dk grey, lt ss plus ch @ base
-281½ Dol, med grey, lt bands, ch nod @ base
-284 Dol, lt-med grey, silic @ top, ch nod @ 284
-295 Dol, lt-med grey, mott 281½-287, hvy mott 287-base, porous
-299 Dol, dk grey, spotted, v. lt bands
-306 Dol, dk grey, hvy mott, grn sh in joints 302½, 303½
-306½ Chert, white
-318 Dol, lt-med grey, ~~[illegible]~~ lt bands - 315
-329 Dol, med-dk grey, hvy mott, blotchy
-332½ Dol, lt grey, hvy bands, siliceous @ 329-330, ch nod @ 331½, lt ss @ 332½
-336 Dol, med grey, mott - 336
-337 Dol, med grey, shaly & mott
-346 Dol, med grey, mott
-347 Dol, lt-med grey, lt bands, lt ss @ 340½, dk 339-340, lt ss @ 344, TGS @ base
-349 Dol, med grey, mott, sugary @ base
-354 Dol, lt grey, banded, TGS plus ch @ base
-359 Dol, lt-med grey, lt mott, spotted, TGS plus lt ss @ base
-362 Dol, lt grey, banded, few eyelets
-368½ Dol, med grey, banded, v. lite ss @ 363, TGS @ base
-372½ Dol, med grey, mott, lt ss @ 369
-374½ Dol, lt grey, banded, TGS @ base
-377 Dol, lt grey, TGS @ base
-380 Dol, med grey, darker toward base, lt bands, lt ss 378½-379
-381½ Dol, med grey, hvy mott
-383 Dol, dk grey, mott, lt ss @ base
-388½ Dol, med grey, darker toward base, TGS @ base
-393 Dol, med grey, hvy grn sh under lt ss @ base
-393½ Chert, blue, TGS @ base
-398 Dol, med grey, lt bands, TGS @ base
-399½ Dol, lt grey, hvy bands, hvy ss throughout
-404½ Dol, med-dk grey, mott 401½-404½
-405½ Dol, dk grey, hvy mott
-409½ Dol, med grey, ch nod @ base
-411 Dol, lt grey, lt bands
-418 Dol, dk grey 411-415, med 415-base, hvy mott 411-413, lt bands 413-base
thin shear 417½
-422 Dol, lt-med grey, banded, TGS @ base
-425½ Dol, v. lite grey, hvy grn sh & v. lite ss @ base
-437 Dol, med grey, hvy mott, ss @ 433
-438½ Chert, white
-444 Dol, med grey, dk brown 440½-base, lt bands
-447½ Dol, med-dk grey, hvy mott, sugary, grn sh @ base
-454½ Dol, med grey, eyelets, bands, TGS @ base, lt ss @ 451
-461 Dol, med-dk grey, mott, few spots
-461½ Chert, white
-469 Dol, med grey, lt bands, ch @ base
-470½ Dol, lt-med grey, very cherty
-477½ Dol, med-dk grey, mott, spotted
-485½ Dol, med grey, siliceous @ base

-488 Dol, lt grey, banded
-489 Chert, white
-491 Dol, med grey, lt ss @ base
-491½ Dol, med grey, hvy mott
-495 Dol, lt grey, mott, hvy ss plus TGS @ base
-497 Dol, med grey, hvy mott
-501½ Dol, lt grey, mott, ss 499½-500½, TGS & ch @ 500½, TGS @ base
-505½ Dol, med grey, lt mott, spotted, TBS @ base
-509½ Dol, dk grey, hvy mott
-516 Dol, med grey, mott, spotted, TGS over ch congl @ base
-518 Dol, med grey, hvy mott
-521 Dol, lt grey, broken & ground
-533½ Dol, med-dk grey, lt mott, TGS plus lt ss @ base
-539 Dol, med-dk grey, hvy mott, sugary ch @ 537½, 539
-544½ Dol, med grey, ch @ 539½, 540, 540½, banded 539½-base, lt ss 543½
-547 Dol, black, mott, spotted
-549½ Dol, med-dk grey, hvy mott, ss @ base
-556 Dol, med grey, mott, blotchy, siliceous
-561 Dol, dk grey, mott, spotted, TBS @ base
-564½ Dol, lt grey, banded, hvy ss (some OM) @ 564½, TGS @ base
-567½ Dol, med grey, TBS @ base, ch nod @ 565½
-568½ Dol, med grey, banded, hvy ss over TGS @ base
-573½ Dol, lt grey, banded, ss 572-573½, hvy OM @ 573½
-581 Dol, med grey, lt ss @ base, ch nod @ 576, 576½
-583 Dol, lt grey, sed breccia with ss, siliceous
-584½ Chert, white
-586 Dol, lt-med grey, banded, ch oolite @ 585
-594 Dol, med-dk grey, mott, lt ss @ base, darker toward base
-597½ Dol, lt-med grey, hvy mott, conglomeratic, porous, ss @ 595½
-599½ Dol, med grey, hvy mott
-612½ Dol, dk grey, hvy mott 599½-601½, spotted, 6" BP fault @ base
-619 Dol, dk grey, mott
-620 Dol, med grey, hvy mott, lt ss @ top
-623 Dol, lt grey, mott, hvy ss plus TGS @ base
-632 Dol, med-dk grey, mott, spotted
-633½ Dol, lt grey, very siliceous, lt ss @ 632½
-636 Dol, med grey, mott, sugary
-637 Dol, dk grey
-637½ Chert, white & blue
-641 Dol, lt grey, banded, lt ss @ 640, chert @ 640
-641½ Chert, white
-647 Dol, lt-med grey, blue mott, sugary toward base, lt ss @ base
-647½ Chert, blue
-651½ Dol, lt grey, banded, ch nod @ 650, 650½, 651½
-655½ Dol, med grey, ch nod @ 653
-656 Chert, smoky
-664 Dol, lt grey, banded, v. lite scatt ss 660-662
-665 Dol, lt grey, mott
-670 Dol, med grey, mott, TGS plus lite ss @ base
-675½ Dol, med grey, hvy mott, TGS plus lite ss @ base
-679 Dol, lt-med grey, hvy mott, lt ss 675½-676, grn sh seen 676-677, lt ss 679
-687½ Dol, med grey, ch @ 680½, 681½, 682
-692½ Dol, med grey, hvy mott
-699½ Dol, med-dkgrey, lt bands, hvy grn sh under hvy ss @ base
-705½ Dol, lt grey, hvy mott, ch oolite @ 705
-709 Dol, lt-med grey, lite mott, spotted, TGS @ base

-718	Dol, dk grey, spotted, TGS @ base
-720	Dol, dk grey, hvy mott, hvy ss plus oolitic ch plus hvy grn sh @ base
-729½	Dol, dk grey, CMSS @ base
-731	Dol, med grey, hvy grn sh & ss @ base
-733½	Dol, med grey, mott, vuggy 731-732, hvy grn sh plus ss @ base
-742	Dol, med grey, lt bands, crackle 740-741½, hvy grn sh @ 742
-743½	Dol, dk grey, mott, ch congl plus TGS @ base
-748½	Dol, lt grey, banded, ch nod @ 744
-753	Dol, med grey, lt mott, grn sh @ base
-760	Dol, dk grey, spotted, TBS @ base
-761	Dol, dk grey, hvy mott
-763½	Dol, med grey, v. lite bands, hvy ss @ base under TBS
-768	Dol, med grey, spotted, hvy ss 763½-764, shaly @ base
-769½	Dol, med grey, hvy mott, TGS @ base
-788	Dol, med grey, spotted, lt ss @ 783
-793½	Dol, dk grey, mott, ch nods @ 791½
-799	Dol, lt-med grey, banded, ch nod @ 794, 796, 797
-805	Dol, med grey, banded, ss @ 803½, 805, TGS @ 805
-809	Dol, med grey, mott, TGS @ base
-812	Dol, v. lite grey, lt open shears 809-810½
-814	Dol, med grey, banded, hvy ss over chert oolite @ base
-815	Dol, lt grey, banded, hvy ss @ base
-830½	Dol, med grey, spotted 815-817, mott 817-827½, spotted 827½-base ch nod @ 820½(oolite), TGS @ base
-835½	Dol, lt grey, mott, hvy grn sh @ base, ch nod @ 834½
-841	Dol, lt-med grey, darker toward base, ch nod @ 840
-847	Dol, med grey, banded, ss 846½-847, hvy grn sh @ base
-852	Dol, lt grey, lt banding, 6" ch @ 847½, hvy grn sh @ base
-857	Dol, med grey, mott
-858½	Dol, lt grey, hvy ss plus blue ch @ base, ch nod @ 858
-859	Chert, white, banded
-868½	Dol, med grey, ch nod @ 861½, 862, 867½, ch ss @ base, TGS @ base
-875	Dol, lt-med grey, v. lite bands, ch nod @ 874
-876½	Dol, med grey, hvy mott
-880	Dol, med grey, few lite gangue fracts
-882	Dol, lt-med grey, hvy bands, ss @ base
-882½	Chert, blue
-892½	Dol, lt grey, v. lite bands, ch nods @ 884½, 885½, 886½, 887½, lt shears 885½-887½
-896	Dol, med grey, hvy mott, blue ch 892½-893, blue ch @ base
-900½	Dol, lt grey, banded, spotted, ch nod @ 896½, TGS plus lt ss @ base
-901	Dol, med grey
-906	Dol, lt-med grey, banded, v. lt ss 905-906, hvy grn sh @ base
-908	Dol, lt grey, v. lite bands
-927	Dol, med grey, hvy mott 908-910, 6" wh ch @ 919, ch nod @ 916, grn sh plus ss @ base
-935	Dol, lt-med grey, hvy mott, v. lite ss @ base
-936½	Shale, dk grn, thin xl @ base
-941	Dol, med grey, banded & mott, sugary
-943½	Dol, med grey, rubble, sealed with hvy grn sh, thin re-xl @ base
-945½	Dol, lt grey, banded
-948½	Re-xl, dk, hvy ss plus ch frags @ top, mott
-950	Dol, lt-med, mott, sugary
-952	Re-xl, dk, mott, grn sh @ base

-957	Dol, med grey, banded, rubble 952-954½ with grn sh filling, ss @ 953
-959½	Re-xl, brn
-965½	Semi-xl, lt-med grey, mott
-966	Re-xl, brn
-969	Dol, lt-med, banded & mott, sugary
-971½	Re-xl, dk, greenish
-972	Shale, grn
-977	Dol, lt-med grey, lt mott, lt shears 974-977
-982	Dol, dk grey, mott, rubble
-986	Re-xl, very coarse grained, black & white, hvy jasperoid, dol & ch, breccia blocks throughout
-988½	Silic, fault zone, steep L., some re-xl
-994½	Dol, lt-med, lt bands, brecc with gangue & re-xl
-1001	Re-xl, brn, blk & white @ base
-1011	Dol, med grey, lt bands, crackle, some gangue & re-xl, ch nod @ 1004½, 1009, 1010½, lt crackle 1006-1008
-1020	Re-xl, brn, coarse, siliceous @ top, rubble 1014-1017, <u>1011-1020 Est. 1½% ZN</u>
-1021½	Dol, med grey, banded, crackle, ss @ base
-1022½	Jasperoid, black, thin ls @ base
-1039	Re-xl, brn, mott, silic @ top (jasperoid), lt crackle throughout, <u>1022½-1023½, Est. 3% ZN</u>, lt dol block @ 1028½ plus lt ss, <u>1034½-1037, Est. 2½% ZN</u>
-1051	Dol, med-dk grey, few spots, ch nods @ 1041½, 1045, 1046, thin re-xl @ 1049½, chert oolite @ base
-1058	Dol, med grey, hvy mott, v. lt ss @ base
-1061	Re-xl, dk brn, limy, thin ss @ base
-1070	Limestone, brn
-1071½	Dol, med-dk grey, eyelets, lt ss plus hvy grn sh @ base
-1072	Re-xl, brn
-1089	Dol, med grey, lt bands, spotted, ch @ 1074½, 1076, 1080, 1081, hvy ss @ 1076½, thin sh plus lt ss @ 1087, mott 1087-base
-1090	Re-xl, brn, hvy mott, scatt ss @ base
-1095	Limestone, brn, shaly, ch plus ss plus sh @ 1094
-1096	Re-xl, brn, coarse, wh ch @ base
-1097	Dol, lt grey, ch @ 1096½
-1099	Re-xl, brn
-1101	Dol, lt grey, lite ss plus sh @ base
-1102½	Re-xl, brn, coarse, mott
-1104	Semi-xl, med grey, mott, lt crackle
-1114	Dol, lt-med grey, rubble, est. 2% FeS 1104-1113, lt ss @ base
-1114½	Re-xl, brn, siliceous
-1115½	Chert, blue & white
-1118	Re-xl, brn, vuggy, ch nod @ 1117
-1119	Dol, banded, shaly, lt ss 1118½-1119
-1121½	Re-xl, dk brn, silic 1119-1120, ch nod @ base
-1123½	Dol, med grey, crackle
-1125	Dol, lt-med grey, 1123½-1124½, shale breccia plus hvy ss

Invoice

Marietta, Ohio

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

July 1959

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Puncheon Camp Creek Project DMEA Contract No. 4580 - July 1959

Core Hole No. CD-32

Footage drilled	1125'	@ $3.00/ft.	$3375.00

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

B. H. Putnam, Operator

by: A. R. Eddy
A. R. Eddy
Drilling Superintendent

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
REGION V

ELECTROTECHNICAL
EXPERIMENT STATION

P. O. BOX 217
NORRIS, TENNESSEE

July 29, 1959

Memorandum

To: E. D. Talbert, Office of Minerals Exploration, Interior Building, Washington 25, D. C.

From: Administrative Assistant, Norris, Tennessee

Subject: Monthly report and voucher

We are enclosing two copies of the following monthly report and voucher:

Idm-E1088 B. H. Putnam
Docket No. DMEA-4580
19th payment - month of June
Amount $1707.15

Helen R. Miller

Attachments
/hbm
Copies to R. A. Laurence
V. J. Lynch
Norris files
Day files

OFFICIAL FILE COPY
O. M. E.
RECEIVED JUL 31 1959

DATE	INITIALS	
7-31	gad	vvo
"		110

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-

JUL 31 1959 O.M.E.

OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of June, 1959 Docket No. DMEA 4580 Contract No. Idm-E 1088
Operator's Name B. H. Putnam Minerals Zinc
Address 512 Third Street, Marietta, Ohio
Contract Amount, $170,125.00 Government Participation: 50% Amount, $85,062.00

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:						
Drilling	$3201.00	$86,562.00	$89,763.00	Aug 3/59	W.P.K.	
Bulldozing						
Crosscutting						
Drifting						
Reaming	---	2,102.00	2,102.00			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
Core boxes	---	290.25	290.25			
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis	21.25	226.25	247.50			
Payroll Taxes						
Liability Insurance						
Incid. allow. @ .18/ft.	192.06	5,193.72	5,385.78			
(8) Contingencies (specify):						
TOTALS	$3414.31	$94,374.22	$97,788.53	3414.31	94,374.22	97,788.53

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

Date 6/30/59 *Payee B. H. Putnam

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:

$ 1707.15

Signature [signature]
(Authorized Certifying Officer)

Date JUL 29 1959 Vou. No. 6
(See other side)

19

1707.16

(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-1088 in accordance with the terms of the contract.

Signature R. J. Lynch Title MINING ENGINEER U. S. BUREAU OF MINES Date JUL 27 1959

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert A. Lawrence Title EXECUTIVE OFFICER OME FIELD TEAM REGION V Date JUL 27 1959

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 1962)

Budget Bureau No. 42-R1151.2

JUL 31 1959
O.M.E.

UNITED STATES
DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION

OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of June 1959 Docket No. DMEA 4580 Contract No. Idm-E-1088
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	$3201.00	1067	$89,763.00	29,921	3.00	50,000	3.00
~~Core~~ Reaming	Foot	---	--	2,102.00	1,051	2.00	5,000	2.00
~~Core~~ Sampling	Each	21.25	17	247.50	198	1.25	500	1.50
~~Storage~~ Core boxes	Each	---	--	290.25	150	1.935	150	2.00
Trenching								
Test Pits								
~~Roads and Trails~~ Incid. allow. @ .18/ft	Foot	192.06	1067	5,385.78	29,921	.18	50,000	.18
TOTAL DISTRIBUTED COSTS		$3414.31		$97,788.53				TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS		$3414.31		$97,788.53				

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 6/30/59 Operator B. H. Putnam

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)

[signature]
GEOLOGIST, U. S. G. S.
JUL 24 '59

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 Puncheon Camp
Creek Project, Grainger County, Tennessee

June 1959
by W. T. Hill

Docket No. 4580
Contract No. Idm-E 1088

During the month of June one hole was drilled on the Puncheon Camp Creek Project. Hole GD-31 was drilled on a strike fence 100 feet southwest of GD-30. The hole collared in the Mascot formation and was drilled to a depth of 1067 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-10	Overburden	——	——	—
10-730	Mascot	CM @ 730	——	Dolomite
730-1006	Kingsport	"R" @ 893 "S" @ 958 "T" @ 1006	956½-969½, 13'-1.51% 985½-1005½, 20'-0.9%	Dolomite & re-xl in part brecciated
1006-1067	Longview	"U" @ 1019 "V" @ 1033	1024-1031, 7'-3.08% 1049-1050, 1'-1.68%	Dolomite & re-xl, in part brecciated

Drilling is now underway @ GD-32 100 feet southwest of GD-31.

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DATE	INITIALS	CODE

ENGINEERS
INSPECTIONS and TESTS

The Bruce Williams Laboratories

ESTABLISHED 1898

MAIN OFFICE AND LABORATORIES 618-624 JOPLIN ST. TELEPHONE MAYFAIR 3-556

JOPLIN, MISSOURI

BATESVILLE, ARKANSAS

ST. LOUIS, MISSOURI

CHEMISTS
INDUSTRIAL and ANALYTICAL

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PICKEL, OKLAHOMA

DATE	INITIALS	CODE

B. W. Putnam
P. O. Box 65
Thornhill, Tennessee

4-30-59

806798 Sample GD-27-1

Zinc 706-707½ Zn 3.20

$1.25

cf/nls 69-568

THE ABOVE FIGURES ARE AS DETERMINED IN OUR LABORATORIES
ADDRESS ALL COMMUNICATIONS TO JOPLIN, MISSOURI

Bruce Williams

ENGINEERS
INSPECTIONS and TESTS

The Bruce Williams Laboratories

CHEMISTS
INDUSTRIAL and ANALYTICAL

ESTABLISHED 1898

MAIN OFFICE AND LABORATORIES 618-624 JOPLIN ST TELEPHONE MAYFAIR 3-1556

JOPLIN, MISSOURI

BATESVILLE, ARKANSAS ST LOUIS, MISSOURI PICHER, OKLAHOMA

B. H. Putnam
P. O. Box 65
Thorn Hill, Tennessee

6-20-59

				ZINC Zn		
809550	#1	GD-29		14.42		
551	#1	GD-30	919-920	20.20	15'e 6.88%	19'e 5.88%
552	#2	GD-30	920-926	1.52		
553	#3	GD-30	926-934	9.24		
554	#4	GD-30	934-938	2.10		
555	#5	GD-30	968-970	2.50		

THE ABOVE FIGURES ARE AS DETERMINED IN OUR LABORATORIES 70-143
ADDRESS ALL COMMUNICATIONS TO JOPLIN MISSOURI

7.50

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ENGINEERS
INSPECTIONS and TESTS

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INDUSTRIAL and ANALYTICAL

MAIN OFFICE AND LABORATORIES 618-624 JOPLIN ST. TELEPHONE MAYFAIR 3-1556

JOPLIN, MISSOURI

BATESVILLE, ARKANSAS — ST. LOUIS, MISSOURI — PICHER, OKLAHOMA

B. H. Putnam
P.O. Box 65
Thorn Hill, Tennessee

7-8-59

			Zinc Zn	
810301	GD-31-1	956½ - 959½	4.16	13½'-1.51%
302	2	959½ - 966	0.24	
303	3	966 - 969½	1.80	
304	4	983½ - 990½	0.74	10½'-0.66%
305	5	990½ - 992½	0.44	
306	6	992½ - 996	0.68	
307	7	996 - 1001	1.10	9½'-1.14%
308	8	1001 - 1005½	1.20	
309	9	1024 - 1031	3.08	7'-3.08%
310	10	1049 - 1050	1.68	1'-1.68%

20'-0.89%

$12.50

70-317 FC/msd

THE ABOVE FIGURES ARE AS DETERMINED IN OUR LABORATORIES
ADDRESS ALL COMMUNICATIONS TO JOPLIN, MISSOURI

Bruce Williams

H. H. Putnam DD-GD-31

Copper Ridge Project - Punchbowl Camp Creek

DMTA Idm-F 1088

Hole No.: GD-31 Collared: 6/12/59

Farm: Green-Dalton Bottomed: 7/2/59

Location: N 49,886.21 Depth: 1067'

E 47,125.46 Casing: BX-10', AX-30'

Elevation: 1,233.87 Reaming: None

Drilled by: Putnam Drilling Company Cement: 2 bags

Logged by: W. T. Hill

Top Kingsport	730
Top "R" bed	893
Top "S" bed	958
Top "T" bed	1006
Top "U" bed	1019
Top "V" bed	1033

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DATE	INITIALS	CODE

0-10 Overburden
-17 Dol, med grey, banded, white ch nods @ 15, TGS @ base
-22½ Dol, med-dk grey, hvy mott, vuggy
-34 Dol, med grey, lt mott, some red coloring
-36 Dol, lt & dk grey, hvy mott
-40 Dol, med grey, mott, lt shear @ 39
-45 Dol, med grey, v. lite banding, few spots
-50 Dol, lt-med grey, mott @ top, lt shear @ 49
-55 Dol, dk grey
-57 Dol, med grey, ch nod @ base
-58 Dol, dk grey, mott
-63 Dol, med grey, banded, shear @ 59, TGS @ base
-63½ Chert, green
-87 Dol, dk grey, vuggy, blotchy, mott
-92 Chert, black, fragmental, asphaltic
-94½ Dol, med grey, spotted, mott
-96½ Dol, black, mott
-99 Dol, med-dk grey, few spots
-100 Dol, med grey, grn mott
-104 Dol, lt-med grey, TGS @ base
-105½ Dol, med grey, grn mott
-111 Dol, lt grey, thin ss @ base
-115 Dol, med-dk grey, ch nod plus grn sh @ base
-118 Dol, med-dk grey, crackle with grn sh filling
-118½ Chert, white
-124 Dol, med grey, mott
-124½ Chert, white
-130½ Dol, dk grey
-134 Dol, med grey, v. lite mott
-140 Dol, med-dk grey, mott
-141½ Dol, dk grey
-145 Dol, med grey, TGS @ base
-146 Dol, lt grey, lt mott
-147 Dol, lt grey, banded
-148½ Dol, lt-med grey, chert @ base
-150 Dol, med grey, fault gorge, low angle
-165½ Dol, dk grey, few spots, v. lite bands
-167 Dol, dk grey, mott
-169 Dol, med-dk grey
-174½ Dol, dk grey, grn sh @ 174½, lt ss plus TGS @ base
-180 Dol, med-dk grey, banded
-185½ Dol, lt grey, ch nods @ 181, 181½, 182 (smoky nods), 183½, 184, 184½, 185½, white ch band @ 185½
-188½ Dol, med grey, mott, liter toward base (black bands), ch @ 188, 188½, TGS @ 188½
-195 Dol, med grey, v. lite banding, spotted 193-193½, TGS @ 194, 195
-198 Dol, med-dk grey, hvy mott, spotted, fragmental
-201 Dol, med grey, lt mott, v. lite bands, TGS @ base
-203 Dol, lt-med grey, TGS @ base
-209 Dol, med grey, pink mott 206½-209, TGS @ 205, 209
-210 Dol, med grey, hvy mott
-213½ Dol, lt-med grey, banded, pink bands 212½-213
-220½ Dol, lt grey, lt-med grey 217-base, mott, 4" band white chert @ base (in part oolitic)

-223½ Dol, med grey, mott, ch @ 222½
-226½ Dol, black, mott
-229½ Dol, lt-med grey, banded
-233 Dol, lt-med grey, mott, TGS @ base
-235 Dol, med grey, hvy mott, TGS @ base
-236 Chert, med grey, mott (on 1st inspection, appears to be dol)
-237 Dol, med grey, sed congl plus scatt ss
-241½ Dol, med grey, darker toward base, TGS @ base
-246 Dol, dk grey, 241½-244, med 244-base, hvy grn sh @ base
-253½ Dol, med grey, spotted, TGS @ base
-260½ Dol, lt grey, mott
-263 Dol, med-dk grey, hvy mott
-269 Dol, med grey, lt blotches, ch @ 267, TBS @ base
-275½ Dol, dk grey, hvy mott to 273, lt 273-base, spotted
-277 Chert, white, upper part fragment, traces chalcopyrite & malachite
-289 Dol, med grey, v. lite bands, TGS @ 283, 286, 287, 289, ch nod @ 282-base
-297½ Dol, med-dk grey, hvy mott, blotchy, silic
-303 Dol, med-dk grey, mott @ 299-300, banded 301-303, ch nods @ 302 ss @ 300
-306½ Dol, med grey, spotted
-307 Dol, med-dk grey, shaly
-309 Dol, lt-med grey, mott
-311½ Dol, lt-med grey, banded, TGS @ 311, lt ss 311-311½
-313 Dol, lt-med grey, TBS @ 313
-314½ Dol, med grey, mott
-318 Dol, med grey, banded, ss 314½-315½ (Hvy @ 315½)
-319½ Dol, med grey, mott
-327 Dol, lt grey, lt bands 319½-322, mott 325-327
-329 Dol, med grey, hvy mott, TGS @ 328½, 329, spotted
-332 Dol, lt grey, mott
-338 Dol, lt grey, banded, lt ss @ 334, hvy grn sh @ base
-340½ Dol, lt-med grey, hvy ss over hvy grn sh @ base
-343½ Dol, med grey, mott, TGS @ base
-345½ Dol, lt grey, banded, v. lite ss @ base
-348½ Dol, med grey, banded, hvy ss plus TGS @ base
-351 Dol, med-dk grey, mott, TGS @ base
-358½ Dol, med grey, blk sh @ 351½, 353, v. lite ss @ 353½, thin ch band between grn sh @ base
-363½ Dol, med grey, banding 361-363½, lite ss plus TGS plus ch band @ base
-369½ Dol, lt grey, mott 363½-365½, banding 367-369½, ss 368½-369½, hvy @ base, TGS @ base
-375½ Dol, med-dk grey, mott 370½-base, vuggy @ 370½
-378½ Dol, lt-med grey, lt mott, dk toward base, TGS plus ch @ base
-381½ Dol, lt grey, lt bands
-382½ Dol, med grey, mott & shaly
-387½ Dol, dk grey, lt bands, TGS @ base
-391 Dol, lt grey, lt bands, v. lite ss 389-390, TGS @ 389, base
-395 Dol, v. lite grey, TGS plus lite ss @ base
-396½ Dol, med grey, blue mott, hvy grn sh @ base
-400 Dol, lt-med grey, lt mott, TGS @ base
-402 Dol, lt-med grey, blue mott, ss @ 401
-406 Dol, med grey, mott & banded, lt ss near base
-407 Chert, white
-412 Dol, med-dk grey, banded 407-409, TGS @ 409

-416 Dol, med-dk grey, hvy mott, sugary
-422 Dol, lt-med grey, banded, spotted 416-419, TGS plus ss @ 419, lt ss @ 421½, TGS @ 422
-431 Dol, med-dk grey, mott, dk toward base, lt ss @ base, hvy bands FeS @ 426
-431½ Chert, white, oolitic
-437 Dol, med grey, banded, TGS @ base
-442 Dol, med grey, hvy mott, vuggy & silic. 437-438½, TGS @ base
-450 Dol, med-dk grey, mott
-452 Dol, med grey, mott & banded, TGS plus hvy ss @ base
-455 Dol, med grey
-456½ Chert, white
-460 Dol, med grey, TGS plus ss @ base, thin wh ch band @ base
-464½ Dol, med grey, hvy mott, TGS @ base
-465½ Ss-xl, lt greenish-brn
-469 Dol, lt grey, banded, hvy ss 468½-469, CM @ 468, TGS @ 469
-473½ Dol, med grey, spotted, mott, TGS @ base
-479 Dol, med-dk grey, hvy mott, ch nod @ 474, base, ch congl @ base
-483½ Dol, lt grey, mott, spotted, TGS @ base
-486 Dol, med-dk grey, hvy mott, brn ch band @ 484½
-495 Dol, med grey, mott, congl 493½-495, ss 494-495 plus TGS @ base
-500½ Dol, med grey, mott 495-498, banded 498-base
-501 Chert, white
-503 Dol, med-dk grey, mott
-506½ Dol, med grey, TGS @ base, grn ch @ 506
-518 Dol, dk grey, hvy mott, hvy ss @ base
-525 Dol, med-dk grey, mott, blotchy, vuggy
-529½ Dol, med grey, ss plus TGS @ base
-531½ Dol, lt grey, banded, ch @ base
-537 Dol, med grey
-542½ Dol, lt grey, banded, sed congl 538-539, ss 541-542½, CM @ 542, 542½
-550½ Dol, med grey, lt bands, TBS @ 543, 550½
-551½ Dol, lt grey, mott, siliceous, scatt ss throughout, ch oolite @ 551
-553 Chert, dol 551½-552, white 552-553
-557 Dol, med grey, mott, sugary, ch oolite @ 555
-563 Dol, med-dk grey, banded 557-558, mott 558-base
-567½ Dol, lt-med grey, vuggy, mott, scatt ss 564-566½
-577 Dol, med-dk grey, mott 567½-572½
-585½ Dol, dk grey, mott, fault @ 580
-588 Dol, med grey, hvy mott @ top, sugary
-591 Dol, lt grey, ss @ 589½
-598 Dol, med-dk grey, mott, spotted
-599 Dol, lt grey, lt ch @ base
-600 Chert, white, fragmental, TGS @ base
-603½ Dol, med-dk grey, mott, dk @ base
-604 Chert, white
-607½ Dol, lt grey, banded, lt ss plus ch nod @ base
-609 Dol, dk grey, lt bands
-610 Dol, lt grey, ch nod @ 609½
-615 Dol, med-dk grey, hvy mott, fault @ 612, TGS @ base, med grey, vuggy, sil-616
-618 Dol, lt grey, banded, ch nod @ 616½, 617, ch band 618½-619, TGS @ 619
-624 Dol, med grey, ch nods @ 623, 4" hvy grn sh @ base
-625 Semi-xl, med-dk grey, mott

-629 Dol, lt grey, banded, ch nod @ 626, TGS @ base
-635 Dol, lt-med grey, mott, TGS @ base
-637½ Dol, med-dk grey, mott, spotted, TGS @ base
-640 Dol, lt-med grey
-644 Dol, med grey, mott, 4" ch band @ 643, sand & sed congl 643-644, TGS @ 644
-645½ Dol, med grey, mott
-646½ Chert, white
-654½ Dol, lt grey, ch nod @ 647, 650, spotted 653-654½, TGS @ base
-661 Dol, med grey, mott, blotchy, TBS @ base
-665½ Dol, med grey, banded, ss @ 664½, shear @ 665
-670½ Dol, lt-med grey, hvy mott, sheared 665½-666½, lt ss 667, vugs with grn sh filling
-675½ Dol, lt-med grey, spotted, TGS @ base
-682½ Dol, med grey, few spots TGS @ 676½, 677, lt shears 676½-677, TBS @ base
-684½ Dol, dk grey, vuggy, mott, cherty, hvy ss plus ch oolite @ base
-685 Chert, blue, oolitic
-685½ Shale, black & grn
-693 Dol, med grey, darker toward base, spotted
-696 Dol, lt grey, banded, ss 694-694½, TGS @ 694½, ss @ 696 over hvy grn sh
-707 Dol, lt-med grey, mott 696-698, banded 698-703, lt ss @ 696 plus ch nod plus TGS, hvy grn sh @ base
-708 Dol, med grey, shaly
-714½ Dol, lt grey, banded, TGS @ base
-718 Dol, med grey
-725½ Dol, dk grey, shaly 718-719, spotted & mott, TBS over ch @ base
-730 Dol, lt grey, banded, hvy ss 728½-730, crackle @ base filled with lt grey dol & sand
-737 Dol, med-dk grey, mott, shaly 733½-734, TBS @ base, sugary 736-737
-739½ Dol, v. lt grey, banded 737-738
-742 Dol, lt-med grey, mott, black sh @ base
-744 Dol, med grey, mott, TGS @ base
-749 Dol, lt-med grey, darker toward base, mott, TBS @ base
-753 Dol, lt grey, banded 749-750, scatt ss 749-750, TGS @ base
-758 Dol, med grey, mott, blotchy, siliceous near base, fragmental ch @ base
-760 Dol, lt grey, banded, ch @ 759½
-771 Dol, med grey, banded, ch nod @ 762, 763, 764, ss 769-769½, TGS @ 769½, hvy grn sh @ base
-777 Dol, lt-med grey, mott, ch oolite @ base under lt ss, lt ss 774
-785 Dol, lt grey, ch plus hvy ss @ 780, ch oolite @ base
-786 Dol, med grey, hvy mott
-795 Dol, lt-med grey, mott, TGS @ 787½, lt shears 794
-800 Dol, v. lt grey, mott, ch nod @ 796
-807 Dol, lt grey, banded, ch nods @ 802, 803, 803½, 804, 805, 805½
-811 Dol, med grey, banded, scatt ss 809½-811, hvy grn sh @ 811
-811½ Dol, lt grey, breec filled with ch plus grn sh
-815 Dol, lt grey, banded, hvy grn sh @ base
-818 Dol, med grey, ch @ 816½, shears @ 817
-822 Dol, med grey, mott, ch nod 819½, 820, TGS plus ch plus ss @ base
-831 Dol, lt-med grey, banded 822-824½, ch nods @ 824, 825½, 826, TGS @ base
-852 Dol, v. lite grey scatt bands, TGS @ 839, 850, ch @ 842, 843, 845, 846, lt ss @ 849
-854 Dol, lt-med grey, mott, v. lite crackle
-857 Dol, med grey, crackle

-865 Dol, lt grey, banded, hvy grn sh @ 860 plus lt ss, lt ss @ 864
-865½ Shale, grn, siliceous
-873 Dol, lt-med grey, lt mott, ch nods 866, 866½, v. lite crackle, TBS @ base
-877½ Dol, med grey, crackle, ch nods 874½, grn sh @ base, rubble @ base
-887 Dol, lt-med grey, dry breccia plus FeS shines 877½-879, 882-884, crackle dry - base, lt ss plus TGS @ base
-892½ Dol, med grey, hvy mott, v. lite crackle, TGS plus v. lite ss @ base
-893½ Dol, med-dk grey, semi-xl, hvy grn sh @ base
-900 Dol, med grey, mott 893½-894½, banded 894½-895½, dry breec 895½-896½
-903 Re-xl, dk brn, coarse @ top, pinkish cast
-904 Dol, lt grey, banded, TGS @ 903½, 904, v. lite ss @ 904 -906 re-xl, dk brn, mott
-908 Dol, med grey, blue mott, crackle
-909 Re-xl, brn, coarse, crackle
-910 Dol, lt grey, rubble, lt ss @ base, some re-xl in matrix
-911 Re-xl, brn, coarse, sh @ base
-912½ Dol, lt grey, banded, grn sh @ base
-915 Re-xl, brn, crackle
-917½ Dol, med grey, hvy mott, crackle
-920 Dol, lt grey, rubble, grn sh @ base
-925½ Re-xl, coarse, blk & white, chert band @ 925, TGS @ base
-930 Dol, med grey, mott, spotted, v. lite crackle, stronger @ base
-935 Dol, dk grey, crackle, FeS shine 932½
-935½ Shale, grn, cherty
-938½ Re-xl, coarse, black & white, hvy jasperoid, hvy ZnS @ 937
-939 Chert, blue
-942 Dol, med grey, mott, crackle, lite ss @ 941, sugary @ base
-948 Re-xl, dk brn, hvy mott, siliceous, hvy wh ch @ base
-949½ Dol, med grey, mott @ top, banded @ base, TGS @ base
-950 Re-xl, brn, sh @ base
-957½ Dol, med grey, hvy mott, crackle to 956, rubble - base, hvy ch @ 953-955, trace ZnS @ 955, 956½-957½, est. 5%
-970 Re-xl, 957½-959½, brn & very siliceous, 959½-965, brn, crackle, mott near base, 965-970, brn, siliceous, heavier toward base, few scatt del blocks, 957½-959½, est. 3% ZnS, 966-969½, est. 2% ZnS
-971 Dol, med grey, breec sealed with silic re-xl
-975 Re-xl, coarse, brn, ch band @ 972
-976 Re-xl, blk & white, trace ZnS @ 975½
-985½ Re-xl, brn, coarse, crackle, ss @ 978½, 979½
-996 Re-xl, ½ brn, ½ blk & white, some crackle, 991-996, est. 2% ZnS, some lite FeS shines 991-996, trace fluorite 995, 985½-991, est. 1% ZnS
-1005½ Re-xl, coarse, blk & white 997, 997-base mixture blk & white & brn, lt grey del block @ 1004, 996-997, est. 3% ZnS, 997-1004, est. 1% ZnS, 1004-1005½, est. 5% ZnS, fluorite shine @ 1003½
-1006 Dol, lt grey, breec
-1019 Dol, med grey, banded, hvy ch @ 1013, 6" ch @ base, crackle
-1020½ Re-xl, brn, mott, crackle
-1028 Dol, med grey, hvy mott, crackle to 1024, hvy crackle 1024-1028, scatt ss @ base, 1024-1028, est. 1.75% ZnS, scatt FeS shines
-1033 Re-xl, brn, coarse, siliceous, hvy grey shale @ 1031, del block @ 1029, 1028-1031, est. 5½% ZnS
-1034½ Dol, med-dk grey, hvy crackle, mott, TGS @ base
-1035½ Re-xl, brn, coarse
-1041 Dol, lt grey, mott, darker toward base, ss @ 1036, very silic 1036-1037, crackle, ch nods @ 1037½, 1039, 1040½, 1041, traces ZnS @ 1038½, 1040½

-1042½ Semi-xl, med grey, banded, cherty, crackle
-1043½ Chert, blue & white
-1046 Dol, lt-med grey, hvy crackle, brecc chert & hvy ss over TOS @ base
-1048½ Semi-xl, hvy mott, med grey, hvy ss @ base
-1053½ Ra-xl, blk & white 1048½-1051, brn & vuggy 1052, blk & white - base, siliceous, wh ch nod & base, hvy ss 1048½-1049, 1049-1050, est. 1% ZE
-1054½ Dol, lt grey, banded, crackle
-1055½ Ra-xl, dk brn
-1056½ Dol, lt grey, banded, lt ss @ base
-1058½ Semi-xl, med grey, mott
-1064½ Dol, lt grey, wh ch nod @ 1061½, crackle near base, lt ss @ base
-1065 Chert, white
-1067 Semi-xl, brn, banded, crackle, ch @ base TD @ 1067

Invoice

Marietta, Ohio

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

June 1959

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Puncheon Camp Creek Project DMEA Contract No. 4580 - June 1959

Core Hole No. CH-31

Footage drilled	1067' @ $3.00/ft.	$3201.00

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

B. H. Putnam, Oper.

By: A. R. Eddy
A. R. Eddy
Drilling Supt.

OFFICIAL FILE COPY
O. M. E.
RECEIVED JUL 31 1959

DATE	INITIALS	CODE

OFFICIAL FILE COPY
O. M. E.
RECEIVED JUL 22 1959

DATE	INITIALS	CODE
7-22	gad	220
"	[illegible]	110
7/22	[illegible]	800
[redacted]		

OFFICE OF MINERALS EXPLORATION

INTERIM REPORT

DMEA 4580, Idm-E1088-Zinc

Operator: B. H. Putnam, Operator Box 65, Thorn Hill, Tennessee

Location: Puncheon Camp Creek area, Grainger County, Tennessee

Summary of drilling completed

	Since last inspection	To date
Number of Holes...	2	58
Footage	2,067	33,275 29,921

Number of holes showing:

a) Commercial-grade zinc ore..... 11
b) Non-commercial zinc mineralization.... 28
c) No zinc mineralization..... 19

Summaries of the results of the two holes completed since the last inspection are given below:

Hole GD-30: Located on the Green-Dalton tract at coordinates: N-49,126; E-47,169. Collar (platform) elevation: 1250 feet A.T. Drilling started: May 37, 1959 and was completed June 12, 1959. Total depth 1,000 feet. Summary log: 0-15 overburden; 15-676 (CM-ss) Mascot dolomite; 676-848 (TR) upper Kingsport; 848-945 (TT) lower Kingsport; 945-1000 (bottom of hole) Longview dolomite. Mineralization: Ore hole with runs as follows: 852-860 (8') estimated @ ½% Zn; 903 trace ZnS; 919-938 (19') with 5.9% Zn; 968½-970½ (2') estimated @ 2½% Zn.

Hole GD-31: Located on the Green-Dalton tract approximately 100 feet southwest of Hole GD-30 (coordinates and elevation not yet available). Drilling started: June 12, 1959; completed July 2, 1959. Total depth 1,067 feet.

29921

Summary log: 0-10 overburden; 10-730 (CM-ss) Mascot dolomite; 730-900 (TR) upper Kingsport; 900-1006 (TT) lower Kingsport; 1006-1067 (Bottom of hole) longview dolomite. Ore hole with runs of mineralization as follows: 937-937½ (1/2') at 1% Zn; 955 traces ZnS; 956½-959½ (3') at 4%; 966-969½ (3½') at 2% Zn; 975 trace ZnS; 985½-991 (5½') at 1%; 991-1005½(14½) at 2 1/4%; 1024-1031 (7') at 4%; 1038-1041, shines; 1049-1050 (1') @ 1%. All values are estimated percent zinc--assays not yet available.

Drilling in progress

Hole GD-32 is now in progress and drilling in the upper part of the Mascot dolomite after having collared in the basal few feet of the Chickamauga limestone. It is located approximately 100 feet southwest of Hole GD-31.

Inspected: July 9, 1959

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

z

June 19, 1959

Memorandum

To: E. D. Talbert, Office of Minerals Exploration, Interior Building, Washington 25, D. C.

From: Administrative Assistant, Morris, Tennessee

Subject: Monthly report and voucher

We are enclosing two copies of the following monthly report and voucher:

Idm-E1088 B. H. Putnam
Docket No. DMEA-4580
18th payment - month of May
Amount $3044.85

Helen R. Miller

Attachments
/hbm
Copies to R. A. Laurence
V. J. Lynch
Morris files
Day files

EXTRA COPY
O. M. E.
RECEIVED JUN 22 1959

DATE	INITIALS	CODE

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

Budget Bureau No. 42-R1036.5

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

JUN 22 1959
O.M.E.

PAID ON VOUCHER & SCHEDULE OF PAYMENTS K-

OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of May, 1959 Docket No. DMEA 4580 Contract No. Idm-E-1088
Operator's Name B. H. Putnam Minerals Zinc
Address 512 Third Street, Marietta, Ohio
Contract Amount, $ 170,125.00 Government Participation: 50% Amount, $ 85,062.00

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:						
Drilling	05745.00	80,817.00	086,562.00	6/22/59 WPK		
Bulldozing						
Crosscutting						
Drifting						
Reaming	—	2,102.00	2,102.00			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
Core boxes	—	290.25	290.25			
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment	—	226.25	226.25			
Sampling and Analysis						
Payroll Taxes						
Liability Insurance						
(8) Contingencies (specify): Incld. allow. .18/ft.	344.70	4,849.02	5,193.72			
TOTALS	06089.70	088,284.52	094,374.22	6089.70	88,284.52	94,374.22

I certify that the above bill is correct and just and that payment therefor has not been received.
Date 5/31/59 *Payee B. H. Putnam
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)

3044.85

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

$ 3044.85

Signature Helen R. Miller
(Authorized Certifying Officer)

Date JUN 19 1959 Vou. No. 119

(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. E-1088 in accordance with the terms of the contract.

Signature V. J. Lynch Title MINING ENGINEER U.S. BUREAU OF MINES Date JUN 24 1959

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert A. Lawrence Title EXECUTIVE OFFICER OME FIELD TEAM REGION V Date JUN 24 1959

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

JUN 22 1959

OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of May 1959 Docket No. DMEA 4580 Contract No. Xm-2-1088
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	$5745.00	1915	$86,562.00	28,854	3.00	50,000	3.00
Churn ~~Teaming~~	Foot	—	—	2,102.00	1,051	2.00	5,000	2.00
Auger ~~Sampling~~	Each	—	—	226.25	181	1.25	550	1.50
Stripping ~~Core boxes~~	Each	—	—	290.25	150	1.935	150	2.00
Trenching								
Test Pits								
~~Roads and Trails~~ ~~Incld. allow. @ .18/ft.~~	Foot	344.70	1915	5,193.72	28,854	.18	50,000	.18
TOTAL DISTRIBUTED COSTS		$6089.70		$94,374.22				TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS		$6089.70		$94,374.22				

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 5/31/59 Operator B. H. Putnam

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.
JUN 16 '59

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

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

May 31, 1959

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Dunehoon Camp Creek Project DMEA Contract No. 4580 - May 1959

Core Hole No. CH-30

Footage drilled 1000' @ $3.00/ft. $3,000.00

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

B. H. Putnam, Operator

By: A. R. Eddy
A. R. Eddy
Drilling Superintendent

Invoice

Marietta, Ohio

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

May 31, 1959

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Punchbowl Camp Creek Project DMEA Contract No. 4580 - May 1959

Core Hole No. CD-29

Footage drilled 915' @ $3.00/ft. $2,745.00

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

B. H. Putnam, Operator

By: A. R. Eddy
A. R. Eddy
Drilling Superintendent

A Progress Report on the Dunaheen Camp Creek Project
Grainger County, Tennessee

May 1959
by W. T. Hill

Docket No. 4580
Contract No. Idm-E 1088

During the month of May two holes were drilled on the Dunaheen Camp Creek Project. Hole GD-29 was drilled 400 feet southeast of GD-27. The hole collared in the Mascot formation and was drilled to a depth of 915'.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-10	Overburden	—	—	—
10-622	Mascot	CMS @ 622	Tr ZnS @ 210'	Dolomite
622-842	Kingsport	"A" @ 761 "S" @ 820 "T" @ 842	793-800, est. 5% ZS (hvy core loss in this zone) sh @ 814	Dolomite, re-xl, and limestone, faulted, hvy core losses
842-915	Longview	"U" @ 854	—	Dolomite, re-xl, and ls

Hole GD-30 was drilled on a strike fence 100 feet southwest of GD-29. The hole collared in the Mascot formation and was drilled to a depth of 1000 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-15	Overburden	—	—	—
15-676	Mascot	OPSS @ 676	—	Dolomite
676-945	Kingsport	"R" @ 848 "S" @ 897½ "T" @ 945	852-860, est. 1/2% ZN; Tr @ 903; 919½-934, est. 5½% ZN; 934-937, est. 2½% ZN	Dolomite, re-xl, in part brecci-ated
945-1000	Ringview	"U" @ 955½ L-3 @ 970½	968½-970½, est. 3% ZN	Dolomite, ½ re-xl; FeS shines 991-993

Drilling is now underway at site CD-31, 100 feet southwest of CD-30.

B. H. Putnam DD-GD-29

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm-E 1088

Hole No.: GD-29 Collared: 5/11/59

Farm: Green-Dalton Bottomed: 5/25/59

Location: N 49,216.19 Depth: 915 feet

E 47,218.58 Casing: BX 10, AX 20

Elevation: 1243.29 DF Reaming: None

Drilled by: Putnam Drlg. Co. Cement: one bag

Logged by: W. T. Hill

Top Kingsport	622
Top "R" Bed	761
Top "S" Bed	820
Base Kingsport	842

0-10	Overburden
-12	Dol, med grey
-20	Dol, lt-med grey, ch nod @ base
-21½	Dol, lt grey, banded, TGS @ base
-30	Dol, med grey, lt bands, darker toward base (5' core loss 20-30)
-37	Dol, med grey, cherty
-40	Dol, med-dk grey
-50	Dol, med grey, mott, spotted, gen sh @ base
-55	Dol, med-dk grey, lt mott, pinkish cast, TGS @ base
-59	Dol, lt grey, cherty near top, ch nod @ 58
-74	Dol, dk grey, spotted 59-61½, sheared 61½-64, mott near base
-89	Dol, dk grey, mott 74-76
-94	Dol, v. lite grey, banded, sed. breccia 89-91, ch nods 89, 92, 93, 94
-96	Dol, med grey, banded with layers of dk & lt dol, base marked by wh ch band
-104	Dol, med-dk grey, ch nod @ 99
-106	Dol, med grey
-108	Dol, med grey, mott & vuggy, coarse grained
-111	Dol, med grey, TBS @ base
-115½	Dol, dk grey, TBS @ base
-118½	Dol, dk grey, banded, TBS @ base
-126	Dol, lt grey, pinkish mott, lt ss plus TGS @ 119, TGS @ 124
-129	Dol, lt grey, pinkish bands, spotted, TGS @ base
-140½	Dol, lt-med grey, banded & mott, TBS @ 131, pinkish cast 135½-base
-143	Dol, lt-med grey, sed congl, some sand, vuggy, sugary
-148	Dol, med grey, pink mott, TGS @ base
-149	Dol, dk grey, mott, TBS @ base
-156	Dol, med grey, banded 151-152, lt ss over ch nod @ base, base sugary
-161	Dol, med grey, banded 156-158, ch band @ base
-161½	Dol, med grey, hvy mott, ch band @ base
-165	Dol, lt grey, lt mott, wh ch nods 162, 163
-168½	Dol, med grey, mott
-170½	Dol, med-dk grey, hvy mott
-175	Dol, med grey, lt bands, vuggy 174-175
-181	Dol, dk grey, hvy mott
-182	Chert band, some gen sh
-188	Dol, lt-med grey, mott, gen sh @ 186, spotted, ch nod under sh @ base
-193½	Dol, med grey hvy bands, TGS @ 189, 190, 193½
-196	Dol, black, mott
-204	Dol, med grey, hvy mott, blotchy, siliceous, black 199-204, lt ss plus ch @ base
-207	Dol, lt grey, mott 204-206, banded 206-207, ch @ 206, base, lt ss @ base
-209	Dol, med grey
-210	Dol, lt grey, spotted
-212	Dol, med grey, hvy mott, <u>traces ZNS around ch nod @ 210</u>
-219	Dol, lt-med grey, TGS @ base overlain by hvy ss plus ch (some CM)
-221	Dol, lt grey, banded
-223	Dol, lt-med grey, mott, TGS @ base
-224	Dol, med grey, hvy mott, TGS @ base
-228	Dol, med grey, lt bands
-231	Dol, lt grey
-233	Dol, dk grey, TGS @ 232, 232½, 233, hvy mott
-241	Dol, lt-med grey, lt bands, TGS @ base
-246½	Dol, med grey, lt mott

-248½ Dol, lt grey, banded, lite ss plus TGS @ base
-251 Dol, med grey, TGS @ 250
-253 Dol, dk grey, mott, TGS @ base
-255 Dol, med grey, hvy mott, TGS @ base
-263½ Dol, med grey, dk 255-256, ch nod @ 260
-266 Dol, med-dk grey, banded, TGS @ base
-270½ Dol, lt grey, mott, TBS @ base
-272 Dol, med grey, very hvy ss 271-272
-274 Dol, black mott
-278 Dol, med grey, hvy mott
-282 Dol, med grey, ch nod @ base
-284½ Dol, lt grey, banded
-285 Dol, med-dk grey, hvy mott, greenish coloring
-290 Dol, black, lt bands, sed congl @ base
-294 Dol, med grey, well banded, lt ss 293½-294, TGS @ base
-297 Dol, lt grey, hvy gen sh @ base, lt ss @ 297
-308 Dol, med grey, blue mott, ss plus TGS @ 304½
-308½ Chert, white
-309 Dol, med grey, mott
-314 Dol, med-dk grey, ch nod @ 309, 311
-318 Dol, black, hvy mott, vuggy, conglomeratic, ch @ 315
-322 Dol, lt-med grey, banded, scatt ss 321-322, TBS @ base
-325 Dol, lt-med grey, banded, TGS @ base, dip @ 325 - 33°
-326 Dol, med grey, hvy mott
-333 Dol, dk grey
-333½ Chert, white
-335½ Dol, lt grey
-340 Dol, med grey, banded, TBS @ base -342½ Dol, med grey, hvy mott, ch @ 340½
-355 Dol, dk grey, spotted, hvy ss plus some CM 354-355, TGS @ base
-357½ Dol, med grey, TGS @ base
-358½ Chert, white
-360 Dol, lt-med grey, TGS plus lt ss @ base
-363½ Dol, med grey, mott, spotted
-366 Dol, lt grey, mott & banded, ch @ 364
-366½ Dol, med grey, cherty plus ss, mott
-371 Dol, dk grey, mott, ch @ 370, 370½, TGS @ 370
-378 Dol, med grey, blue mott, scatt ss 375-376
-382½ Dol, lt-med grey, mott, sugary toward base
-385 Dol, lt grey, mott, TBS @ base
-388½ Dol, med grey, hvy mott
-395½ Dol, med grey, lt ss plus TGS @ base
-403 Dol, med grey, mott, lt ss plus TGS @ base
-403½ Chert, black & white
-406 Dol, med-dk grey, hvy mott, gen sh @ base
-406½ Chert, blue & white, TGS @ base
-412 Dol, med grey, lt bands, TGS @ base
-417 Dol, med-dk grey, mott, eyelets, cherty
-427 Dol, med grey, mott, vuggy & eyelets, chert in vugs
-438 Dol, lt-med grey, some banding, ch @ 431½, 433, congl plus ss @ 437
TGS @ base
-442 Dol, lt grey, hvy bands, scatt ss 441-442, chert oolite @ base
-449½ Dol, med grey, ch @ 447
-451½ Dol, med grey, mott, scatt ch oolite plus ss throughout, hvy ch band
@ base

-452½ Dol, med grey
-453 Chert, oolite
-458 Dol, med grey, mott, vuggy @ top
-462 Dol, med-dk grey, mott
-463 Dol, lt grey, banded, scatt ss throughout
-469 Dol, lt-med grey, hvy mott, vuggy, ss 466-468, ch @ 468
-472 Dol, dk grey, mott
-484 Dol, dk grey, spotted 481-484, fault 480½-481½ (BP), scatt shears 481½-483½
-487 Dol, med-dk grey, mott, ch congl plus ss @ base
-491 Dol, lt grey, mott, scatt ss @ base
-501½ Dol, med grey, mott, blotchy, silic 501-501½, TGS @ base
-504½ Dol, med grey, mott, dk toward base
-505 Chert, white
-509½ Dol, lt grey, banded, lt ss @ 508½, chert band @ base
-510½ Dol, dk grey
-512 Dol, lt grey, ch nod @ 510½
-520 Dol, med grey, mott, congl toward base (vuggy and coarse-grnd)
-521 Dol, med-dk grey
-533 Dol, lt grey, banded 526-531, mott 531-base, lt ss 529-531
-536½ Dol, med grey, hvy mott, lt ss plus TGS @ base
-537½ Dol, lt grey
-542½ Dol, med grey, mott and spotted
-543½ Dol, lt grey, banded
-549 Dol, lt grey, hvy mott, very vuggy, ss 545-546, ss plus ch @ base
-559 Dol, med grey, mott, spotted, siliceous, lt shears @ 552
-561 Dol, black, spotted
-564 Dol, med grey, banded,ss plus TBS @ base
-573 Dol, lt grey, mott & spotted, chert oolite plus ss @ 569½, shears 566½-567½
-585 Dol, med-dk grey, spotted, hvy grn sh @ base overlain by hvy ss plus congl, some CM
-588½ Dol, lt grey, lt bands
-591 Dol, med-dk grey, mott, silic toward base
-593 Dol, lt grey, banded, v. lt ss @ base
-594 Dol, dk grey, hvy mott & shaly
-596 Dol, v. lt grey, banded, lt ss 595-596, hvy ss @ base
-603½ Dol, med grey, banded, hvy grn sh @ base
-605 Dol, dk grey, mott, ch nod @ 604
-608 Dol, lt grey, hvy bands
-612 Dol, med grey
-614 Dol, dk grey, hvy mott
-617½ Dol, med grey
-619 Dol, black, TBS @ base, hvy mott
-622 Dol, lt grey, banded, hvy CMSS @ base
-627 Dol, lt grey
-630 Dol, med-dk grey, hvy mott
-636 Dol, lt grey, spotted TGS @ base
-637 Dol, dk grey, mott, TGS @ base
-640 Dol, lt-med grey, hvy mott
-641½ Dol, dk grey, banded
-646½ Dol, lt grey, TGS @ base
-651 Dol, med grey, mott, TGS @ 647½

-654 Dol, lt grey, lt bands, ch @ 652,653
-659 Dol, med grey, banded, ss plus TGS @ base
-660½ Dol, med grey, TGS @ base
-663½ Dol, lt-med grey, mott
-670 Dol, lt grey, lt bands
-671 Dol, med grey, ss over ch nod @ base
-677 Dol, med grey, TGS @ 672, 676, 677, 6" chert @ 674
-682 Dol, med grey, mott, TGS @ base
-689 Dol, lt grey, mott, ch nod @ base
-690 Dol, med grey, ch nod @ 689½, 690
-696½ Dol, med grey, well banded, shale breccia & ss @ base
-697 Chert, blue
-715 Dol, lt grey, banded, ch nod @ 705, 706, 713, 714, ss @ 710, 714-715, siliceous dk dol plus ss (congl), TGS @ base
-733½ Dol, lt grey, banded 715-726, TGS @ 723, base, ss @ 730, ch nod @ 721, 727, 729, 732
-738 Dol, lt grey, well banded, hvy grn sh @ base
-741 Dol, lt-med grey, banded, TGS @ base plus lt ss
-742½ Dol, med grey, ch nod @ 742
-750 Dol, lt grey
-761 Dol, lt-med grey, banded, ch nod @ 751, hvy grn sh @ base
-768 Ls, brn, shaly
-772 Dol, med grey, lt bands, lt ss plus TGS @ base
-775 Dol, med grey, mott, lt scatt shears
-776 Dol, lt grey, faulted, some gangue dol 775½-779½, 2' core loss
-777 Dol, dk grey, very shaly
-777½ Re-xl, brn
-784½ Dol, lt grey, sheared, open, some gangue dolomite
-786 Re-xl, brn, wh ch @ 785
-792 Dol, lt grey, dk semi 786-788, scatt shears, crackle, 786-792, 3' core loss
-794 Dol, dk grey, hvy mott, rubble, open, 5½' core loss 793-800
-803 Re-xl, brn, scatt shears, open, <u>1/2' solid ZNS between 793-800 plus mineral frags.</u>, core lost in min. zone
-805 Dol, lt grey, sheared, open, wh ch @ base
-806½ Re-xl, black jasperoid @ base
-808½ Ls
-813½ Dol, lt grey, crackle with black ch filling, <u>ZNS sh @ base</u>
-814½ Re-xl, black, crackle
-817 Dol, dk grey, sheared, gangue dol
-819 Dol, med grey, sheared, gangue dol, wh ch @ 817½
-819½ Re-xl, black & white
-820 Shale, black, siliceous
-831 Ls, shaly, some crackle
-831½ Re-xl, brn
-834 Dol, lt grey, banded, ch nod @ 832
-840 Re-xl, brn, limy
-840½ Ls
-842 Re-xl, brn crackle
-843 Dol, med grey, crackle
-854 Dol, lt grey, wh ch @ 852, 854
-855 Shale, black, pyritiferous, siliceous
-862 Dol, med grey, wh ch nod @ 859, breccia sealed with silica (both black & white)
-863 Ls, brn, shaly
-868 Re-xl, brn, mott, ss @ 865½, some ls frags @ 865, 6" chert @ 866

-869	Dol, lt grey, banded
-872	Re-xl, brn, hvy ss @ top, re-xl, limy @ base
-873	Chert, gray band
-873½	Re-xl, siliceous
-875	Ls, brn, shaly
-880	Re-xl, brn, crackle 877-878½ with black ch filling
-884	Dol, med-dk grey, spotted
-886	Semi-xl, med grey, re-xl toward base
-887	Chert, white
-888½	Dol, med grey, TGS @ base
-896	Dol, med grey, hvy mott
-899	Re-xl, hvy mott, siliceous, ss @ base
-905	Ls, shaly, TGS @ base
-908	Dol, med-dk grey, ch @ 905½, TGS plus lt ss @ base
-911	Re-xl, dk grey, coarse, siliceous, TGS @ base
-915	Dol, med grey, crackle, hvy ss @ 914. TD @ 915

E. H. Putnam DD-GD-30

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm-E 1088

Hole No.: GD-30 Collared: 5/27/59

Farm: Green-Dalton Bottomed: 6/12/59

Location: N 49,126.22 Depth: 1000'

E 47,169.55 Casing: BX-10; AX-30

Elevation: 1250.03 DF Reaming: None

Drilled by: Putnam Drilling Co. Cement: 2 bags

Logged by: W. T. Hill

Top Kingsport	676
Top "R" bed	848
Top "S" bed	898½
Top "T" bed	945

0-10	Overburden
-14	Dol, frags, oxidized
-20	Dol, med grey, broken & oxid, brecc with grn sh 15-16
-40	Dol, black, asphaltic hvy mott 22-30, eyelets
-46	Dol, black, coarse grn'd, asphaltic, calcarenite
-47½	Dol, black, breccia sealed with light calcarenite
-54	Dol, dk grey, mott
-57	Dol, med grey
-63½	Dol, lt grey, lt bands, hvy grn sh @ base
-65	Dol, med grey, mott
-68½	Dol, lt grey, banded near base plus thin chert
-71	Dol, med grey, v. lt bands
-74	Dol, med grey, strong bands
-75½	Dol, dk grey, ch nod @ base
-79½	Dol, med grey
-80½	Chert, brn & white
-82	Dol, lt grey
-91	Dol, lt-med grey, mott, TBS @ base
-93½	Dol, med grey, mott, spotted
-101	Dol, dk grey, grn sh @ 98, base
-106	Dol, med grey
-119½	Dol, dk grey, lt shears 110-112
-120½	Dol, dk grey, hvy mott
-131	Dol, dk grey, lt pink bands to 126
-135	Dol, med grey, banded, TGS @ base
-140	Dol, lt grey, sed breccia 135-136, sed congl plus sand @ base
-144	Dol, lt grey, hvy bands, black ch @ 141, congl @ base plus grn silica
-145	Dol, lt grey
-150	Dol, med grey, v. lt bands
-155	Dol, med grey, hvy mott 150-151, 153-155
-163	Dol, med-dk grey, TBS @ 154, pink coloring 159-163, TGS @ base
-174	Dol, lt grey, mott 163-164, bands 164-167, hvy ss @ 167, mott 174, pink coloring
-179	Dol, med-dk grey, banded 176-179
-187	Dol, dk grey, lt mott
-188	Dol, med grey, hvy mott, TBS @ base
-191	Dol, med grey, hvy mott, sugary, sed congl @ base plus ss
-197	Dol, med grey, lt mott, TBS @ 195, base
-198	Dol, med-dk grey, hvy mott
-203½	Dol, med-dk grey, lt bands, ch plus ss @ base
-205½	Dol, lt grey, banded, ch nod @ base
-207½	Dol, med grey, TGS @ base
-212	Dol, lt grey, open shear @ 209
-216	Dol, lt-med grey, hvy mott, sugary & vuggy near base
-218½	Dol, dk grey, sugary, open shear 216, 217½
-229	Dol, med-dk grey, ch @ 220½, 221, vuggy 220½-222, darker toward base, hvy mott 223-229
-231½	Chert, white, in part brecc, grn sh plus ss @ base
-234½	Dol, lt-med grey, spotted, ch @ base, grn sh @ 233½
-242	Dol, med grey, darker toward base, bands 236½-240, scatt ss 238½-239½
-243½	Dol, dk grey, asphaltic, brecc blk ch @ base
-252	Dol, med-dk grey, mott, blotchy, siliceous, TBS @ base
-255½	Dol, med grey, sugary 253½-254, grn ch @ 254, blue ch @ base
-257	Dol, lt grey, banded, sed breccia, ss @ base
-260½	Dol, med grey, spotted near base, TGS @ base

-263 Dol, med grey, mott
-264½ Dol, lt grey, banded, TGS plus ss @ base
-268 Dol, med-dk grey, hvy mott, TBS @ base
-270 Dol, lt grey, ss @ base
-272½ Dol, med grey, banded
-273 Dol, med grey, hvy mott
-274 Dol, lt grey, mott
-274½ Dol, med grey, hvy mott
-275½ Dol, lt grey, banded
-279½ Dol, dk grey, banded, TGS plus ss @ base
-280½ Dol, lt grey
-283 Dol, med grey, mott
-291½ Dol, lt grey, banded & spotted 283-286, TGS @ 286, banded 286-288, ss @ 288, TGS @ base
-293½ Dol, lt-med grey, shaly 291½-292, ss @ 293
-296 Dol, med grey, TBS @ base
-298 Dol, lt grey, TGS @ base
-303½ Dol, med grey, lt bands
-306 Dol, dk grey, mott & spotted, ss @ base
-317 Dol, med grey, TGS @ 311, 312, 314, 315, CMSS @ 315, TGS @ 316½, 317, ch @ 316½
-323 Dol, lt grey, banded, hvy ss 322-323, TGS @ base
-325 Dol, dk grey
-329 Dol, med-dk grey, hvy mott
-332 Dol, med grey, ch @ base
-334½ Dol, lt grey
-340 Dol, dk grey, hvy mott 334½-335½
-341 Dol, med grey, mott
-343 Dol, lt-med grey, banded, hvy ss plus TGS @ base
-351 Dol, lt grey, mott
-357 Dol, med grey, blue mott, TGS @ 353, crackle @ 356-357
-358 Chert, white
-359 Dol, dk grey, mott, sugary
-360 Dol, lt grey, banded
-364 Dol, med grey, banded
-368 Dol, med-dk grey, hvy mott
-376 Dol, med grey, lt bands 368-374, mott 374-376
-383½ Dol, med-dk grey, mott & spotted, wh ch @ base
-390 Dol, lt grey, banded, ch nod @ base
-394 Dol, med grey, hvy mott
-404½ Dol, med grey, ch @ 395, hvy shear @ 401, open shear @ 401, @ 404½, <u>3½' core loss 396-401</u>, 2½' core loss 401-404
-411 Dol, lt grey, 406½-411 fault gorge
-412 Chert, white, sheared
-415 Dol, lt grey, fault gorge 412-413, lt shears - 415, <u>1' core loss 411-415</u>
-421 Dol, lt grey, mott, ss @ 417, shears near base
-426 Dol, lt grey, banded, scatt open shears throughout, hvy ss 424-425, TGS @ base
-427½ Dol, med grey, mott, sheared
-433 Dol, dk grey, spotted, sheared
-438 Dol, lt grey, mott, spotted, scatt shears throughout, TGS @ base
-440 Dol, med grey, mott, sheared
-443 Dol, lt-med grey, mott, scatt steep L shears throughout (open)
-448 Dol, med-dk grey, mott, ss plus ch @ base
-454 Dol, med-dk grey, mott, blotchy, lt ss @ base, shears @ 450, 453

-454½	Chert, white
-456	Semi-xl, dk brn, hvy mott, hvy grn sh over ch @ base
-465	Dol, med grey, lt gangue shears 462-464
-470	Dol, dk grey, mott, ss plus sed congl @ base, spotted, scatt wh chert-filled fracts
-479	Dol, med grey, mott, blotchy, spotted, white ch band @ base, thin shear @ 474
-481	Dol, med grey, banded, hvy ss @ base, bedding fault @ 481
-487	Dol, med grey, banded 481-483, lt open shears 485-487
-489	Dol, med-dk grey, hvy mott, ch @ 488, ss @ 488, base
-489½	Chert, white
-493	Dol, lt grey, banded, ss 492-493, hvy CM @ 493
-500	Dol, med grey, ch @ 497
-500½	Chert, white, ss @ base
-502	Dol, med grey, banded, cherty & sheared
-503	Chert, white
-504½	Dol, med grey, fault 503-503½, ss @ 504
-505	Chert, white
-507	Dol, med grey, oolite @ base
-508	Dol, lt grey
-512½	Dol, med grey, mott
-515	Dol, dk grey, ss @ base
-516	Dol, lt grey, banded, ss @ base
-522½	Dol, med grey, mott, lt shears
-537½	Dol, dk grey, hvy fault 533-534 (bedding plane), hvy mott 535-538½, asphaltic odor 535-538½, ch nod @ base vuggy
-543	Dol, med grey, hvy mott, hvy ss @ base, lt ss & shale 538
-545½	Dol, med grey, mott, grn sh @ 545
-552	Dol, med-dk grey, mott, spotted
-553½	Dol, lt grey, hvy mott @ base, silic, ss @ top, TGS @ base
-557	Dol, dk grey, hvy mott, blue ch @ base
-560	Dol, lt grey, banded, ch nod @ 558½, ch & ss @ base
-561½	Dol, med grey, silic, hvy mott
-563½	Dol, lt grey, ch @ 562½
-569	Dol, med grey, hvy mott, v. lite ss @ base
-569½	Chert, blue, sandy
-573	Dol, lt grey, banded, ch @ 571-573
-578	Dol, med grey, ch @ 574½, 576½, 578, TGS @ 578, dip @ 578 - 36°
-578½	Dol, med grey, hvy mott, shaly
-585½	Dol, lt grey, banded 578½-582, mott 582-585½, vert shears throughout
-588	Dol, med grey, blue mott, TBS @ base
-590	Dol, med grey, mott near base, lt shears
-592½	Dol, med grey, spotted, lt shear 591
-595	Dol, med grey, mott & spotted, lt ss @ base plus TBS, steep L shear @ 593
-601	Dol, med grey, hvy mott, ss @ 599, sheared 598-598½
-608	Dol, lt grey, ch nod @ 601, 602, 602½, 603, lt shears 601-603
-614	Dol, med grey, mott, eyelets, TBS @ 614, shear @ 612
-615½	Dol, med-dk grey, mott
-618	Dol, med grey, lt bands, TGS @ 618, ss @ 617½-618, scatt shears throughout
-619	Dol, lt grey
-623½	Dol, med grey, mott, sed congl plus ss @ base, ch @ 619, 623½, sheared 619
-627	Dol, lt grey, mott, TBS @ base, spotted
-633½	Dol, med grey, mott, spotted, TGS @ 628, lt shears 628½-632, dk dol 631-base, TGS @ base
-635½	Dol, med grey, lt bands, hvy ss 635-635½, some CM @ 635½

-636 Shale, grn & black, sandy
-642½ Dol, med grey, mott & spotted, darker toward base, lt shear637, 638½
-644½ Dol, lt grey, banded, lt ss 643½-644½, CM plus TBS @ 644½
-645½ Dol, dk grey, ss @ base, hvy grn sh @ base
-647 Dol, dk grey, hvy mott, lt shear @ 646
-656 Dol, lt grey, banded, lt ss @ 649, med grey 649-656, hvy grn sh @ base
-657½ Dol, med grey, mott, TGS @ base
-666 Dol, lt grey, banded, ch @ 658½
-668 Dol, black, mott
-672 Dol, med grey, TGS @ base, BP fault @ base
-681 Dol, lt grey, shears @ 673, hvy ss plus CM @ 676, spotted 676-681
-683 Dol, med grey, hvy mott, shaly @ top, TGS @ base
-690 Dol, lt grey, lt bands, vert shear 686-687½, TBS @ base
-691½ Dol, dk grey, banded, TGS @ base
-694 Dol, lt grey, hvy mott, TGS @ base
-696 Dol, dk grey, banded, TBS @ base plus lt ss
-701 Dol, lt grey, TGS @ base
-705 Dol, med grey, lt shear @ 702½
-718 Dol, med grey, banded, TGS @ 711, 716, hvy ss @ 716, crackle 716-718
-721 Dol, med grey, mott, TGS @ base
-723 Dol, lt grey, TGS @ 721½, 722, ch @ 722, 723, ss @ 722, 723
-728 Dol, med-dk grey, ch nod (oolite) @ base
-729 Dol, med grey, mott
-731 Dol, lt grey, TGS @ base
-738 Dol, med grey, mott 733-base, TGS @ 733, base
-743 Dol, lt grey, mott, wh ch nod @ 742
-753 Dol, lt grey, banded, wh ch nods @ 744, 746, 746½, 747½, 748½, 749, TGS @ 749, base, hvy ss 752-753
-757 Dol, med-dk grey, hvy mott, ch nod @ base
-759½ Dol, lt grey, banded, white ch nod @ base
-765 Dol, lt grey, mott, scatt open fracts
-766½ Dol, med grey, wh chert under lite ss @ base
-771 Dol, lt grey, banded, grn sh plus lite ss @ base
-778 Dol, lt-med grey, hvy grn sh @ base, silic @ base, fault @ 777½
-797 Dol, lt grey, banded, ch nods @ 784, 790, 790½, 791, ss @ 790, 793½
-799 Dol, med grey, mott, TGS @ base
-805 Dol, lt grey, banded, ss @ base
-806 Dol, med grey, crackle
-809½ Dol, lt grey, banded, hvy grn sh @ base, lt ss @ 809, lt crackle
-816 Dol, med grey, ch @ 809½, 810½, 811, TGS @ base
-818 Dol, lt grey, mott 816-817, ch band @ base, <u>traces ZNS in chert</u>
-824½ Dol, med grey, crackle, wh ch @ 822½
-832 Dol, lt grey, hvy crackle
-836 Dol, lt-med grey, hvy crackle, TGS @ base, lt ss @ 835
-843 Dol, lt-med grey, mott, lt crackle @ top, sheared 841½-842
-848 Dol, lt-med grey, mott, crackle, rubble 847-848, lt ss @ base, scatt shears throughout
-848½ Shale, grn, dipping 60°
-850½ Semi-xl, dk grey, mott, rubble, thin re-xl @ top, shale breccia @ base, lt fluorite shines
-852 Dol, lt grey, lt bands, rubble, lt ss @ 851, thin white ch band @ base
-853½ Shale, grn & black, steep dip, <u>ZNS shines throughout (est .25%) ZN</u>
-855 Re-xl, dk brn, ruble, TGS @ base
-856 Chert band, white, crackle with blk jasperoid, <u>est 1/2% ZN</u>
-857 Semi-xl, dk brn, mott, TGS @ base

-860½ Re-xl, brn, mott, lite @ base, shaly 860-860½, hvy grn sh @ base, Est. 1/2% ZN 857-860
-864 Dol, lt grey, hvy mott, crackle, v. lite ss over TGS @ base
-868 Dol, med grey, hvy mott, rubble 864-865½, crackle 865½-base, fault breccia @ base, TGS @ base
-868½ Dol, med-dk grey, banded
-873 Re-xl, dk brn, ruble, lt dol block @ 871
-875½ Re-xl, med brn, banded, hvy ss @ 874
-876½ Semi-xl, med brn, banded
-879 Dol, med grey, mott, v. lite crackle
-880 Semi-xl, dk brn, mott, vuggy, crackle, white ch @ base
-881 Dol, lt grey, rubble, ss @ base
-881½ Dol, med-dk grey, hvy mott
-886 Dol, lt grey, banded, rubble, blk jasper band @ 885
-889 Re-xl, brn, crackle
-891 Dol, lt-med grey
-892 Re-xl, blk & white, banded
-896 Dol, lt-med grey, crackle
-898½ Dol, dk grey, crackle
-908 Re-xl, dk grey & black, 75% shale & silica, white brecc ch frags throughout, trace ZNS @ 904
-914 Re-xl, brn mott, fract with sil re-xl @ 909, 911, wh ch (brecc) @ 911, lt shear @ base
-920 Re-xl, brn, silic, vuggy, white ch @ 919½-920, 919½-920, 20% ZN est.
-926 Dol, lt grey, lt mott, lt crackle 923½-924½ chert, white ch nods 925-925½, 926
-932 Re-xl, blk & white, siliceous, chert frags throughout, 926-932, est. 10% ZN
-932½ Dol, lt grey, crackle
-935 Re-xl, blk & white, siliceous, 932½-934, est. 4% ZN, 934-935, est. 1/2% ZN
-935½ Dol, lt grey
-937½ Re-xl, blk & white, silic., hvy ss 936½, 935½-937½, est. 3% ZN
-939½ Re-xl, brn, crackle, hvy ss @ base
-941½ Re-xl, blk & white, TGS @ base
-943½ Re-xl, brn, vuggy, silic
-945 Re-xl, blk & white
-947 Dol, lt-med grey, mott, 945-946, ch nod @ 946
-948 Dol, lt grey, wh ch @ base plus lite ss
-949 Semi-xl, silic, white ch @ 949, hvy blk shale @ base
-949½ Chert, grey & white
-955½ Dol, med grey, mott @ top, rubble to 953, crackle - base
-956 Re-xl, brn, silic
-964 Dol, med grey, mott, lt crackle, trace FeS @ 959, wh ch @ 963, lite ss 963-964
-966 Semi-xl, brn, mott, crackle
-968½ Re-xl, brn, crackle, lite ss @ base
-970½ Re-xl, grey, silic, ch & sh frags throughout, Est. 1/4% ZN 968½-969½, 4% ZN 969½-970½ Est.
-971 Chert, brn
-974½ Dol, med-dk grey, mott, eyelets, lt crackle, lite ss @ base plus TGS
-978 Re-xl, brn, silic, ss @ 977
-985 Dol, lt-med grey, blue mott, ch nods @ 978½, 982, 984½, hvy ss @ 982
-991½ Dol, med grey, mott 988½-base, crackle, TGS plus ss @ 988, ss @ 991½
-992½ Re-xl, brn, 5% FeS 991½-992
-995½ Dol, med grey, rubble, hvy FeS shines 992½-993½
-998 Re-xl, brn, rubble 995½-996
-1000 Re-xl, grey, silic, fragmental cherts throughout, chert oolite @ 999 over ss

OFFICIAL FILE COPY
O. M. E.
RECEIVED JUN 15 1959

DATE	INITIALS	
6/15	G	220
6/16	JG	810
6/18	[illegible]	800
6/18	[illegible]	500

INTERIM REPORT

DMEA-4580, Idm-E1088 (Zinc)

Operator: B. H. Putnam, Operator, Box 65, Thorn Hill, Tennessee--Assignee

Location: Puncheon Camp Creek area, Grainger County, Tennessee

Summary of drilling completed

	Since last inspection	To date
Number of holes	2 ✓	56 X 51
Footage	1,696 ✓	31,208 X 27,854

Tabbert 6/18/59

Number of holes showing:

a) Commercial-grade zinc ore . . . . . 9 ✓
b) Non-commercial zinc mineralization 28
c) No zinc mineralization 19

Summaries of the data on the two holes completed since the last inspection are given below:

Hole GD-28: Located on the Green-Dalton property about 290 feet west-southwest of Hole GD-27. Coordinates: N-49,345; E-46,626. Collar (platform) elevation: 1,398. Drilling was started on 4/24/59 and was completed on 5/7/59 at a depth of 781 feet. Summary log: 0-50 clay overburden; 50-486 Mascot dolomite; 486-762 Kingsport formation (TR @ 645) 762-781 (bottom of hole) Longview dolomite. Note: Essentially all of lower part of Kingsport formation was a "dry" (or sedimentary) breccia with a reddish argillaceous matrix). Mineralization: Barren hole.

Hole GD-29: Located on the Green-Dalton property approximately 400 feet southeast of the fence consisting of Holes GD-25, -26, and -27. Coordinates: N-49,216; E-47,219. Collar (Platform) elevation: 1,243 feet. Drilling was started on 5/11/59 and was completed on 5/25/59 at a depth of 915 feet. Summary log: 0-10 clay overburden; 10-622 Mascot dolomite; 622-842(?) Kingsport formation (TR @ 761(?); 842(?)-915 (bottom of hole) Longview dolomite. Mineralization: Shine hole. 793-800, 7' with 10 % Zn (est); shine of Zns @ 814. Note: Only 1½' of core recovered from the 7 feet cored---the ground appeared highly shattered. As sphalerite is usually the first material to break it is likely that 5½' core loss could have had a grade equal to that recovered and thus the hole may be in ore.

Drilling in progress

Drilling is now in progress on Hole GD-30, located approximately 100 feet south-southwest of Hole GD-29 on a strike fence. At the time of inspection the hole was drilling in the Mascot dolomite at a depth of 585 feet. Estimated bottoming depth is 925 feet.

Inspected: June 4, 1959

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

INTERIM REPORT

DMEA-4580, Idm-E1088 (Zinc)

OFFICIAL FILE COPY
O. M. E.
RECEIVED JUN 3 1959

DATE	INITIALS	CODE
6/3	a	220
4	[illegible]	110
[illegible]	[illegible]	800
		500

Operator: B. H. Putnam, Operator, Box 65, Thorn Hill, ~~Tennessee~~

Location: Puncheon Camp Creek area, Grainger County, ~~Tennessee~~

Summary of drilling completed

	Since last inspection	To date
Number of holes	3 ✓	54 ✗ 48
Footage	2,233 ✓	29,512 ✗ 26,158'

6 discontinued holes aggregated 3,351', leaving 3' difference Jackson

Number of holes showing:

a) Commercial-grade zinc ore	9 ✓
b) Non-commercial zinc mineralization	27
c) No mineralization	18

Summaries of the three holes completed since the last inspection on March 9, 1959 are given below:

Hole GD-25: Located on the Green-Dalton property approximately 200 feet east of Hole GD-11. Coordinates: N-49,622; E-46,982. Elevation: 1,391 feet. Drilling started on 3/6/59 and was completed on 3/17/59 at a depth of 703 feet. Summary log: 0-25 clay overburden; 25-420 Mascot dolomite; 420-703 Kingsport formation (Top of R-bed @ 574, top of S-bed @ 640). Top of T-bed (Longview dolomite) not reached. Mineralization: Weak trace of sphalerite at 393 in Mascot dolomite; hole considered barren.

Hole GD-26: Located on Green-Dalton property approximately 100 feet southwest of Hole GD-25. Coordinates: N-49,539; E-46,949. Elevation: 1,380 feet. Started drilling on 3/25/59 and completed on 4/9/59 at a depth of 760 feet. Summary log: 0-17 clay overburden; 17-442 Mascot dolomite; 442-708 Kingsport formation (Top of R-bed @ 596, top of S-bed @ 652); 708-760 bottom of hole) Longview dolomite. Mineralization: Shine of ZnS @ 660; 665-674, 9 feet with 5.06 % Zn; 665-688, 23 feet with 2.43 % Zn; 688-692, 4 feet with 1.04 % Zn; Shine of ZnS @ 700. Ore hole.

Hole GD-27: Located on Green-Dalton property approximately 100 feet southwest of Hole GD-26. Coordinates: N-49,448; E-46,880. Elevation: 1,377 feet. Drilling started on 4/10/59 and was completed on 4/22/59 at a depth of 770 feet. Summary log: 0-11 Clay overburden; 11-479 Mascot dolomite; 479-741 Kingsport formation (TR @ 636, TS @ 690); 741-770 (bottom of hole) Longview dolomite. Mineralization: Shine of ZnS @ 705; 706-707½, 1½ feet with 3.20 % Zn. Shine hole.

Drilling in progress

At the time of inspection drilling was in progress on Hole GD-28 on the Green-Dalton property. This hole is located about 290 feet west-southwest of Hole GD-27. Drilling was started on April 24, 1959 with the hole collared in the Mascot dolomite. At the time of inspection it was drilling in the upper member of the Kingsport formation at a depth of 610 feet; the estimated total depth will be about 800 feet. On completion of this hole it is anticipated that drilling will start on a new strike fence 400 feet southeast of the strike fence consisting of Holes GD-25, -26, and -27 in an attempt to intersect the southeastward extension of the main ore body.

Inspected: May 6, 1959

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

May 15, 1959

Memorandum

To: N. D. Talbert, Office of Minerals Exploration, Interior Building, Washington 25, D. C.

From: Administrative Assistant, Morris, Tennessee

Subject: Monthly report and voucher

We are enclosing two copies of the following monthly report and voucher:

Idm-51088 B. H. Putnam
Docket No. DMRA-4580
17th payment - month of April
Amount $2660.47

Helen R. Miller

Attachments
/hbm
Copies to R. A. Laurence
V. J. Lynch
Morris files
Day files

EXTRA COPY
O. M. E.
RECEIVED MAY 18 1959

DATE	INITIALS	CODE
5/18	a	220
5/19	[illegible]	110
		500

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Budget Bureau No. 42-R1036.4
Approval expires 6-30-53.

PAID ON VOUCHER & SCHEDULE OF PAYMENTS K- 52

OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of April, 1959 Docket No. DMEA 4580 Contract No. Idm-E 1088
Operator's Name B. H. Putnam Minerals Zinc
Address 512 Third St., Marietta, Ohio
Contract Amount, $170,125.00 Government Participation 50% Amount, $ 85,062.00

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:						
Drilling	$4653.00	$76,164.00	$80,817.00			
Bulldozing						
Crosscutting						
Drifting						
Reaming	380.00	1,722.00	2,102.00			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
Core boxes	----	290.25	290.25			
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis	8.75	217.50	226.25			
Payroll Taxes						
Liability Insurance						
(8) Contingencies (specify): Incid. allow. @ .18/ft.	279.18	4569.84	4,849.02			
TOTALS	$5320.93	$82,963.59	$88,284.52	5320.93	82,963.59	88,284.52

OMB 5/25/59 APPR.

I certify that the above bill is correct and just and that payment therefor has not been received.
Date 4/30/59 *Payee B. H. Putnam
Per William Weiss 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:
$ 2660.47
Signature Nelson R. Miller
(Authorized Certifying Officer)
Date MAY 15 1959 Vou. No. 111
(See other side)

2660.46

(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-1088 in accordance with the terms of the contract.

Signature [illegible] Title GEOLOGIST, U. S. G. S. Date MAY 13 1959

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature [illegible] Title ACTING EXECUTIVE OFFICER OME - REGION V Date MAY 13 1959

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.

GPO 83-38476

Form MF-104A
(April 1952)

Budget Bureau No. 42-R1151.2

MAY 18 1959 O.M.E.

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

Month of April 1959 Docket No. DMEA 4580 Contract No. Idm-E 1088
Operator's Name B. 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								
Drilling: Core	Foot	$4653.00	1551	$80,817.00	26,939	3.00	50,000	3.00
Reaming	Foot	380.00	190	2,102.00	1,051	2.00	5,000	2.00
Sampling	Each	8.75	7	226.25	48 50	1.25	550	1.50
Core boxes	Each	---	--	290.25	150	1.935	150	2.00
Trenching								
Test Pits								
Roads and Trails Incid. allow. @ .18/ft.	Foot	279.18	1551	4,849.02	26,939	.18	50,000	.18
TOTAL DISTRIBUTED COSTS		$5320.93		$88,284.52				TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS		$5320.93		$88,284.52				

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 4/30/59 Operator B. H. Putnam

Per William T. Rice 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)

H Reed

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

RECEIVED
MAY 13 1959
U. S. Geological Survey
Geologic Division
Knoxville, Tenn.

A Progress Report on the Puncheon Camp Creek Project
Grainger County, Tennessee

April 1959
by W. T. Hill

Docket No. 4580
Contract No. Idm-E 1088

During the month of April two holes were drilled on the Puncheon Camp Creek Project. Hole GD-27 was drilled 100 feet west of GD-26. It collared in the Mascot formation and was drilled to a depth of 770 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-11	Overburden	—	—	—
11-479	Mascot	CMSS @ 479	—	Dolomite
479-741	Kingsport	"R" @ 636 "S" @ 690 "T" @ 741	Shine @ 705, 706-707½, 3.20%	Dolomite, re-xl, ls, crackle breccia in "S" bed
741-770	Longview	"U" @ 756	—	Dolomite, re-xl

Hole GD-28 was drilled on a strike fence and is 290 feet west of GD-27. The hole collared in the Mascot formation and was drilled to a depth of 781 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-50	Overburden	—	—	—
50-486	Mascot	CMSS @ 486	—	Dolomite, numerous shears and faults throughout
486-762	Kingsport	"R" @ 645 "S" @ 698 "T" @ 762	—	Dolomite, re-xl, ls, scattered "dry" breccia & red coloration
762-781	Longview	"U" @ 775	—	Dolomite & re-xl

B. H. Putnam DD-GD-27

Copper Ridge Project - Panchasen Camp Creek

Hole No.: GD-27	Collared: 4/10/59
Farm: Green-Dalton	Bottomed: 4/22/59
Loc.: N 49,448.33	Depth: 770
E 46,879.97	Casing: BX-10'; AX-165'
Elevation: 1,376.68	Reaming: 45-165
Drilled by: Putnam Drlg. Co.	Cement: None
Logged by: W. T. Hill	

Top Kingsport	479
Top "R" bed	636
Top "S" bed	690
Base Kingsport	741
"U" bed	756

0-11	Overburden
-26	Dol, med-dk grey, mott & spotted, 3' core loss 20-28
-30	Dol, lt grey, lt bands
-45½	Dol, dk grey, mott, 12' core loss 28-45
-47½	Dol, med grey, hvy mott
-50½	Dol, lt grey, banded, ch nod @ 48, TGS @ base
-53½	Dol, med grey, TGS @ base
-55½	Dol, med grey, shaly & hvy mott
-57½	Dol, lt grey, TBS @ base
-59½	Dol, med grey, banded, lt ss @ base
-62	Dol, lt grey, banded, pinkish
-63	Cavity
-64	Dol, lt grey, banded
-66	Dol, med grey, hvy mott, spotted
-69	Dol, med-dk grey, banded
-70½	Cavity
-76	Dol, med grey, hvy mott, spotted
-77	Dol, lt grey, banded
-77½	Cavity
-83	Dol, med grey, banded, lt ss @ 78, hvy gen sh @ base
-87	Dol, med grey, mott, hvy ss plus gen sh @ 84
-93½	Dol, lt grey, banded, sh @ 90,93½, lt ss @ 93½
-94	Cavity
-96½	Dol, med-dk grey, hvy mott
-97	Dol, med grey
-97½	Cavity
-98½	Dol, dk grey, hvy BF shears @ 97½
-103½	Dol, med grey
-105	Cavity
-107½	Dol, med grey
-118	Dol, lt grey, CMSS @ 108½, hvy ss 116½-118, ch nods 114, 115
-121	Dol, black, congl near base
-124	Dol, med grey, hvy ss plus ch @ base
-126	Dol, lt grey, ch @ base
-135	Dol, med grey, mott
-136	Dol, med, reddish, congl hvy CMSS @ base
-140	Dol, lt grey
-148	Dol, lt-med grey, lt reddish bands
-153	Dol, med grey, banded & mott, ch @ base
-160	Dol, med grey
-164	Semi-xl, med grey, hvy mott, ch band 160-160½, 50% ch 163-164
-170½	Dol, lt grey, banded, vuggy @ top, TBS @ 166, ss 166-167, lt ss 169-170, TGS @ base
-171	Dol, med grey, hvy mott
-178½	Dol, med-dk grey, mott
-179	Ch, white
-183	Dol, lt grey, banded, TGS @ base
-187	Dol, med grey, mott
-200½	Dol, dk grey, spotted, lt ss plus ch @ base
-206	Dol, med grey, ch nod @ 204
-207	Dol, lt grey, lt ss @ base
-207½	Chert, white
-210½	Dol, med grey, hvy mott, spotted, ch nod @ base
-215½	Dol, med grey, hvy mott
-220½	Dol, lt grey, spotted, banded, hvy ss 219-220

-225½ Dol, dk grey, spotted, TGS @ base
-230½ Dol, dk grey, mott, lt ss plus ch @ base
-236 Dol, lt grey, mott, vuggy, TGS @ base
-239 Dol, med grey, hvy mott, ch plus ss plus TGS @ base
-248 Dol, med grey, TGS plus ss @ base
-254 Dol, med-dk grey, spotted, lt ss plus TGS @ base
-255 Dol, med grey, hvy mott
-259½ Dol, lt grey, ch nod @ base
-270 Dol, med-dk grey, hvy mott 268-270, ss @ base
-282 Dol, med grey, mott and hvy spots, ch nods @ 274
-286 Dol, lt grey, banded, lt ss @ 283, ch @ base
-290 Dol, med grey, CMSS @ base
-296 Dol, lt grey, banded 293-296, ch @ 291, ss 294½-296, CMSS @ 296 plus TGS
-305 Dol, med grey, ch @ 297, 303, 304, 304½-305 (oolite), lt ss 303-304
-307 Dol, med-dk grey, hvy mott
-313 Dol, med grey, mott, spotted
-314 Semi-xl, dk, mott, lt ss @ base
-319 Dol, lt grey, mott, ss 317-319
-332 Dol, med-dk grey, mott, congl 321-322
-339 Dol, med-dk grey, hvy BF fault breccia 333-334, scatt shears 334-336, congl 337-338, lt ss plus grn sh @ base
-342 Dol, med grey, mott
-343 Dol, lt grey, med breccia plus ss 342½-343
-353 Dol, med-dk grey, spotted, congl 343-344
-354 Dol, lt grey
-356 Semi-xl, med, 50% silica
-359 Dol, med grey, hvy mott, ch band @ base
-363 Dol, lt grey, banded, dk & mott, 362-363, ss @ 362
-363½ Chert, white
-364 Semi-xl, dk grey
-368½ Dol, lt grey, lt bands, ch @ 364½
-369 Dol, med-dk grey, hvy mott, conglomeratic
-370 Chert, blue & white, oolitic
-375½ Dol, lt grey, banded, ch @ 374
-376½ Dol, med grey
-379 Dol, med grey, banded, TGS @ base
-381½ Dol, med grey, mott, spotted, ch @ 380, TBS @ 381½
-384 Dol, lt grey, hvy bands, TGS plus lite ss @ base
-397 Dol, med-dk grey, hvy mott
-397½ Dol, lt grey, banded
-401 Dol, lt-med grey, mott, silic, ss @ 398-399, vuggy
-401½ Chert, congl
-411 Dol, lt grey, banded, ch nods @ 404
-418 Dol, med grey, hvy mott
-419½ Dol, dk grey
-421½ Dol, lt grey, banded
-427½ Dol, lt-med grey, hvy mott, ch @ 424,425
-432 Dol, med grey, hvy mott, spotted, ch @ 429, 431, 432
-438 Dol, black, hvy mott, spotted, TGS plus ch @ base
-439½ Dol, med grey, mott, hvy ss @ base
-440 Chert, blue & white, oolitic
-440½ Shale, green
-446½ Dol, med grey, hvy mott, TBS @ base
-449 Dol, lt grey, banded, hvy ss plus TGS @ base
-451 Dol, med grey, hvy mott
-456 Dol, lt grey, banded, ss 453-454, TBS @ 456

-460	Dol, med grey
-462	Dol, med-dk grey, hvy mott
-467	Dol, lt grey, banded, ch @ 463
-470	Dol, med grey
-472	Dol, dk grey, shaly mott
-475	Dol, med grey
-478	Dol, med-dk grey, spotted, mott
-485	Dol, lt grey, banded, ch nods @ 478, 481, hvy ss @ 478, 479, TGS @ 485
-487½	Dol, med grey, hvy mott, TGS @ base
-491	Dol, lt grey, banded
-495	Dol, med grey, mott, hvy sh @ 494, 495
-497½	Dol, lt-med grey, mott, TBS @ base
-502½	Dol, lt grey, banded, ch nod @ 498, scatt ss @ 499
-507	Dol, med grey, mott, TGS @ 505, 506
-510	Dol, med grey, hvy mott, ch nod @ base
-523	Dol, lt grey, banded, ch @ 511, 512, lt ss @ 518, 519½, TGS @ base
-526	Dol, med grey, lt mott & spotted, hvy gen sh plus ss @ base
-541	Dol, med grey, hvy ss @ 529, mott, TBS @ base
-545	Dol, v. lite brey, mott, TBS @ base
-548	Dol, lt grey, ch @ 548
-556	Dol, med grey, banded, ch nod @ 550, hvy ss 555-556, TGS @ 556
-558	Semi-xl, med grey, hvy mott, hvy ch plus TGS @ base
-562	Dol, lt grey, ch plus TGS @ base
-568	Dol, lt grey, TGS plus lt ss @ base
-569	Chert, blue & white
-570½	Dol, dk grey
-579	Dol, lt-med grey, ch @ 572½, 573, 575, 576, 577, TGS @ base
-579½	Dol, med grey, ch plus TGS @ base
-590½	Dol, v. lite grey, lt bands, hvy bands 589-590½, ch @ 590½, 592, 593, ss @ 594
-600½	Dol, med grey, mott, ch @ base
-610½	Dol, lt grey banded, ch @ 610½, lt ss plus TGS @ 605, lt ss 610-610½
-617	Dol, lt-med grey
-622	Dol, lt grey, banded, ch @ 619
-636	Dol, v. lt grey, bands, ch @ 623, gen sh @ 630, lt ss plus hvy gen sh @ base
-638	Ma-xl, black & white, crackle, lt FeS shines
-638½	Dol, mostly gen sh
-641½	Dol, med grey, mott, crackle breccia, hvy gen sh @ base
-643	Ma-xl, dk grey, shaly
-648	Dol, med brown, hvy mott, crackle, TGS @ base, lt ss @ base
-649	Ma-xl, black & white
-652	Semi-xl, med grey crackle
-653	Dol, lt grey, banded, lt ss @ base
-658	Ma-xl, brn, crackle, hvy FeS 653-654
-661	Dol, lt grey, crackle (dry)
-667	Ma-xl, brn, lt crackle
-669	Dol, med grey, ch @ 668
-674	Ma-xl, greenish, mott
-675	Dol, lt grey, lt ss plus TGS @ base
-678	Dol, lt-med grey, spotted
-681½	Dol, dk grey, spotted, hvy ch band plus TGS @ base
-683	Ls, brown, hvy sh 682, 683
-688	Dol, med-dk grey, mott & spotted, crackle
-690	Semi-xl, lt grey, banded, ch @ 688

-698	Ss-xl, brn, siliceous
-700	Ls, hvy gsn sh @ base
-704	Dol, lt grey, crackle, semi-xl, 700-702
-713	Ss-xl, brn, breccia, sh @ 705, 706-707½, Est. 43% SH, fluorite @ 708
-713½	Dol, lt grey
-723	Ss-xl, brn, crackle
-723½	Dol, lt grey, thin ls @ base
-732	Ss-xl, brn
-734	Ls, brn
-741	Ss-xl, brn
-756	Dol, med grey, oh nods @ 743, 744
-756½	Chert, blue & white, oolite
-757½	Ss-xl, brn
-766	Dol, med grey, mott, crackle breccia
-770	Ss-xl, brn, mott, lt crackle

B. H. Putnam DD-CD-27

Copper Ridge Project - Pumpkin Camp Creek

Hole No.: CD-27	Collared: 4/10/59
Farm: Green-Dalton	Bottomed: 4/22/59
Loc.: N 49,445.33	Depth: 770
E 46,879.97	Casing: BX-10'; AX-165'
Elevation: 1,376.68	Reaming: 45-165
Drilled by: Putnam Drlg. Co.	Cement: None
Logged by: W. T. Hill	

Top Kingsport	479
Top "U" bed	636
Top "S" bed	690
Base Kingsport	741
"U" bed	756

Invoice
Marietta, Ohio

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

April 30, 1959

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Puncheon Camp Creek Project DMEA Contract No. 4580 - April 1959

Core Hole No. CD-27

Footage drilled	770' @	$3.00/ft.	$2,310.00
Footage reamed	120' @	$2.00/ft.	240.00
			$2,550.00

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

B. H. Putnam, Operator

By: A. R. Eddy
A. R. Eddy
Drilling Superintendent

B. H. Putnam DD-DD-28

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm-F-1088

Hole No: DD-28	Collared: 4/25/59
Farm: Green-Dalton	Bottomed: 5/7/59
Location: N 49,344.80	Depth: 781'
E 46,626.50	Casing: BX-48, AX-130
Elevation: 1198.47	Reaming: 60-130
Drilled by: Putnam Drlg. Co.	Cement: None
Logged by: E. T. Hill	

Top Kingsport	486
Top "A" bed	645
Top "B" bed	698
Top Longview	762

0-50	Overburden
-52	Dol, lt grey, banded, TGS @ base
-55	Dol, med grey, mott
-57	Dol, med grey, banded
-60	Dol, med-dk grey, banded
-70	Dol, med grey, vuggy
-75	Dol, med-dk grey, vuggy, ss @ 72, shear @ 69, 74, hvy gen sh @ base
-76	Dol, lt-med grey, sh plus lt ss @ base
-80	Dol, med grey, mott
-81	Dol, med grey, banded, TGS @ base
-83	Dol, med-dk grey
-88	Dol, med-dk grey, banded, ss plus TGS @ 85, hvy mott 85-88
-90	Dol, black, eyelets, ss @ 90, BP fault @ 88, 89
-102	Dol, med-dk grey, banded 99-102, ss @ 101, sh mod @ 97, 102
-106	Dol, med grey, lt mott
-108	Dol, lt grey, hvy bands, scatt ss throughout, hvy ss @ base
-110	Dol, dk grey, lt bands
-112	Dol, med grey, hvy mott
-117	Dol, dk grey, mott
-120	Dol, lt grey, mott & banded, lt ss @ 117, TGS @ base
-122	Dol, med grey, hvy mott
-125½	Dol, dk grey, banded 122-123½, mott 123½-125½
-128	Cavity
-133½	Dol, lt grey, hvy ss @ 130
-140½	Dol, med-dk grey, mott
-152	Dol, med grey, lt mott, sh @ 145, wh ch band @ base
-155	Dol, med-dk grey, hvy mott, wh ch band @ 153
-157	Dol, dk grey, spotted
-159	Dol, med grey, banded
-165	Dol, lt grey, banded
-166	Chert, white
-176	Dol, med-dk grey, mott
-177	Chert, white
-178	Col, lt grey, hvy bands, TGS @ 177
-181½	Dol, med-dk grey, hvy mott, sh @ 178
-185	Dol, med grey, lt mott
-192	Dol, med grey, lt mangue fracts 189-192
-195	Dol, med grey, mott, sh @ 193-194, scatt lt shears throughout
-197	Dol, lt grey, banded, hvy stp angle flt @ 195
-198	Chert, white
-201	Dol, lt-med grey, lt mott, lt ss plus sh @ base, lt shears
-210	Dol, lt-med grey, hvy mott, ss 202-204, hvy ss plus gen sh @ 204, lt shears 201-204
-212	Dol, lt grey, banded, ss @ 211
-223	Dol, med-dk grey, mott, spotted 212-214, TGS @ 216, ss @ base plus white chert
-227	Dol, lt grey, mott
-231	Dol, med grey, mott, TGS @ 231
-234	Dol, lt-med grey, shear @ 234
-244	Dol, med grey, mott, sh plus lt ss @ 241½, ss plus sh @ base
-247	Dol, med grey, hvy mott
-249	Dol, lt grey
-259½	Dol, med-dk grey, sh @ 251, shears @ 255½-256
-263	Dol, dk grey, mott, [illegible] @ 263

-275½ Dol, med grey, mott, eyelets, shear @ 268, ch @ 270, 273, TBS @ base & lt ss
-286½ Dol, lt-med grey, lt bands, ch @ 276, 278, lt ss @ 283½
-288½ Dol, lt grey, banded, scatt ss, hvy ss plus TGS @ base
-294 Dol, med grey, ch nod 289
-306 Dol, med grey, hvy fault gouge 294-306, lt ss @ 295
-310½ Dol, lt-med grey, scatt shears, hvy ss @ 309½
-328 Dol, dk grey, scatt shears 310½-323, hvy gouge 323-325
-331½ Dol, med-dk grey, hvy mott, lt ss plus congl @ base
-339 Dol, lt-med grey, hvy mott
-346 Dol, med grey, spotted & vuggy
-347 Dol, lt-med grey
-351 Dol, med grey, hvy mott, ss @ 347½, 351, cherty 348
-351½ Chert, white
-357 Dol, lt grey, ch @ 352, ch congl 356-357, lt ss 355
-357½ Chert, white
-361 Dol, med grey, ch @ 358, 359, hvy mott 359-361, TBS @ base
-363½ Dol, med grey, mott, sugary, cherty 361-362
-368 Dol, lt grey, hvy bands 363½-366, ch @ 364, 365, 366, 367
-373 Dol, med grey, ch @ base
-374½ Dol, med grey, TGS @ 373,
-378 Dol, med grey, spotted
-380½ Dol, lt grey, banded, lt ss 379½-380½
-385 Dol, med grey, mott
-388 Dol, med-dk grey, spotted, lt ss @ base
-392 Dol, lt-med grey, lt mott
-395 Dol, med grey, hvy mott, banded near base, lt ss @ base
-395½ Chert, white
-397 Dol, med grey, hvy mott, hvy ss 395½, crackle with gen sh @ 396½
-408 Dol, lt grey, ch nods @ 398, 401, ss @ 397, TBS @ 405
-412 Dol, med grey, mott
-414 Dol, dk grey, spotted
-421 Dol, lt-med grey, ss @ 416 plus TGS, fault @ 416, 420, scatt shears 415-420
-423 Dol, med grey, mott, hvy ss plus congl @ base
-437 Dol, med-dk grey, spotted, TGS @ 429, 430, lt shears @ 429, 430, 433, 436
-438 Chert, blue, oolitic plus ss, hvy gen sh @ base
-444 Dol, lt-med grey, lt bands, TGS @ base
-446 Dol, med-dk grey, TGS @ 446
-449 Dol, med grey, shear @ 447
-451 Dol, med-dk grey, mott & silic
-463 Dol, lt grey, banded, ch @ 452, lt ss 455-456, TGS @ 456, TGS @ base
shears @ 454, 457, 458, 459
-466½ Dol, med grey, mott, hvy gen sh @ base, ch @ 465, 466
-472½ Dol, med grey, lt bands
-473 Dol, dk grey, shaly
-479 Dol, med-dk grey, spotted
-480 Dol, dk grey, shaly
-484 Dol, med grey, banded, lt ss @ base
-489 Dol, med grey, lt ss 486
-491 Dol, med grey, hvy mott, TGS @ top & base
-501 Dol, lt-med grey, TGS @ base, hvy ss @ 492½, lt shears 496-497
-503 Dol, lt grey, lt shear @ 502
-505 Dol, med grey
-505½ Dol, med grey, lt ss @ base
-509½ Dol, lt-med grey

-513	Dol, med grey, TGS @ base, fault @ 512
-519½	Dol, med grey, hvy mott, ch @ 514, 515, 516, 517, 519, 519½, gen sh @ 517, 518
-525	Dol, med grey, lt bands, ch @ 521, TGS @ base, hvy ss 524½, 525
-529	Dol, med grey, spotted
-538	Dol, lt-med grey, lt mott, ss 536½-538, some CM
-552	Dol, med grey, gen sh @ 547, 552
-557	Dol, lt grey, mott, hvy gen sh @ base overlain by ch nod
-569	Dol, lt-med grey, lt bands, ch nod @ 560, 561, ss 566-569, congl 568-569
-571½	Dol, med grey, hvy mott, TGS @ 569, 571½, ch @ 571
-575	Dol, lt-med grey, ch @ 573, 575, hvy grn sh @ base
-576	Dol, med grey, lt crackle with dry breccia filling
-578	Dol, med grey, mott, hvy gen sh @ base
-588	Dol, med grey, ch @ 580, 581, 582, ss @ 582, lt crackle plus dry breccia filling
-592	Dol, med-dk grey, ch @ 589, 591, congl @ 591½, dry breccia
-597	Dol, lt grey, banded, dry breccia, ch @ 596, ss @ base
-611	Dol, lt-med grey, lt bands, ch @ 602½, 603, 606½, dry breccia 597-603, TGS @ 605, lt ss @ 607
-612½	Dol, med grey, mott
-624	Dol, med grey, banded, ss @ 617½, dry crackle @ 612½, 613, 618, 619½, 623, ss @ 621, ch @ 622
-626	Dol, med grey, hvy mott, crackle, dry
-627	Dol, lt grey
-634½	Dol, med-dk grey, spotted 627-630, ss plus ch @ 630
-640	Dol, med grey, banded, TGS plus ss @ base, ch @ 638
-646	Dol, lt-med grey, hvy mott 640-644, bands 644-646 (reddish), hvy gen sh @ base
-650	Dol, lt grey, mott, dry breccia 646-647 (semi-xl)
-654	Dol, med grey, hvy mott, congl 652-654, dry crackle 654
-657	Dol, lt grey, dry rubble, ss @ 655
-658	Re-xl, brn, dry rubble, ch nod @ base
-659	Dol, lt grey, banded, rubble @ base, ss @ base
-660	Chert, blue
-660½	Re-xl, black & white
-661	Ls-, brn, shaly
-666	Semi-xl, mott, brn, fault @ 663, thin ls @ base
-667	Dol, med grey, pink bands, TGS @ base
-672	Re-xl, mott, pinkish
-673	Dol, med grey, banded, pinkish, TGS @ base
-677	Ls, shaly, part breccia sealed with red & orange shale
-684	Dol, med-dk grey, hvy mott, reddish, lt crackle
-686	Dol, dk grey, spotted, crackle with red & gen sh gangue
-688	Ls, red shale
-692	Dol, med-dk grey, red motting
-693½	Chert, white
-698	Dol, med grey, red mott, TGS @ base, lt crackle
-701	Ls, dry breccia 699-700
-705	Re-xl, dk grey, some gen shale, fault @ 704, ch @ base
-709	Dol, med grey, cherty @ base
-715	Semi-xl, red, dk lt crackle
-718	Dol, med grey, mott, lt crackle
-719	Chert with red and green shale
-735	Ls, brn, red shale 721-721½, 728, 729-729½, 731-732
-738	Dol, med-dk grey, lt crackle, ch nod @ 737, TGS @ base
-739½	Ls

-743	Ls, dry breccia
-745½	Ls, sh @ base
-748	Re-xl, brn, coarse, red @ base
-753½	Ls, breccia sealed with re-xl, some red & grn coloring
-757	Re-xl, limy, dk
-758½	Ls, sh @ base
-762	Re-xl, black, asphaltic odor
-764½	Dol, med grey, mott, sh @ base
-775	Dol, med-dk grey, sh @ 766½, 775
-777	Re-xl, brn, siliceous
-778	Dol, med grey, mott
-781	Re-xl, lt brn TD @ 781

Invoice
Marietta, Ohio

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

April 30, 1959

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Luncheon Camp Creek Project DMEA Contract No. 4580 - April 1959

Core Hole No. CL-28

Footage drilled	781' @ $3.00/ft.	$2,343.00
Footage reamed	70' @ $2.00/ft.	140.00
		$2,483.00

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

B. H. Putnam, Operator

By: A. R. Eddy
A. R. Eddy
Drilling Superintendent

ENGINEERS
INSPECTIONS and TESTS

The Bruce Williams Laboratories

CHEMISTS
INDUSTRIAL and ANALYTICAL

ESTABLISHED 1890

MAIN OFFICE AND LABORATORIES 618-624 JOPLIN ST TELEPHONE MAYFAIR 3-1556

JOPLIN, MISSOURI

BATESVILLE, ARKANSAS ST. LOUIS, MISSOURI PICHER, OKLAHOMA

B. H. Putnam
P. O. Box 65
Thornhill, Tennessee

4-22-59

		PERCENT ZINC	
806321	GD - 26 - 1 665-667	11.90	
322	No Tag, material wrapped in paper & was in sack with 26-1 667-669	8.82	1'e 5.06% ZN
323	GD - 26 - 2 669-674	0.82	23'e
324	GD - 26 - 3 674-678	0.32	2.43% ZN
325	GD - 26 - 4 678-684	0.16	
326	GD - 26 - 5 684-688	2.00	
327	GD - 26 - 6 688-692	1.04	

$8.75

Bruce Williams

cf-jc 69-490

THE ABOVE FIGURES ARE AS DETERMINED IN OUR LABORATORIES
ADDRESS ALL COMMUNICATIONS TO JOPLIN, MISSOURI

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 March 19 59 Docket No. DMEA 4580 Contract No. Idm-E 1088

Operator's Name B. H. Putnam Minerals Zinc

Address 512 Third Street, Marietta, Ohio

Contract Amount, $ 170,125.00 Government Participation: 50 % Amount, $ 85,062.00

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:	$4389.00	$71,775.00	$76,164.00	5/13/59	20 RK	
Drilling						
Bulldozing						
Crosscutting						
Reaming Drifting	380.00	1,342.00	1,722.00			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Core boxes	—	290.25	290.25			
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment	53.75	163.75	217.50			
Sampling and Analysis						
Payroll Taxes						
Liability Insurance Incid. allow. .18/ft.	263.34	4,306.50	4,569.84			
(8) Contingencies (specify):						
Totals	$5086.09	$77,877.50	$82,963.59	5086.09	77,877.50	82,963.59

APR 30 1959 O.M.E.

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

Date 3/31/59 *Payee B. H. Putnam

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:

$ 2543.04

Signature Helen R. Miller
(Authorized Certifying Officer)

Date APR 28 1959 Vou. No. 106

(See other side)

2543.05

(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-1088 in accordance with the terms of the contract.

Signature W. A. Beck Title MINING ENGINEER U. S. BUREAU OF MINES Date APR 23 1959

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature V. J. Lynch Title ACTING EXECUTIVE OFFICER REGION V Date APR 23 1959

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 1959 Docket No. DMEA 4580 Contract No. Idm-E 1088

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	$4389.00	1463	$76,164.00	25,388	3.00	50,000	3.00
Reaming	Foot	380.00	190	1,722.00	861	2.00	5,000	2.00
Sampling	Each	53.75	43	217.50	174	1.25	550	1.50
Core boxes	Each	----	---	290.25	150	1.935	150	2.00
Trenching								
Test Pits								
Incid. allow. @ .18/ft.	Foot	263.34	1463	4,569.84	25,388	.18	50,000	.18
TOTAL DISTRIBUTED COSTS		$5086.09		$82,963.59				TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS		$5086.09		$82,963.59				

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, 1959 Operator B. H. Putnam

Per [signature] Title Superintendent

REMARKS:

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)

W. A. Beck

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

A Progress Report on the Luncheon Camp Creek Project
Grainger County, Tennessee

March 1959

by W. T. Hill

Docket No. 4580
Contract No. Idm-F 1088

During the month of March two holes were drilled on the Luncheon Camp Creek project. Hole CD-25 was drilled on the Green-Dalton farm. The hole was drilled 200 feet east of CD-11 and is the initial hole on a strike fence. It collared in the Mascot formation and was drilled to a depth of 703 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-25	Overburden	——	——	——
25-420	Mascot	CM @ 420	Trace ZNS @ 393	Dolomite
420-703	Kingsport	"R" @ 574 "S" @ 640	——	Dolomite, re-xl, and limestone, some lite crackle breccia

Hole CD-26 was drilled 100 feet southwest of CD-25. The hole collared in the Mascot formation and was drilled to a depth of 760 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-17	Overburden	——	——	——
17-442	Mascot	CM @ 442	——	Dolomite

RECEIVED
APR 2 1 1959
U. S. Geological Survey
Geologic Division
Knoxville, Tenn.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
442-708	Kingsport	"R" @ 596 "S" @ 652 "T" @ 708	Trace ZNS @ 662 665-669, 6% ZN est. 669-670, 1/2% ZN est. Shine @ 683 685-688, 4% ZN est. 688-690, 1/2% ZN est. Shine @ 700	Dolomite & re-xl, crackle breccia in "S" bed
708-760	Longview	"U" @ 727 L-4 @ 754	——	Dolomite, re-xl, and limestone

Drilling is now underway 100 feet southwest of GD-26

ESTABLISHED 1904
MAIN OFFICE AND LABORATORIES 810-824 JOPLIN ST. TELEPHONE MAYFAIR 3-1550
JOPLIN, MISSOURI
BATESVILLE, ARKANSAS ST. LOUIS, MISSOURI PICHER, OKLAHOMA

B. H. Putman
P. O. Box 65
Thorn Hill, Tennessee

2-3-59

				Zinc	
002221	Sample	CU-22-1	143½ - 144½	11.00	
222		CU-22-2	144½ - 145½	0.40	7½'e
223		CU-22-3	148 - 149	9.70	3.11%
224		CU-22-4	149 - 151	2.20	10½'e 2.4%
225		CU-22-5	155 - 156	6.50	
226		CU-22-6	156 - 159	1.22	
227		CU-22-7	212½ - 215	7.24	20½'e
228		CU-22-8	228 - 231	3.20	5'e
229		CU-22-9	231 - 233	3.20	3.20% 1.66%

20/38 CU-TLA

THE ABOVE FIGURES ARE AS DETERMINED IN OUR LABORATORIES
ADDRESS ALL COMMUNICATIONS TO JOPLIN, MISSOURI

Bruce Williams

ENGINEERS
INSPECTIONS and TESTS

The Bruce Williams Laboratories

CHEMISTS
INDUSTRIAL and ANALYTICAL

ESTABLISHED 1898

MAIN OFFICE AND LABORATORIES 618-624 JOPLIN ST. TELEPHONE MAYFAIR 3-1556

JOPLIN, MISSOURI

BATESVILLE, ARKANSAS — ST. LOUIS, MISSOURI — PICHER, OKLAHOMA

D. H. Putnam
P. O. Box 65
Dorn Hill, Tennessee

2-11-59

			ZINC	
00274	CD - 23 - 1	241½-243	3.76	
742	CD - 23 - 2	243 - 245	1.50	9½'c
743	CD - 23 - 3	245 - 247	2.00	
744	CD - 23 - 4	247 - 249	1.44	3.07%
745	CD - 23 - 5	249 - 251	4.44	
746	CD - 23 - 6	258 - 258½	0.00	
747	CD - 23 - 7	263 - 265	1.36	4'c
748	CD - 23 - 8	265 - 267	1.62	1.49%
749	CD - 23 - 9	320 - 322	10.04	
750	CD - 23 - 10	322 - 323½	14.04	
751	CD - 23 - 11	323½ - 325	0.12	13½'c
752	CD - 23 - 12	328 - 330½	1.02	
753	CD - 23 - 13	330½ - 332	0.40	4.19%
754	CD - 23 - 14	332 - 333½	7.10	
755	CD - 23 - 15	342 - 343	1.70	
756	CD - 23 - 16	348½ - 349½	1.72	
757	CD - 23 - 17	356 - 358	2.90	

01-02 68-830

THE ABOVE FIGURES ARE AS DETERMINED IN OUR LABORATORIES
ADDRESS ALL COMMUNICATIONS TO JOPLIN, MISSOURI

Bruce Williams

21.25

ENGINEERS
INSPECTIONS and TESTS

The Bruce Williams Laboratories

CHEMISTS
INDUSTRIAL and ANALYTICAL

ESTABLISHED 1898

MAIN OFFICE AND LABORATORIES 818-824 JOPLIN ST. TELEPHONE MAYFAIR 3-1556

JOPLIN, MISSOURI

BATESVILLE, ARKANSAS ST. LOUIS, MISSOURI PICHER, OKLAHOMA

B. H. Putnam
P. O. Box 65
Thorn Hill, Tennessee

2-21-59

			ZINC	
803161	GD-24-#1	290-291	1.58	
162	2	296-296½	6.04	
163	3	302½-303½	1.12	
164	#4	312½-313½	2.28	
165	5	333-335	2.74	
166	6	338-340	2.38	
167	7	340-342	0.68	8'@ 2.0%
168	8	342½-344½	0.66	
169	9	344½-346½	4.68	
170	10	346½-348	1.82	
171	11	356-358	4.36	
172	12	358-360	2.94	
173	13	360-361	1.32	9'@ 2.61%
174	14	361-363	1.10	
175	15	363-365	2.90	
176	16	379-379½	1.78	
177	17	386-387	5.88	

$21.25

Bruce Williams

THE ABOVE FIGURES ARE AS DETERMINED IN OUR LABORATORIES
ADDRESS ALL COMMUNICATIONS TO JOPLIN, MISSOURI

B. H. Putnam DD-GD-25
Copper Ridge Project - Pumpkin Camp Creek
DMA Idm-K 1068

Hole No.: GD-25

Farm: Green-Dalton

Location: N 69,622.35

E 46,981.96

Elevation: 1390.82

Drilled by: Putnam Drlg. Co.

Logged by: W. T. Hill

Collared: 3/6/59

Bottomed: 3/17/59

Depth: 703'

Casing: BX-55; AX-155

Reaming: 35-155

Cement: None

Top Kingsport	420
Top "R" bed	574
Top "S" bed	639

0-25	Overburden
-30	Dol, med grey, banded & mott, hvy gen sh @ 27, 28
-35	Dol, lt grey, red mott
-36	Dol, med grey, gen sh @ base
-37	Dol, lt grey, banded
-43	Dol, med-dk grey, banded & mott
-51	Dol, med grey, darker toward base, black sh plus hvy ss @ base
-53½	Dol, med grey, banded
-55	Dol, lt grey, banded
-57	Dol, med grey, banded
-59	Dol, lt grey, mott, very hvy ss plus congl throughout, sh @ base
-66	Dol, dk grey, mott, steep angle fault 62-63
-73½	Dol, med-dk grey
-76	Dol, lt grey, banded
-77	Dol, med grey, mott, shaly
-81	Dol, black
-87	Dol, lt grey, ss @ 83, sh @ base
-96	Dol, med grey, mott, spotted
-97½	Fe-xl & chert, mott
-102	Dol, med grey
-106	Dol, med grey, hvy mott, siliceous
-114	Dol, lt-med grey, banded, ss @ 109, 114, sh @ 114
-121	Dol, med grey, mott, vuggy 118-119
-122	Chert, white
-127	Dol, lt-med grey, banded, TGS @ base
-130	Dol, med grey, hvy mott, silic 127-128
-141	Dol, med grey, ss @ base
-145	Dol, lt grey, mott @ 142
-147	Chert, white
-151	Dol, med grey, lt fracts
-152	Dol, med grey, mott, vuggy
-153½	Opening
-160	Dol, med grey, mott
-170	Dol, med grey, hvy mott, spotted 160-164, ss plus sh plus TGS @ base
-175	Dol, lt grey, mott, spotted, TGS @ base
-178	Dol, med grey, hvy mott, ss plus TGS @ base
-192	Dol, lt-med grey, mott, spotted, TGS @ 192, fault @ base
-195½	Dol, med grey, hvy mott
-200	Dol, med grey, lt bands, shear @ 192, TGS @ base
-206	Dol, med-dk grey
-209	Dol, dk grey, hvy mott, ss @ base
-220	Dol, med grey, mott, heavy spots
-225	Dol, lt grey, ch nods @ 220, 222, 225, TGS @ 225
-229	Dol, lt-med grey, scatt ss 228-229
-235	Dol, lt grey banded, ss @ 234-235, CM @ 235
-244	Dol, med grey, TGS @ base
-245	Dol, lt grey, ss throughout
-246	Dol, med grey, mott, siliceous, wh ch plus hvy ss @ base, oolite @ 246
-254	Dol, med-dk grey, mott, vuggy, TGS plus ss @ base
-257	Dol, lt grey, hvy ss @ 256
-264	Dol, med grey, hvy mott
-266	Dol, dk grey
-278	Dol, med grey, mott, TGS plus ss @ base, hvy fault 272-273
-284	Dol, lt grey, mott, hvy ss plus CM @ 282½, TGS @ 284

-295 Dol, med grey, mott, spotted, TGS plus ss @ base
-297½ Dol, med grey, mott
-298 Chert, white
-301 Dol, med grey
-305 Dol, lt grey, banded, lt ss 301-302, ch @ 303,304
-310 Dol, med grey, hvy mott, spotted, sugary
-314 Dol, lt grey, ch @ 312, 1½' core loss 310-314
-321 Dol, lt-med grey, 4' core loss 314-321
-325 Dol, very lt grey, banded, ch nod @ 325
-327½ Dol, lt-med grey, mott
-332 Dol, med grey, hvy mott, TGS plus ss @ base
-339 Dol, lt grey, mott, ss 338-339, silic 337-339
-343 Dol, lt grey, hvy mott, ch @ 342
-349 Dol, lt-med grey
-356 Dol, med grey, hvy mott, blk sh @ base
-359 Dol, dk grey, banded, spotted, TGS @ 359
-363 Dol, lt grey, mott, ss @ 363
-366 Dol, med grey
-368 Dol, lt grey, mott, sh @ base
-378 Dol, black, hvy spots, ss @ base plus 6" gen sh
-384 Dol, lt-med grey, mott
-386 Dol, med grey, mott
-387½ Dol, lt-med grey, CMSS plus TGS @ base
-391 Dol, med-dk grey, hvy mott
-399 Dol, med grey, banded, ss 391-392, TGS @ base, TR ANS @ 393
-400½ Dol, dk grey, hvy mott, TGS @ 399½
-404 Dol, lt grey, banded, fault breccia @ 403
-407 Dol, lt grey, mott
-415½ Dol, dk grey, mott, spotted
-423 Dol, lt grey, lt bands 419-421, ss in sed breccia (coarse bedding), spotted
-424½ Dol, hvy mott, ch @ 423, sh @ base
-434 Dol, lt grey, lt bands, TGS @ base
-437 Dol, lt grey, well banded, TGS @ 435-436, ss @ 437
-443 Dol, lt grey, TGS @ 441
-447½ Dol, dk grey, hvy mott, ch nod @ base
-454 Dol, lt-med grey, banded, ch nods @ 449, 450, 451, 453
-456 Dol, lt-med grey, banded, hvy ss 455-456, TGS @ 456
-467 Dol, lt grey, mott, TGS @ 462, 467, ch @ 460, 465, ss @ 465, 466 (CM)
-479 Dol, lt-med grey, TGS @ 473, 474, 475, ch @ 472
-488 Dol, lt grey, lt mott, ch nod @ 487, 488
-496 Dol, lt grey, strong bands, ch nod @ 481, ss 494-495, sed congl plus ss 495-496, TGS plus ch @ 496
-498 Dol, med grey, hvy mott, sed congl @ base
-517 Dol, lt grey, banded, ch nods @ 506, 507, 508, 509, scatt ss 510-511, TGS @ 511, Ch 515, 516, sed-congl 516-517
-517½ Dol, med grey, mott
-536 Dol, lt grey, banded, ch nods @ 523, 532, ss @ 529, TGS @ 525, 536
-538½ Dol, lt grey, mott, ch nod @ base
-543 Dol, lt grey, well banded, lt shears 540-541, TGS plus lt ss @ 543
-548 Dol, lt-med grey, mott, ss 547-548, 6" wh ch @ base
-548½ Shale, green, hvy FeS throughout
-549 Chert, blue
-554 Dol, med grey, hvy mott, shaly near base
-556 Dol, lt grey, mott, TGS @ base

-558	Dol, med grey, hvy mott
-560	Dol, med grey, banded, TGS @ base
-567	Dol, lt grey, lt bands, grn sh @ base
-572	Dol, lt-med grey, mott, ch @ base
-574	Dol, lt grey, banded, lt ss @ base
-574½	Shale, green
-575½	Dol, med grey, hvy mott, hvy gen sh @ base
-584	Dol, med grey, mott, lt ss @ base
-585½	Dol, med grey, sed breccia with gen sh filling (dry breccia)
-586½	Dol, med grey, banded
-588½	Dol & blue chert, dry breccia
-592	Ss-xl, brn, coarse grn'd, crackle
-592½	Dol, lt grey, banded, lt ss @ base
-593½	Ss-xl, brn, coarse grn'd
-595½	Dol, med grey, sugary, banded, crackle
-599	Ss-xl, brn, coarse, lt crackle
-603	Dol, med grey, mott, ch nod @ 599½
-604	Ss-xl, brn, vuggy
-613½	Dol, med grey, greenish, mott, crackle
-614½	Ss-xl, brn, crackle
-617	Dol, med grey, crackle
-622	Dol, med grey, spotted
-625	Dol, dk grey, breccia, some Fe_3 shines
-627	Ls, breccia, gen sh filling
-628	Chert, black & brn, shaly
-634	Dol, med grey, banded & mott
-634½	Ss-xl, dk brn, vuggy, ch @ base
-639½	Dol, lt grey, banded, ch @ 636, 637, 639½
-646	Ss-xl, brn, coarse, chert 639½-641
-653	Ls, brn, shaly
-654½	Dol, med grey, ch @ 653, 654
-665	Ls, brn, shaly, ch @ 655, 659, 660
-669	Ss-xl & ls, dk brn, vuggy
-674	Ls, brn, shaly
-675	Dol, banded, lt ss plus gen sh @ base
-685	Ls, brn
-690	Ss-xl, brn, coarse
-691	Dol, med grey, ss @ base plus TGS
-692½	Ss-xl, brn
-693½	Ls, brn, shaly
-703	Ss-xl, brn, coarse TD @ 703

Invoice
Marietta, Ohio

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

March 31, 1959

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Luncheon Camp Creek Project DMEA Contract No. 4580 - March 1959

Core Hole No. OD-25

Footage drilled	703 @ $3.00/ft.	$2,109.00
Footage reamed	120 @ $2.00/ft.	240.00
		$2,349.00

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

B. H. Putnam, Operator

By: A. R. Eddy
A. R. Eddy
Drilling Superintendent

B. H. Putnam DD-CD-26
Copper Ridge Project - Pumpkin Camp Creek
DMEA Idm-F 1088

Hole No: CD-26

Farm: Green-Dalton

Location: N 49,538.57

E 46,929.38

Elevation: 1379.54

Drilled by: Putnam Drlg. Co.

Logged by: W. T. Hill

Collared: 3/25/59

Bottomed: 4/9/59

Depth: 760'

Casing: BX-17, AX-100

Reaming: 30'-100'

Cement: 2 bags

Top Kingsport	442
Top "R" bed	596
Top "3" bed	652
Base Kingsport	708

0-17	Overburden
-20	Dol, med grey, very shaly
-26	Dol, lt-med, banded, oxid @ 25
-30½	Dol, med grey, very shaly
-34½	Dol, med-dk grey, banded
-41	Dol, med grey, strong mott, lt ss @ 34½
-47	Dol, med grey, banded, ss @ 43, blk sh @ 45
-51½	Dol, lt grey, mott, eyelets, hvy ss plus TGS @ 50
-54	Dol, very lt grey, mott, lite ss plus TGS @ base, ch @ 53½, hvy mott @ base
-57	Dol, lt grey, lt mott
-59½	Dol, dk grey, TBS @ base
-61	Dol, med grey, hvy mott, ch @ base
-63	Dol, dk grey, spotted, hvy ss @ base
-69	Dol, lt-med grey
-72½	Dol, black, banded, CMSS @ 71, hvy black sh @ base
-77	Dol, lt grey, banded, hvy mott @ top, scatt ss 76-77, hvy CMSS @ base plus black sh
-79	Dol, dk grey
-85	Dol, med-dk grey, mott, sugary, conglomeratic
-87½	Dol, med grey, sugary, ch plus lt ss @ base
-89	Dol, lt grey, banded
-91	Dol, med grey, hvy mott, shaly
-95½	Dol, med-dk grey, ocngl @ base
-97½	Opening
-105	Dol, very lite grey, sed breccia 97½-98½ plus CMSS
-111	Dol, med grey, lt mott, TGS @ base
-116	Dol, med grey, hvy mott @ 113, gangue filled breccia plus oolite @ base
-121½	Dol, med grey, lt bands
-126	Dol, dk grey, hvy mott, sugary
-128	Dol, med grey, spotted, ss plus wk ch @ base
-132½	Dol, lt grey, banded, lt ss @ base
-133½	Dol, med grey, hvy mott
-141½	Dol, med-dk grey, mott
-142	Chert, white
-149	Dol, lt-med grey, banded, wh ch @ base
-154	Dol, med grey, hvy mott
-162	Dol, med-dk grey, spotted, scatt ss @ base
-162½	Chert, white, TGS @ base
-165	Dol, med grey, TGS @ base
-167	Chert, white, some ocngl
-170	Dol, med grey, ch mod @ base
-170½	Chert, white
-178	Dol, med grey, hvy mott, spotted to 173, ss @ 173, gen sh @ 176
-183	Dol, med grey, banded, scatt hvy ss 181-182
-187	Dol, med grey, mott, spotted, TGS @ base
-192	Dol, med-dk grey, hvy mott, sugary, sh plus ss @ base
-198	Dol, very lite grey, lite bands, dip @ 196 - 36°
-202	Dol, med grey, hvy mott 199-202, hvy gen sh plus lite ss @ base
-207	Dol, med grey
-211½	Dol, med grey, hvy mott, lt ss plus TGS @ 209
-215	Dol, med grey, spotted, banded, lt ss plus TGS @ base
-216	Dol, med grey, hvy mott, shaly
-221½	Dol, lt grey, ch mod @ 220½, 221½ (oolitic)
-224½	Dol, med grey

-231½ Dol, dk grey, mott, lt ss @ base
-242½ Dol, med grey, mott, spotted, siliceous, ch nod @ base, lt shear @ base
-244 Dol, med grey, ch nod @ base
-253 Dol, lt grey, banded, hvy CMSS @ 244½, 250, lt ss @ 252, ch nod @ 247
BF fault plus gen sh @ 251
-257 Dol, lt grey, broken bands, ss 256-257, CMSS @ 252 plus TGS plus ch
-266 Dol, med grey, ss 265-266, TGS @ 265, ch @ 265½
-267½ Re-xl, brn, oolitic ch @ base
-269½ Semi-xl, brn, mott
-277 Dol, med grey, lt mott, spotted, ss @ 276
-279 Dol, lt-med grey, mott
-281 Dol, lt grey, sed breccia, hvy ss
-295 Dol, med-dk grey, hvy mott, TGS @ base, hvy BF fault 294-295
-301 Dol, black, mott
-306 Dol, lt-med, hvy mott, TGS plus ss @ base
-315 Dol, med grey, mott, spotted
-316½ Dol, lt grey, hvy mott, ch nod @ 316
-320 Dol, med grey, hvy mott
-320½ Chert, white
-325 Dol, lt grey, banded, lt ss plus ch @ base
-330½ Dol, med grey, lt mott
-332 Dol, med-dk grey, hvy mott
-333 Chert, blue and white
-338 Dol, very lite grey, banded, ch nods @ 335, 336, 337
-340 Dol, lt-med grey, TGS plus chert @ base
-340½ Chert, white
-346 Dol, lt grey, banded, lt ss @ base
-350 Dol, lt-med grey, mott, TGS plus lite ss @ 348½
-352 Dol, med grey, mott, lite ss @ base
-359 Dol, lt grey, mott
-360 Chert, white
-364 Dol, med, hvy mott, hvy ss plus congl @ 360-361, wh ch congl 363-364
-371 Dol, lt grey
-378 Dol, lt-med grey, mott, darker toward base, TBS @ base
-381 Dol, lt grey, banded, shear @ 380
-385 Dol, lt grey, mott, vuggy
-388 Dol, lt-med grey, vuggy, sandy, 6" hvy ss @ base plus sed breccia
-401 Dol, med grey, spotted, oolitic ch @ base
-408 Dol, med grey, mott, vuggy near base
-411 Dol, lt grey, banded, lt scatt ss plus TGS @ base
-412 Dol, med grey, mott
-416 Dol, lt grey, banded, scatt ss
-421 Dol, dk grey, banded, gen sh @ base
-428 Dol, lt-med grey, banded, ch nod @ 423
-433 Dol, med grey, hvy mott, shaly toward base
-435 Dol, med-dk grey
-438 Dol, dk grey
-446 Dol, lt grey, banded, CMSS @ 442, ss @ 443½
-448 Dol, med grey, hvy mott, ch @ 446 plus TGS, TGS @ base
-452 Dol, lt grey, scatt shears 448-450
-455½ Dol, med grey, mott, gen sh @ base
-458½ Dol, lt grey, mott, black sh @ base
-470 Dol, lt-med grey, ch nod near base, mott
-487 Dol, lt grey, well banded, ch nods @ 470½, 472½, 473, 474, lt ss 478-480,
lt ss plus TGS @ base

-488½ Dol, med grey, sugary, hvy ss plus sh @ base
-491 Dol, lt grey, CMSS plus sh @ 490
-498 Dol, med grey, banded, TGS @ 496, 497, 498
-518 Dol, lt grey, strong banding, sh nods @ 510, 511, TGS @ 506, 515, 518, hvy ss 517-518
-521 Dol, med grey, hvy mott, hvy gen sh @ base
-535 Dol, very lite grey, banded, sh nods @ 529, 530, 531, 532, 535, hvy gen sh @ 524, 534, ss @ 534
-540 Dol, lt-med grey, sh nods @ 536, 537, gen sh @ 539, 540
-565 Dol, very lt grey, lt bands, TGS plus 6" sh @ 547, sh @ 551, 552, 553, 560
-570 Dol, lt grey, well banded, lt ss @ base
-570½ Shale gsn
-596 Dol, very lite grey, lt banding, TGS @ 575, sh @ 578, 595
-596½ Shale, green
-598 Ra-xl, dk brn, mott, hvy gen sh @ base
-604 Dol, med grey, mott, TGS @ base
-605½ Dol, med grey, banded
-607 Chert, black, shaly, oxidized
-608½ Ra-xl, dk brn, mott
-609½ Dol, lt grey, banded, lt ss plus TGS @ base
-610½ Shale, grn
-612 Ra-xl, brn, vuggy
-612½ Dol, lt grey, banded
-613½ Chert, blue & white, hvy gen sh @ base
-617 Ra-xl, brn, scatt sh nods, lt crackle
-620 Dol, lt grey, banded, dry breccia 617-619, lt ss @ 617
-623 Ra-xl, brn, crackle
-623½ Dol, lt grey, crackle, lt FeS shines
-634 Semi- & ra-xl, lt, lt crackle, lt ss plus TGS @ base
-637½ Dol, lt grey
-642 Dol, dk grey, spotted, lt crackle, gen sh @ base
-644½ Ls, brn, gen sh @ base
-645½ Ra-xl, dk brn
-652 Dol, med grey, mott, crackle breccia
-653½ Ra-xl and white chert
-674 Ra-xl, brn, coarse, good crackle breccia, siliceous, FeS shine @ 662, 665-669, Est 5% PX, 2' loss 667-669, 669-670, Est 1/2% PX, 2' core loss 669-674
-675 Dol, lt grey, crackle
-683 Ra-xl, brn, coarse, crackle, 675½-678, Est 1/2% PX, sh @ 683
-694 Ra-xl, brn, coarse, 685-688, Est 4% PX, 688-690, Est 1/2% PX
-695 Dol, lt grey, crackle
-708 Ra-xl, dk brn, coarse, good FeS shine @ 700
-721 Dol, med grey, sh nod @ 711, darker toward base
-726½ Dol, med-dk grey, well mott
-735 Ra-xl, coarse, dk brn, siliceous, lt crackle
-739 Dol, med-dk grey, vuggy, siliceous
-742 Semi-xl, dk brn, siliceous, ss @ 740
-743 Ra-xl, dk brn
-754 Dol, med grey, banded, sh @ 745, 749, 750, 751, 752½, ss plus TGS @ 746, ss @ 754
-757 Ra-xl, dk brn, mott, ss @ 756
-760 Ls, brn 760 TD

Invoice
Marietta, Ohio

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

March 31, 1959

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Lumbeson Camp Creek Project DMEA Contract No. 4580 - March 1959

Core hole No. CD-26

Footage drilled	760 @ $3.00/ft.	$2,280.00
Footage reamed	70 @ $2.00/ft.	140.00
		$2,420.00

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

B. H. Putnam, Operator

By: A. R. Eddy
A. R. Eddy
Drilling Superintendent

OFFICIAL FILE COPY
O. M. E.
RECEIVED MAR 20 1959

DATE	INITIALS	CODE
3-20	C	220
"		110
3/20		800
3/23		500

DMEA EXPLORATION PROJECT

INTERIM REPORT

DMEA-4580, Idm-E1088 - Zinc

Operator: B. H. Putnam, Operator. P.O. Box 65, Thorn Hill, Tenn.

Location: Puncheon Camp Creek area, Grainger County, Tennessee

Summary of Drilling Completed

	Since last inspection		To date	
Number of holes	3	45	51	
Footage	1524	1521' 73,925'	27,279	

Jackson 3/20/59

Holes showing:

a) Commercial zinc ore---------- 8
b) Non-commercial zinc mineralization----- 26
c) No zinc mineralization---------- 17

Additional data on the three holes completed during the interim follows:

Hole No. GD-24.- Located 100 feet south of GD-23 on Green-Dalton property. Total depth 501 feet. Coordinates N49593.43, E46186.29; Platform elevation 1438.35. Drilling began 1-31-59 and was completed 2-10-59. Brief log of hole: 0-65 overburden, collared in Mascot fm; top of Kingsport fm (chert matrix) at 176; top of "R" bed (?) at 337; top of "S" bed (?) at 409; top of "T" bed (?) at 449; hole bottomed at 501 feet.

Mineralization: 1' (290-291) heavy shines of sphalerite; shine at 295; 1/2'(296-296½) of est. 3% Zn; 1' (302½-303½) of est. 3% Zn; 1' (308½-309½) of est. 1% Zn; 1' (312½-313½) of est. 3.5% Zn; traces at 317, 325 and 327; 2'(333-335) of est. 2% Zn; 8½' (338-346½) of 2.0% Zn (assay); shines from 346-348; 9'(356-365) of 2.6% zinc (assay); shine at 378; 1'(386-387) of est.4% Zn;

shine at 391.

Hole No. DAL-1.- Located 200 feet west of GD-21 on Dalton property. Coordinates N49507.78, E45739.34; platform elevation 1495.83 feet. Total depth 410 feet. Drilling began 2-11-59 and was completed 2-19-59. Brief log of hole: 0-78 feet overburden, collared in Mascot fm; top of Kingsport fm (chert matrix) at 131½; top of "R" bed at 303; top of "S" bed at 365; top of "T" bed at 395; hole bottomed at 410 feet.

Mineralization: None - hole blank.

Hole No. Bul-1. - Located 400 feet west of DAL-1 on Rosie Bullen property. Coordinates N49157.03, E45523.29; platform elevation 1463.19 feet. Total depth 613 feet. Starting and bottoming drilling dates were not available at time of this inspection. Brief log of hole: 0-55 overburden, collared in Mascot fm; Cavity from 67-125; top of Kingsport fm (chert matrix) at 220; fault zone with 70 feet of actual vertical displacement from 241 to 305; top of "R" bed at 484; no "S" bed was recognizable; top of "T" bed at 551; top of "U" bed at 567; L-4 marker bed at 599; hole bottomed at 613 feet. Mineralization: None-blank hole.

610' for log [illegible]

Current drilling is in progress on Hole No. GD-25, located 250 feet southeast of GD-10. Core was examined to a depth of 110 feet.

Inspected: March 9, 1959

Helmuth Wedow, Jr. Geologist
Geological Survey

L. E. Shirley, Mining Engineer
Bureau of Mines (OME)

z

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

Budget Bureau No. 42-R103.4
Approval expires 6-30-53.

PAID ON VOUCHER & SCHEDULE OF PAYMENTS K- 51

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

Month of February, 1959 Docket No. DMEA 4580 Contract No. Idm-E 1088
Operator's Name B. H. Putnam Minerals Zinc
Address 512 Third Street, Marietta, Ohio
Contract Amount, $170,125.00 Government Participation: 50% Amount, $85,062.00

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	$4563.00	$67,212.00	$91,775.00	3/20/59		
Bulldozing						
Crosscutting						
Drifting						
Reaming	40.00	1,302.00	1,342.00			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
Core boxes	—	290.25	290.25			
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis	10.00	153.75	163.75			
Payroll Taxes						
Liability Insurance						
(8) Contingencies (specify): Incld. allow. .18/ft.	273.78	4,032.72	4,306.50			
TOTALS	$4886.78	$72,990.72	$77,877.50	$4886.78	$72,990.72	$77,877.50

I certify that the above bill is correct and just and that payment therefor has not been received.
Date 2/28/59 *Payee D. H. Putnam
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:
$2,443.39
Signature [signature] (Authorized Certifying Officer)
Date MAR 12 1959 Vou. No. 92
(See other side)

2,443.39

(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. Wm-E1088 in accordance with the terms of the contract.

Signature [illegible] Title GEOLOGIST, U. S. G. S. Date MAR 6 1959

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature V. J. Lynch Title ACTING EXECUTIVE OFFICER OME - REGION V Date MAR 11 1959

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.

GPO 83-38476

Form MF-104A
(April 1962)

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 February 1959 Docket No. DMEA 4580 Contract No. Idm-E 1088
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	$4,563.00	1521	$71,775.00	23,925	3.00	50,000	3.00
Reaming	Foot	40.00	20	1,342.00	671	2.00	5,000	2.00
Sampling	Each	10.00	8	163.75	131	1.25	550	1.50
Core boxes	Each	—	—	290.25	150	1.935	150	2.00
Trenching								
Test Pits								
Incid. allow. @ .18/ft.	Foot	273.78	1521	4,306.50	23,925	.18	50,000	.18
TOTAL DISTRIBUTED COSTS		$4,886.78		$77,877.50				TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS		$4,886.78		$77,877.50				

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 February 28, 1959 Operator B. H. Putnam

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)

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

MAR 6 1959

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 Puncheon Camp Creek Project
Grainger County, Tennessee

February 1959

By W. T. Hill

Docket No. 4580
Contract No. Idm-X 1088

During the month of February three holes were drilled on the Puncheon Camp Creek project. Hole GD-24 was drilled 100 feet south of GD-23. The hole collared in the Maccet formation and was drilled to a depth of 501 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-65	Overburden	—	—	—
65-176	Maccet	CMSS @ 176	—	Dolomite
176-449	Kingsport	"R" @ 338; "S" @ 409; "T" @ 449	290-291, 1.58% ZN, 296-296½, 6.04% ZN, 302-303½, 1.12% ZN, 308½-309½, shines, 312½-313½, 2.28% ZN, trace @ 317, 326, 328, 333-335, 2.74% ZN, 338-346½, 2.0% ZN, 346½-348, 1.82% ZN, 356-365, 2.61% ZN, 379-379½, 1.78% ZN, 386-387, 5.88% ZN	Dolomite & re-xl; R & S beds brecciated, some dry breccia
449-501	Longview	—	—	Mostly dry breccia

Hole DAL-1 was drilled on the W. Dalton farm. The hole is located 200' west of GD-21. It collared in the Maccet formation and was drilled to a depth of 410 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-77	Overburden	—	—	—
77-140	Mascot	CMSS @ 140	—	Dolomite
140-395	Kingsport	"R" @ 303, "S" @ 365, "T" @ 395	—	Dolomite & re-xl, some dry breccia
395-410	Longview	—	—	Dolomite

Hole BUL-1 was drilled on the R. Bullen farm 400 feet west of DAL-1. The hole collared in the Mascot formation and was drilled to a depth of 610 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-124	Overburden	—	—	—
124-220	Mascot	CM @ 220	—	Dolomite, numerous small shears
220	Kingsport	"R" @ 484	—	Dolomite & re-xl, faulted from 240-350 (70' vertical displacement)
551-610	Longview	"T" @ 551 "U" @ 580	—	Dolomite & re-xl

B. H. Putnam DD-GD-24

Copper Ridge Project - Puncheon Camp Creek

Hole No: GD-24	Collared: 1/31/59
Farm: Green-Dalton	Bottomed: 2/10/59
Loc.: N 49,592.43	Depth: 501
E 46,186.29	Casing: BX 70 - AX 120
Elev.: 1,438.35 Platform	Reaming: 20'
Drilled by: Putnam Drlg. Co.	Cement: 2 bags
Logged by: W. T. Hill	

Top Kingsport	176
Top "R" bed	338
Top "S" bed	409
Base Kingsport	409

0-65 Overburden
-90 Dol, lite grey; 2½' core recovery; rock badly oxidized; some cherts
-95 Dol, lite-med; mott; 1½' core recovery
-109 Dol, lite grey; 2' core recovery 95-110
-110 Dol, med-dk grey; dip @ 110 - 37°
-112 Dol, med grey, banded; scatt shears @ base
-120 Dol, lite grey; chert, sed congl plus hvy ss near base (½-7); 2' core recovery 112-120
-123 Dol, lite grey; 2' core recovery 120-123
-128 Dol, med grey; mott & spotted; oxid @ 124
-129 Dol, med grey; TGS @ base
-132 Dol, med-dk grey; mott; 6" hvy ss plus oolitic chert @ base
-134½ Dol, lite grey; TGS @ base
-135½ Dol, med grey; mott & shaly
-143 Dol, med-dk grey; mott; spotted; sh nod @ base
-148 Dol, lite grey; lite bands, lite ss @ 145; hvy block sh @ base
-149 Dol, med grey; mott
-152 Dol, lite grey; banded, ss @ 150-151
-156 Dol, med grey
-157 Dol, med grey; very shaly
-160 Dol, med grey; sh nods @ 158½, 159
-162 Dol, lite grey; banded
-166 Dol, med grey; lite mott
-167 Dol, med grey; shaly
-173½ Dol, black, spotted; lite mott lower; 1' very shaly, sh nod @ base
-176½ Dol, lite grey; banded; hvy ss @ base; some CM
-183½ Dol, med grey; mott; lite gangue fracts 180-181½; sh @ base
-190½ Dol, lite grey; banded & mott; hvy GMOS @ 185, 186; sh @ 188, 189
-194 Dol, med grey; blue mott; dip @ 189 - 33°; TGS @ base
-195½ Dol, dk grey; banded; TGS plus ss @ base, sh nod @ 194½
-202½ Dol, med grey; lite gangue fracts, mott near base
-205 Dol, dk grey, sherty, mott, chert nod @ base
-212 Dol, lite grey; banded, sh nod @ 209; TGS plus lite ss @ base
-217 Dol, med grey; spotted, TGS @ base
-220½ Dol, med grey; hvy mott, TGS @ base
-221½ Dol, lite grey; lite breec plus trace ZNS; breec green sh, chert plus ss
-222½ Dol, med grey; mott; sugary
-223 Chert, oolite plus ss
-224½ Dol, lt grey, banded, lite ss @ base
-230 Dol, med-dk grey; wh sh @ 230
-232½ Dol, lt grey; mott
-237½ Dol, dk grey; hvy mott; TGS @ base
-241 Dol, lite grey; hvy mott; hvy green shale @ base
-252 Dol, lite-med grey; banded, sh nods @ 243½, 244, 246, 246½; TGS @ 248 scatt hvy ss 250-252, heavier toward base; congl @ base; TGS plus chert @ base
-255 Dol, med grey; hvy mott; sh @ 253, sh congl @ base plus TGS
-269 Dol, lite grey; sh nods @ 263, 264; banded; lite ss @ 264; TGS plus ss @ base
-276 Dol, lite grey; sh nods @ 270, 271, 272½, 274-275; sherty semi-rexl; TGS @ base
-287½ Dol, lite grey, banded, sh nods @ 280, 287½; lt ss @ base; crackle 285-285½, 286½-287½; dip @ 285 - 35° (steepens toward base)
-305½ Dol, lite grey, lt bands, cherts @ 288½, 289, 290, 291, 300; dip 48° @ 293; hvy crackle throughout; ss @ 295, hvy ZNS shine @ 290-295, 296-296½ Est 1% ZN; shears @ 297; 302½-303½, est. 1% ZN
-308½ Dol, med grey; mott; breec; TGS @ 307 (dip - 45°)

-316 Dol, lite grey; banded, dip - 55°; crackle, ch mod @ top; 308½-309½. Est 1% ZN; 312½-313½ Est 2½% ZN

-317 Dol, med grey; crackle, traces ZNS @ base

-324 Dol, lt grey, banded, lt ss plus gen sh @ base; hvy crackle breec; ch @ 317½, dip @ 324 - 45°

-331 Dol, med grey; hvy mott 324-325; breec 325½ - 327½; traces ZNS @ 325½, sh mod @ 328; traces ZNS @ 328

-335 Dol, med grey; crackle breec; TGS @ 332½, steep shears @ 333; 331-332. traces ZNS; Est 2% ZN 333-335

-337 Dol, lt grey, banded breccia

-342½ Dol, med grey; lt ss @ 338, breccia; 338-342. Est 1% ZN; hvy FeS

-355 Dol, lt-med grey; breec - 342½-347½; 342½-346½. Est 2.75% ZN; crackle 347½-355, dip flat, traces FeS

-365 Dol, lt grey; breccia; banded, darker toward base; 355-365. est. 2% ZN

-366 Re-xl, brn, breccia

-367 Dol, lt grey, banded, TGS plus chert @ base

-372 Dol plus re-xl, breccia, cherty near top; hvy gen sh @ base

-373 Dol, lt grey, banded, crackle

-381 Re-xl, brn, silic, lt crackle; ch @ 375, hvy ZNS shine @ 379

-382 Dol, dk grey; mott; sugary, crackle, ch @ base

-384 Dol, lt grey; mott; breccia

-387 Dol, dk grey; mott, crackle, rubble @ base, 386-387. Est 4% ZN

-391 Dol, med grey; banded & mott; crackle; spott ZNS shines 387-391; TGS @ base

-400 Dol, lt grey, rubble with ch and brn re-xl matrix; hvy mott @ base

-406 Dol, lt grey; lt ss @ 401; breccia (dry)

-408 Re-xl, dk brn, ch mod @ top & 408; TGS @ base

-408½ Dol, lt grey, mott

-409½ Re-xl, greenish

-412 Semi-xl, greenish

-415 Re-xl, dk brn; shaly, ch @ base

-415½ Dol, banded

-421 Re-xl, brn, crackle; ch @ 419, 421; TGS & base

-426½ Dol, mott; breccia sealed with re-xl and gangue

-427½ Re-xl, brn, crackle

-431 Dol, lt grey; breccia; re-xl & gangue matrix

-437 Dol, lt-med grey; breccia, lite ss @ base; some dry breccia @ 433

-438 Dol, dk grey; breccia, dry

-439½ Chert

-440½ Dol, med grey

-442½ Dol, med-dk grey; mott; ch & gen sh @ base

-443½ Re-xl, brn, TGS @ base

-446 Dol, lt grey, lt mott, breccia

-449 Re-xl, dk brn

-467 Dol, med grey, breccia, ½ dry; ss @ 454, 457, 465, 467; trace ZNS @ 467

-468 Dol, very dk grey

-469½ Dol, breccia, dk & lite blocks

-472½ Dol, lt grey; breccia, cherty

-473½ Chert

-476 Dol, dk, semi, breccia

-484 Dol, lt grey breccia, fine rubble, 480-481½ sealed with re-xl

-501 Dol, lt & med frags; dry breccia; ss @ 485. TD @ 501

Invoice
Marietta, Ohio

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

February 28, 1959

In account with
PUTNAM DRILLING COMPANY
P. O. Box 447

512 Third Street

Phone: FR 4-6761

Statement for drilling Puncheon Camp Creek Project DMEA Contract No. 4580 - February 1959

Core Hole No. CD-24

Footage drilled	501 @ $3.00/Ft.	$1,503.00
Footage reamed	20 @ $2.00/Ft.	40.00
		$1,543.00

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

B. H. Putnam, Operator

By: A. R. Eddy
A. R. Eddy
Drilling Superintendent

B. H. Putnam DD-DAL-1

Copper Ridge Project - Pumpkinvine Camp Creek

Hole No.: DAL-1

Farm: W. Dalton

Loc.: N 49,507.78

E 45,739.34

Elev.: 1495.83 GEND.

Drilled by: Putnam Drilling Co.

Logged by: W. T. Hill

Collared: 2/11/59

Bottomed: 2/19/59

Depth: 410'

Casing: BX-77 - AX-122

Reaming: None

Cement: None

Top Kingsport	140'
Top "R" bed	303
Top "3" bed	365
Base Kingsport	396

DAL-1

0-77	Overburden
-86	Dol, med grey, spotted
-99	Dol, lt-med grey; ox shears @ 87; lt crackle 87-88
-100½	Dol, med grey; sherty
-103	Dol, lt grey, banded; lt scatt ss @ 101; ss plus chert @ base; dip - 35°
-111½	Dol, lt grey; mott 110-111½
-112½	Chert
-119½	Dol, lt grey, lt bands; TGS @ base
-122	Dol, med grey; mott; TBS @ 121
-122½	Dol, black, mott
-129½	Dol, med grey; spotted; cavity 123-124.5; TGS @ 128
-131½	Dol, lt grey; banded; CMSS @ base
-137	Dol, med grey; ch @ base
-137½	Dol, med, shaly
-139½	Dol, dk grey; hvy mott; TGS @ base
-145	Dol, lt grey; ss @ 140
-147½	Cavity
-156½	Dol, very lt grey; banded 150½; ss plus TGS @ 151
-159½	Cavity
-164	Dol, dk grey; mott; siliceous; ch nod @ base
-175½	Dol, med grey; banded near base
-177	Dol, med grey; TGS @ base
-181½	Dol, med-dk grey; spotted; lt shears throughout
-185½	Dol, lt-med grey; ss plus ch @ 182
-187	Chert, conglomeratic; hvy ss; some dol congl
-194	Dol, med grey; shaly; banded 187-188; ss @ 188
-201½	Dol, lt-med grey; lt mott; TGS @ base
-208	Dol, lt grey; lt mott; TGS @ base
-212	Dol, med grey; ch nods @ 211, 211½, 212
-223	Dol, lt grey; banded; ch nods @ 213, 214; 221-222, hvy ss, TGS @ base
-226	Dol, med-dk grey; sugary; TGS @ 224½; hvy mott, ch nod @ base; shears throughout
-230½	Dol, lt-med grey; hvy gen sh @ base; scatt shears 226-228
-235	Dol, med grey; mott; hvy green sh plus ch @ base; lt facets throughout
-240	Dol, med grey; banded; scatt ss 239-240; ch @ 240
-245	Dol, med grey; ch nods @ 242, 245; lt shears throughout
-258	Dol, lt grey; banded; ch nods @ 250, 257, 258; hvy gen sh @ 258; shear @ 250
-261	Dol, med grey; ch 259½-260½, 261; TGS @ 260½; oolite @ 259½
-265	Dol, med grey; banded; TGS plus ch @ base
-270	Dol, med grey; banded; TGS plus ss @ base
-275	Dol, med grey; mott; scatt ss 274-275; 6" gen sh @ base
-285	Dol, med-dk grey; mott @ 281-283; spotted 283-285; darker toward base; ch @ 276, 285; some lt crackle with gen chert filling
-296½	Dol, med-dk grey; scatt lite ss plus TBS @ base
-300	Dol, med grey; mott
-304	Dol, med-dk grey; banded; hvy gen sh plus ss @ 303; ch nod @ 302
-306	Dol, med grey; hvy mott; eyelets; hvy gen sh @ base
-310	Dol, med grey; shaly & mott; fract @ 309 (dry breccia); gen sh @ base
-313½	Dol, lt grey; dry breccia
-315½	Ss-sl, dk brn; lt grey dol block @ 314
-316½	Dol, lt grey
-322	Ss-sl, brn, shaly near top; vuggy and darker toward base; crackle at base; ss @ top

	Dol, lt grey; dry breccia
	Re-xl, brn; mott
	Dol, med grey; hvy mott; semi-sh; crackle; TGS @ 332
	Dol, med grey; sh mod @ 335½, 336; hvy gen sh @ base
2	Re-xl, lt brn; mott; vuggy near base
43	Dol, lt grey; banded; as plus TGS @ base
-349	Dol, med grey; mott; lt crackle (dry); TGS @ 345, 357
-350	Re-xl, dk brn; hvy mott crackle
-354	Dol, black, breec (in part dry); sh mod near base; hvy gen sh : base
-354½	Chert
-355	Re-xl, cherty
-355½	Limestone
-356½	Re-xl, brn
-361	Dol, med-dk grey; mott; crackle
-365	Dol, med grey; lt bands, lite crackle; some grey dol gangue near base
-372	Re-xl & chert (75% chert); black jasperoid @ base
-377	Re-xl, siliceous; black jasperoid band & gen sh @ base
-379	Dol, med grey; fractured; as @ base
-391	Re-xl, brn; siliceous; gen sh : 380, 384, 386½; as @ 389; white sh @ base
-393	Dol, med grey
-396	Chert, white
-410	Dol, med grey; lt facets throughout. TD @ 410'

Invoice
Marietta, Ohio

B. N. Putnam, Appro.
512 Third Street
Marietta, Ohio

February 28, 1959

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Punchbowl Camp Creek Project DMEA Contract No. 4580 - February 1959

Core Hole No. DAL-1

Footage drilled	410 @ $3.00/FT.	$1,230.00

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

B. N. Putnam, Operator

By: A. R. Eddy
A. R. Eddy
Drilling Superintendent

ENGINEERS
INSPECTIONS and TESTS

The Bruce Williams Laboratories

CHEMISTS
INDUSTRIAL and ANALYTICAL

ESTABLISHED 1896

MAIN OFFICE AND LABORATORIES 618-624 JOPLIN ST TELEPHONE MAYFAIR 3-1556

JOPLIN, MISSOURI

ST. LOUIS, MISSOURI

PICHER, OKLAHOMA

ROGERSVILLE, ARKANSAS

B. H. Putnam
P. O. Box 65
Thorn Hill, Tennessee

12-17-58

		ZINC
800657	Sample GD-19-1 11'-13' 5 12'c 1.96%	1.96
658	GD-19-2 183-184	0.80
659	GD-19-3 188-188½	1.92
660	GD-20-1 204-206	7.04
661	GD-20-2 223½-224½ 3½'c 1.38%	1.54
662	GD-20-3 224½-226	1.1[illegible]
663	GD-20-4 238½-239½	5.00
664	GD-20-5 254½-256½	1.36

$1.00

Bruce Williams

Fo/JE 68-397

ASSAYS ARE AS DETERMINED IN OUR LABORATORIES

Invoice
Marietta, Ohio

B. N. Putnam, Appro.
512 Third Street
Marietta, Ohio

February 28, 1959

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Puncheon Camp Creek Project BMRA Contract No. 4580 - February 1959

Core Hole No. BUL-1

Footage drilled	610' @ $3.00/ft.	$1,830.00

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

B. N. Putnam, Operator

By: A. R. Eddy
A. R. Eddy
Drilling Superintendent

B. H. Putnam DD-BU-1

Copper Ridge Project - Puncheon Camp Creek

Hole No.: BUL-1

Farm: R. Bullen

Location: N 49,157.03

E 45,523.29

Elevation: 1,463.19

Drilled by: Putnam Drilling Co.

Logged by: W. T. Hill

Collared: 2/20/59

Bottomed: 3/4/59

Depth: 610'

Casing: BX-52 AX-140

Reaming: None

Cement: None

Top Kingsport	220
Top "R" Bed	484
Top "S" Bed	?
Base Kingsport	551
Top "U" Bed	567

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O. M. F.
RECEIVED APR 16 1959
INDEXED
Y/16 C 220
~~446 156 g 500~~

RECEIVED
APR 13 1959
U. S. Geological Survey
Geologic Data
Washington, D.C.

0-55	Overburden
-66	Dol, med grey; some cherts, badly fractured; 2½' core recovery
-124	Opening, clay and boulder filled
-125	Dol, med grey; vertical fault gorge
-135	Dol, med grey; mott 126-135; jointed; 5' core recovery
-137	Dol, med grey, banded; scatt ss plus ch; hvy ss @ base
-140	Dol, lt-med grey; banded; hvy fault gorge @ base; scatt shears
-144	Dol, lt-med grey; banded, lt scatt shears; 1½' core recovery
-148½	Dol, med-dk grey; lt shears; some crackle
-150	Chert, white, sheared
-156	Dol, med grey; ch @ 153; lt scatt shears 152-156; 2' core recovery
-161	Dol, med grey; mott; scatt shears; 4' core recovery
-163	Dol, med-dk grey; mott; hvy gen sh @ 162; scatt ss 162-163
-166	Dol, med grey; lt shears
-170	Dol, med-dk grey; hvy mott; lt ss @ base; hvy shears; fault @ base 3' core recovery 165-170
-174	Dol, med grey; hvy mott; oolite plus hvy ss @ 171
-188	Dol, med grey; ch @ 175, 185; spotted 181-188; hvy shears 176, 177; lite shears throughout; TGS @ 183
-190	Dol, dk grey; mott; hvy fault @ 188
-194	Dol, med-dk grey; banded; lite ss @ 193; hvy ss plus TGS @ base
-195	Chert, white; TGS @ base
-197½	Dol, med grey; ch @ 196
-198½	Chert; sed congl 197½-198; white 198-198½
-202	Dol, med grey; hvy ss 198½-199½
-215	Dol, med-dk grey; spotted
-224	Dol, lt-med grey dol, banded; TGS @ 220
-228½	Dol, med-dk grey; spotted
-239	Dol, lt-med grey; lite bands; ss @ 229, 233-233½; ch nod @ 234, 234½
-240	Dol, dk grey
-242	Dol, med grey; scatt oxid shears
-248	Dol, med grey; 2' core recovery
-253	Dol, med grey; 1' core recovery; some dry breccia @ base
-256	Dol, med grey; 2' core recovery; scatt shears
-260	Dol, med grey; 1½' core recovery, spotted
-267	Dol, med grey; spotted
-270	Dol, med grey; mott; ch @ base
-274	Dol, med-dk grey; 2' core recovery; ch @ 272
-281	Dol, lt grey; hvy sh @ base; open 275-275½
-282	Dol, lt grey; hvy mott; conglomeratic
-302	Dol, med grey; ch nod @ 295, hvy vert faults 282-286; scatt steep angle fracts throughout
-304½	Dol, med grey; oxid fract @ base
-308	Dol, dk grey; mott; ch nods @ 307, 308; shear @ 305½; lite scatt shears throughout
-313	Dol, med grey; banded; ch nods @ 311, 312
-315	Dol, lt-med grey, banded, ch nod @ 313; TGS plus lt ss @ base
-324	Dol, med grey; TGS @ base
-332	Dol, med grey, banded; TGS @ 326, 326½, 327; dip @ 50°; crackle with gen sh & white gangue filling
-333	Dol, dk grey; ss plus ch @ base
-339	Dol, lt grey; lt bands; silic gen sh plus hvy ss @ 334; dry breccia crackle @ 337; ss plus ch @ base
-341½	Dol, lt-med grey; banded; oolitic ch plus hvy ss @ 340; CMSS @ base
-357	Dol, ~~[illegible]~~, med grey; lite bands to 352; pinkish coloring 349-353; gen sh plus ss @ base

-362 Dol, lt grey, hvy open fault @ 357½
-366 Dol, med grey; lite gen sh fract @ 363
-374 Dol, lt grey; well banded; 1' heavy ss @ base; dip @ 35°; 1' fault breccia 370, 371; TGS @ base
-375 Dol, med grey; hvy mott; steep angle fault @ 374; ch @ 374, 375; hvy gen sh @ 375
-387½ Dol, med grey; lt bands; ch @ 386½, 387½; grn silic shale @ base fault @ 380, 386; scatt crackle (dry) and shears; oolite 386½
-394 Dol, med grey; mott; ss plus ch plus gen sh @ base
-399 Dol, med grey; ch nods @ 394, 395, 395½, 396, 399
-401½ Dol, med grey; mott; semi-xl, siliceous
-410 Dol, lt grey; banded 401½-406½; ch nods @ 403; TGS @ base
-411 Dol, lt-med grey; mott
-413 Dol, med grey; banded; ch nod @ 411; TGS @ base
-418½ Dol, med grey; ch nod @ 417
-421½ Chert & gen sh; brecciated; sealed with see chert
-434 Dol, lte grey; banded; ss @ 426; ch @ 429; ss @ 433-434; gen sh @ base
-438 Dol, lt grey; lite bands; ch nod @ 435; lite fracts throughout
-441 Dol, lt grey; mott; gen sh @ 439; lt fracts throughout
-446 Dol, med grey bands; ch nod @ 442, 443; very lt shears
-456 Dol, lt grey; lt bands; lt vert fracts with wh silic gangue; ss @ 455; some FeS sh along bedding @ 455
-463 Dol, med grey; mott; fracts with pink fn-grnd dol plus FeS from 460-463
-474 Dol, med grey; mott; scatt fracts with gen sh, 468-472 dry breccia
-482 Dol, med-dk grey; mott; crackle with gen sh; darker toward base; gen sh @ base
-484 Dol, lt grey; bands; lt shears
-494½ Semi-xl; hvy sh @ top, 1' re-xl @ top; hvy mott; open shears near base
-496 Dol, lt grey crackle; hvy gen sh @ 495½-496; vert shears @ 496
-499 Re-xl, greenish brn, crackle, hvy gen sh @ 498-498½
-504 Dol, lt grey, mott, crackle, fault @ 500
-505 Re-xl, dk brn, crackle
-509 Dol, dk grey, crackle, sugary, hvy gen sh in crackle @ 508
-510½ Silica, fragmental, some gen sh, hvy gen sh @ base
-517 Dol, med grey, mott, crackle
-523 Dol, lt grey, bands 519-520, ch @ 518
-528½ Silica, dry breccia
-532 Dol, lt grey, crackle with silic gangue, fault breccia 531-532
-534½ Re-xl, cherty near top plus gen sh
-540 Dol, lite grey, crackle, some re-xl gangue
-546 Re-xl, brn, brecc, silic, hvy ss @ base
-548½ Re-xl, brn
-551 Re-xl, brn, shaly, hvy gen sh @ base
-555 Dol, med grey, mott
-566½ Dol, med grey, ch @ 561, vert shears 561-563, some crackle
-567½ Oolitic ch plus ss, thin re-xl @ base
-573 Dol, med grey, mott, crackle
-578½ Re-xl, brn, silic, wh ch 576-576½
-583 Dol, med grey, mott, brecciated
-587 Dol, dk grey, brecciated, sheared throughout
-599 Dol, lt med grey, mott, ch nods near base plus hvy ss, brecciated
-607 Re-xl, brn, very silic 600-601, hvy ss plus gen sh @ 601, fault @ 605
-608 Dol, lt grey, ch nods, lite ss @ base
-611 Re-xl, bands, gen sh throughout, crackle
-613 Dol, lite grey, TD @ 613

OFFICIAL FILE COPY
O. M. E.
RECEIVED FEB 24 1959

DATE	INITIALS	CODE
2/24	C	220
"	FH	110
2/25	[illegible]	800
~~2/26~~	~~[illegible]~~	~~500~~

DMEA EXPLORATION PROJECT

INTERIM REPORT

DMEA-4580, Idm-E 1088 - Zinc

Operator: B. H. Putnam, Operator, P.O. Box 65, Thorn Hill, Tenn.

Location: Puncheon Camp Creek area, Grainger County, Tennessee

Summary of Drilling Completed

	Since last inspection	To date
Number of holes----------	3 ✓	48*
Footage----------	1090 ✓	25,755*

Holes showing:

a) Commercial zinc ore----------	8
b) Non-Commercial zinc mineralization----------	25
c) No zinc mineralization----------	15

Additional data on the three holes completed during the interim follows:

Hole No.GD-21 - Located 103 feet southwest of GD-20 on Greene-Dalton property. Coordinates N49680.01, E45,837.82; collar elevation 1496.26. Total depth 365 feet. Drilling began 12/10/58 and was completed 12/23/58. Brief log of hole: 0-70 feet overburden, collared in Kingsport fm; top of "R" bed at 210½; top of "S" bed at 298½; top of "T" bed 328; top of Longview dolomite at 328; top of "U" bed at 338; L-4 marker at 365; hole bottomed at 365 feet. Mineralization: None

Hole No. GD-22 - Located 100 feet north of GD-18 on Greene-Dalton property. Coordinates N49,854.49, E-46,043.65; collar elevation 1467.29 feet. Total depth 315 feet. Drilling began 1/14/59 and was completed 1/24/59. Brief log of hole: 0-62 feet overburden, collared in Kingsport fm; top of "R" bed at 130;

* Includes 6 holes and 3,351' disallowed by Fld. Team.
Talbot 2/24/59

top of "S" bed at 215½; top of "T" bed at 258; "U" bed from 274 to 285; top of L-4 marker at 301; hole bottomed at 315 feet.

Mineralization: 12' (143½-155½) of 3.4% Zn

3' (155-158) of 1.32% Zn

Strong shines of Zn 191 and 201

2.5'(212-214½) of 7.42% Zn

Strong shines of Zn at 224

5'(228-233) of 3.2% Zn

Hole No. GD-23, Located 100 feet south of GD-18 on Greene-Dalton property. Coordinates N49680.73, E46,138.93; elevation at platform 1459.66. Total depth 410 feet. Drilling began on 1/26/59 and was completed 1/30/59. Brief log of hole: 0--65 feet overburden, collared in Mascot fm; top of Kingsport (~~chert~~ chert-matrix) at 124; top of "R" bed at 277½; top of "S" bed at 343; top of "T" bed at 378; top of "U" bed at 390; hole bottomed at 410 ft.

Mineralization: 9½'(241½-251) of est. 3% Zn; shines of Zn at 255, 258, 258½; 3'(263-266) of est. 0.5% Zn; shines at 274; 1' (276-277) of est. 2% Zn; shines of zinc at 280½ and 281; 1/2' (284½-285) of est. 0.5% Zn; shines at 286; 3½ (320-323½) est. 10% Zn; shines at 325 and 329; 4'(329-333) of est. 2% Zn; traces from 333 to 336; weak shines from 336 to 337; traces from 340 to 343; 1½'(343-344½) of est. 2.5% Zn; 1½'(348½-350) est. 1.5% Zn; 2'(356-358) of 2.5% Zn; Shines at 362 and 363; 2'(369-371) of est. 2% Zn.

Current drilling is in progress on Hole No. GD-24, located 100 feet south of GD-23. This hole was near bottom at the time of this visit and core was observed to 460 feet. Some mineralization has been encountered but no estimates are given.

Inspected: Feb. 10, 1959

L. E. Shirley, Mining Engineer
Bureau of Mines - OME

Helmuth Wedow, Jr., Geologist
Geological Survey

z

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
REGION V

ELECTROTECHNICAL
EXPERIMENT STATION

P. O. BOX 217
NORRIS, TENNESSEE

February 4, 1959

Memorandum

To: Jay L. Chambers, Office of Minerals Exploration Administration, Interior Building, Washington 25, D. C.

From: Administrative Assistant, Norris, Tennessee

Subject: Monthly report and voucher

We are enclosing two copies of the following monthly report and voucher:

Idm-E1088 B. H. Putnam
Docket No. DMEA-4580
14th payment - month of January
Amount $1152.75

Helen Miller
Helen R. Miller

Attachment
/hbm
Copies to R. A. Laurence
V. J. Lynch
Norris files
Day files

OFFICIAL FILE COPY
O. M. E.
RECEIVED FEB 6 1959

DATE	INITIALS	CODE
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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 January, 1959 Docket No. DMEA 4580 Contract No. Idm-E 1088
Operator's Name B. H. Putnam Minerals Zinc
Address 512 Third Street, Marietta, Ohio
Contract Amount, $170,125.00 Government Participation: 50 % Amount, $ 85,062.00

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	$2175.00	$65,037.00	$67,212.00	2/11/59		
Bulldozing						
Crosscutting						
Drifting						
Reaming	———	1,302.00	1,302.00			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
Core boxes	———	290.25	290.25			
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis	———	163.75	163.75		153.75	153.75
Payroll Taxes						
Liability Insurance						
(8) Contingencies (specify): Incid. allow. @ .18/ft.	130.50	3,902.22	4,032.72			
TOTALS	$2305.50	$70,695.22	$73,000.72	2305.50	70,685.22	72990.72

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

Date 1/31/59 *Payee B. H. Putnam

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:

$ 1152 75

Signature Helen R. Meder
(Authorized Certifying Officer)

Date FEB 4 1959 Vou. No. 85
(See other side)

1152.75

(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. E-1088, in accordance with the terms of the contract.

Signature V. J. Lynch Title MINING ENGINEER U. S. BUREAU OF MINES Date FEB 3 1959

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert A. Kamm Title EXECUTIVE OFFICER OME FIELD TEAM REGION V Date FEB 3 1959

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

FEB 6 1959
O.M.E.

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

Month of January 9 1959 Docket No. DMEA 4580 Contract No. Idm-E 1088

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	$2,175.00	725	$67,212.00	22,404	3.00	50,000	3.00
Churn Reaming	Foot	—	—	1,302.00	651	2.00	5,000	2.00
Auger Sampling	Each	—	—	163.75	123	1.25	550	1.50
Core boxes	Each	—	—	290.25	150	1.935	150	2.00
Stripping								
Trenching								
Test Pits								
Roads and Trails Inc. allow. @ .18/ft.	Foot	130.50	725	4,032.72	22,404	.18	50,000	.18
Total Distributed Costs		$2,305.50		$73,000.72				Total Costs Authorized by Contract
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
Total Costs		$2,305.50		$73,000.72				

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 1/31/59 Operator B. H. Putnam

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)

V. 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

A Progress Report on the Puncheon Camp Creek Project
Grainger County, Tennessee

January 1959

By W. T. Hill

Docket No. 4580
Contract No. Idm-E 1088

During the month of January two holes were drilled on the Puncheon Camp Creek Project. Hole GD-22 was drilled 100 feet north of GD-18. The hole collared in the Kingsport formation and was drilled to a depth of 315 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-62	Overburden	-----	-----	---
62-258	Kingsport	"R" @ 130; "S" @ 215½; "T" @ 258	143½-144½, est. 6% Zn; 144½-145½, est. 1/2% Zn; 147½-149, est. 7% Zn; 149-151, est. 1/2% Zn; 155-155½, est. 4% Zn; 155½-158½, est. 1% Zn; shine @ 191, 200½-201; 212-215, est. 8% Zn; 215-217, est. 3/4% Zn; 228-230, est. 1% Zn; 230-233, est. 1½% Zn.	Dolomite & recrystalline, some limestone. In part, brecciated. FeS mineralization 143½-158½
258-315	Longview	"U" @ 274; L-4 @ 301	-----	Dolomite , rexl, some limestone; very silliceous, no breccia

Hole GD-23 was drilled 100 feet south of GD-18. The hole collared in the Mascot formation and was drilled to a depth of 410 feet.

Depth	Formation	Key Horizon	Zinc Mineralization	Remarks
0-65	Overburden	------	------	---
65-152	Mascot	CMss @ 152	------	Dolomite
152-378	Kingsport	"R" @ 277½; "S" @ 343; "T" @ 378	241½-251, est. 3% Zn; Shine @ 255, 258; 263-266; est. 1/2% Zn; shine @ 274; 276-277, est. 2% ZN; shine @ 280½, 281; 284½-285, est. 1/2% Zn; 320-323½, est. 10% Zn; shine 329; 329-333, est. 2% Zn; 333-336, traces; 340-343, traces; 343-344½, est. 2⅛% Zn; 348½-350, est. 1⅛% Zn; 356-358, est. 2½% Zn; shines 362, 363; 369-371, est. 2% Zn	Dolomite & re-xl, brecci-ated, scatter-ed FeS through-out
378-410	Longview	"U" @ 390	------	Dolomite and recrystalline

Drilling is now under way at location GD-24, 100 feet south of GD-23.

Invoice
Marietta, Ohio

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

January 31, 1959

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR-4-6761

Statement for drilling Puncheon Camp Creek Project DMEA Contract No. 4580 - January 1959

Core Hole No. GD-22

Footage drilled	315' @ 3.00/ft.	$945.00

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

B. H. Putnam, Operator

By: A R Eddy
A. R. Eddy
Drilling Superintendent

Invoice
Marietta, Ohio

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

January 31, 1959

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Puncheon Camp Creek Project DMEA Contract No. 4580 - January 1959

Core hole No. GD-23

Footage drilled	410' @ $3.00/ft.	$1230.00

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

B. H. Putnam, Operator

By: A R Eddy
A. R. Eddy
Drilling Superintendent

B. H. Putnam DD-GD-22

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm-E 1088

Hole No.: GD-22

Farm: Green-Dalton

Location: N 49,854.49

E 46,043.65

Elevation: 1467.29

Drilled by: Putnam Drlg. Co.

Logged by: W. T. Hill

Collared: 1/14/59

Bottomed: 1/24/59

Depth: 315'

Casing: BX-62'; AX-98'

Reaming: None

Cement: None

Top Kingsport	----
Top "R" Bed	130'
Top "S" Bed	215½'
Base Kingsport	258'
Top "U" Bed	274'
Base "U" Bed	285'
Top of L-4	301'

0-62	Overburden
-85½	Dolomite, lite grey, ch nod @ 63; banded to 85; 3½' recovery 62-85; thin hvy ss @ 85½
-86	Blue chert & semi-rexl
-87	Lite grey dol, banded
-88	Lite grey dol; hvy mott; blue chert @ top
-90½	Med grey dol, lite bands; chert band @ 90; oolitic chert @ 90½
-92½	Lite grey dol, chert nod @ base
-105	Lite grey dol, banded; hvy gen sh @ base; crackle @ 93; 5' core recovery 92½-105
-105½	Ls; in part re-xl
-109	Lite-med dol; shear @ 106½; faint banded
-111	Lite-med dol; mott with eyelets
-123	Med-dk grey dol; strong bands 111-112½; lite bands to 123; lite ss @ base; ch nod @ 120; TGS @ 121; dip @ 121 - 49°
-130	Med-grey mott dol; oxid @ 123, 128-130; lite shears @ 126
-134	Re-xl, black and white; shaly 130-131½; mott lite crackle 133-134
-136	Med grey dol, banded
-139	Lite-med dol; hvy mott; scattered oxid shears 137½-139; some gangue
-140	Re-xl, brn, shaly
-143½	Dol, black; crackle
-147	Re-xl, dk brn; black and white 143½-144½; brecc 143½-144½; Est 6% ZN 143½-144½ plus FeS; Est ½% ZN 144½-145½; oxid 146; crackle breccia
-148	Dol, med grey, banded; crackle brecc
-160	Re-xl, brn & black and white; 148-149, brecc with est. 7% ZN plus some FeS crackle brecc, 149-151 with jasperoid with est. ½% ZN; dol block @ 154 (fault shears throughout); 155-156, est. 4% ZN and some FeS; Est. 1% ZN 156-159 plus FeS
-165	Dol, med grey; mott; upper 3' semi-re-xl; 6" blue ch @ base; lite crackle
-166	Dol, med-dk grey; thin gen sh @ base; lite crackle
-170½	Re-xl; greenish; shaly & mott; lite crackle
-173½	Dol, med grey; mott; lite shearing throughout; siliceous
-187	Dol, lite grey
-190½	Dol, med-dk grey; wk ch @ from 189-190½; lite crackle
-191½	Re-xl, coarse; good ZNS shine
-199½	Dol, dk grey; wk ch @ 195½; rubble breccia
-201½	Re-xl, coarse; black and white; ZNS shines 200½-201
-205	Dol, lite grey; dk grey 201½-202½ (ruble breccia); crackle 202½-205; banded, blue ch @ 203; TBS @ base
-210	Re-xl; black and white, coarse, crackle; wk ch @ base
-210½	Dol, lite grey
-211½	Re-xl, black and white; jasperoid bands
-212½	Ls; brecc sealed with jasperoid
-215	Chert and re-xl, brecc; Est 8% ZN 212½-215
-215½	Dol, lite grey; sandy; trace ZNS
-220	Re-xl, coarse; brn; cherty and siliceous; Est 3/4% ZN 215½-216½
-258	Re-xl; lite grey dol block 227, 228, 230; 220-228 brn, coarse; crackle, brecc 228-233, black and white; 233-234½ brn; 6" gen shale @ 234½; 234½-239 brn, lite crackle, 239-242, black and white, jasperoid @ top; 242-258 brown, 6" semi @ 245-245½ with ss @ base; hvy ss @ 241 plus gen sh plus chert; good ZNS shine @ 224 (along shale seam); 228-231, est. 1% ZN; 231-233 est. 1½% ZN; "S" bed

-274½	Dol, lite-med grey; white ch nod @ 260, 261½; lite crackle and shears throughout ("T" bed)
-275½	Re-xl; dk brn; white oolitic chert @ top ("U" bed)
-280	Dol, med grey; mott brecc @ base
-284	Re-xl; black and white; TGS @ base; half chert (mott) 280-282
-285	Ls, brn, shaly, thin re-xl @ base
-291	Dol, med-dk grey; eyelets, thin ss plus TGS @ base
-297	Re-xl, coarse brn, siliceous; ch nod @ 293½, 294½ (white sec.); 295; thin hvy ss @ base
-299½	Dol, lite grey, mott
-301	Re-xl, drk brn, silic., crackle @ base; ch nod @ base; 1½ core recovery 300-305
-306½	Dol, med grey; blue; mott; lite ss @ 305½
-309	Re-xl, very siliceous; dk brn, sandy
-310	Chert, white
-311	Dol, lite grey; lite ss @ base
-315	Chert, white; dol brecc with ss @ 312; TD @ 315

B. H. Putnam DD-GD-23

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm-E 1088

Hole No.:	GD-23	Collared:	1/26/59
Farm:	Green-Dalton	Bottomed:	1/30/59
Location:	N 49,680.73	Depth:	410'
	E 46,138.93	Casing:	----
Elevation:	1459.66 (Platform)	Reaming:	None
Drilled by:	Putnam Drlg. Co.	Cement:	None
Logged by:	W. T. Hill		

Top Kingsport	124
Top "R" Bed	277½
Top "S" Bed	343
Top "T" Bed	378
Top "U" Bed	390

0-65	Overburden
-68½	Dol, lite grey; thin shear @ base
-69½	Dol, dk grey; mott
-75	Dol, lite-med grey, lite bands; heavy CMSS plus gen shale @ base plus chert
-91½	Dol, lite grey; lite scatt shears 88-89; lite ss @ base
-92½	Dol, dk grey
-95½	Dol, lite grey, banded; thin ss beds throughout; thin blue ch @ base
-96½	Dol, med grey; mott; lite ss @ base
-100	Dol, lite grey; well banded; lite ss 98-100; CMSS @ 97½; brn ch @ base
-104	Dol, med grey; gangue facets 101-102; TBS @ base
-105	Dol, med grey, shaly & mott (heavy)
-106½	Dol, med grey; mott 105-105½; ch nod @ 106
-112	Dol, lite-med grey; banded 108-110; dip @ 110' - 34°
-114	Dol, med grey; TBS @ base
-115	Dol, shaly; heavy mott; oxidized
-120	Dol, very dk grey; eyelets
-121	Dol, dk grey; shaly & mott; oxidized; fault @ 121
-129	Dol, dk grey; banded 121-125; mott 125-129; 6" heavy ss @ 124; ss chert @ 121½
-129½	Dol, shaly &&mott; oxidized
-132	Dol, med-dk grey; mott; TBS @ base
-136	Dol, lite grey; banded 132-134; hvy ss @ 133; CMSS @ 133½
-138	Dol, med-dk grey; mott; TBS @ 136½, 138
-141	Dol, lite-med; mott; TBS @ base
-142½	Dol, dk grey, banded TBS @ base; dip @ 142 - 31°
-146	Dol, med grey; scatt ss 143-143½; TBS @ base
-148½	Dol, med grey; mott TBS @ base
-152	Dol, dk grey; mott; shaly; oolitic chert @ base
-155½	Dol, lite grey; banded; mott 152-153; eyelets
-157	Dol, dk grey; banded, TBS @ base
-165	Dol, lite-med grey banded 157-159½; lite ss @ 158½; TBS @ 161; 164; TGS @ base; spotted 161½-165; dip @ 159 - 32°
-170	Dol, lite grey; mott; lite oxid shears throughout
-171	Chert, white; hvy cherty ss @ base underlain by blue chert
-173½	Dol, lite grey; faintly banded, lite ss @ top
-178	Dol, med grey, mott
-178½	Dol, med grey; heavy mott TGS @ top and base
-185½	Dol, med grey; well mott; TGS @ 182-183½
-189	Dol, very lite grey; well mott; TGS @ base
-192½	Dol, very lite grey; banded; blue ch nods @ 190, 190½, 191, 192, 192½
-195	Dol, med-dk grey; banded
-198	Dol, very lite grey; well banded; scatt ss 196½-197½; heavy ss 197½-198
-200	Dol, med grey; well mott; sugar
-201½	Dol, med grey; banded, sugary; sed congl @ base overlain by chert oolite
-206½	Dol, very lite grey; hvy green sh @ base; thin rubble above shale
-209	Dol, lite dol; green sh @ base; ch congl @ 208½
-214	Dol, very lite grey; hvy banded 211½-214; wh ch @ 209, 210, 211, 214; ss @ base
-218½	Dol, lite grey; ch @ 216, 216½, 218½
219½	Re-xl, vuggy, mott; gen sh @ base, dip @ 225 - 34°
-237½	Dol, lite grey, banded; ss @ 227, 235; 2 gangue facets (bedding) @ base
-241½	Dol, med grey; mott
-243	Dol, lite grey; brecc; <u>Est 3% ZN 241½-243</u>; carbonate @ top

-252 Dol, lite grey, banded; brecc; 243-251, est. 3% ZN; hvy gen sh @ base, some FeS throughout
-259 Dol, med grey; brecc 252-255½; crackle - 259; blue ch nods @ 254, 254½; ZNS shine 255½, 258, 258½
-260 Semi-xl, green, shaly
-269 Dol, lite grey; mott 260-263; lite banding to 268; crackle 263-269; 263-266½, Est 1/2% ZN; scatt open shears 263-266½
-272½ Dk grey dol; crackle; FeS shine
-275½ Dol, med grey; mott; lite crackle; good ZNS shine @ 274
-277½ Dol, med-dk grey; brecc; 276-277, Est. 2% ZN; heavy FeS shines
-278½ Re-xl; black, heavy green shale @ top
-280½ Dol, med-dk greenish grey; mott; lite crackle; heavy FeS plus trace ZNS @ base; heavy green sh @ base
-285½ Dol, med grey; hvy mott; crackle, rubble 284½-285 (Est 1/2% ZN); ZNS shine 281½; heavy FeS shines throughout
-288 Dol, black; semi-xl; hvy mott; crackle; good ZNS shine 286½
-288½ Shale, green
-289 Re-xl; dk brn, brecc
-291 Dol, med grey; mott; ruble breccia; lite ss @ base
-296½ Re-xl, dk brn brecc; dol block 295-295½
-298½ Dol, med grey; banded; crackle
-306 Re-xl, brn; mott 300-305; crackle 298½-303
-307 Dol, med grey; banded; blue ch @ top
-310 Re-xl, greenish brn; mott
-316 Dol, med grey; mott; crackle; lite ss : 313½
-325 Dol, dk grey. rubble breccia; fault brecc @ base; 320-323½, Est 10% ZN some FeS 320-323½
-325½ Re-xl, brn
-326 Chert, grn; hvy gen sh @ base
-333 Re-xl, brn; rubble breccia; 329-333½ Est 2½% ZN; steep shears 329
-336 Dol, lt grch; rubble breccia; banded; scatt traces ZNS
-343 Dol & re-xl, rubble breccia; chert @ 336, 337, 339, 340¢ scatt FeS throughout; traces ZNS 340-343
-358 Re-xl; black & white 343-354 lite dol blocks @ 345, 354; FeS throughout, 343-344½ Est 2% ZN; 348½-350 Est 1½% ZN; brn re-xl 354-357; blk & white 357-358; brecc, 356-358, Est 2½% ZN
-378 Re-xl, brn to 366; blk & wh to 370; brn to 371; blk & wh to 377; brn to 378; ss @ 364,358; good ZNS shine @ 363-363½, 369-370 Est 2% ZN, plus FeS
-389 Dol, lite grey, banded; blue ch @ 379, 379½
-389½ Chert, blue, oolitic
-390½ Re-xl, brn, siliceous
-397 Dol, med grey, mott
-408 Re-xl, brn, siliceous, crackle
-410 Dol, lite grey; TD @ 410'

OFFICIAL FILE COPY
O. M. E.
RECEIVED DEC 30 1958

DATE	INITIALS	CODE
12/30	[illegible]	225
	[illegible]	~~440~~
12/30	[illegible]	800
12/31	[illegible]	~~500~~

DMEA EXPLORATION PROJECT

INTERIM REPORT

DMEA-4580, Idm-E1088 - Zinc

Operator: B. H. Putnam, Operator, P. O. Box 65, Thorn Hill, Tennessee

Location: Puncheon Camp Creek Area, Grainger County, Tennessee

Summary of Drilling Completed

	Since last inspection	To Date
Number of holes	3	45
Footage	974	24,665

Holes showing:

a)	Commercial zinc ore	6
b)	Non-commercial zinc mineralization	25
c)	No zinc mineralization	14

Additional data on the three holes completed during the interim follows:

Hole No. GD-18.--Located 300 feet north of GD-16. Coordinates and collar elevation not available at time of inspection. Drilling began November 8, 1958 and was completed November 19, 1958. Depth 400 feet. Brief log of hole: 0-91 feet overburden, collared in Kingsport formation; top of "R" bed at 223; top of "S" bed at 308½; top of Longivew formation at 351; top of "U" bed at 359; hole bottomed at 400 feet.

Mineralization:--1' (203-204) of 5.36 % Zn
3½ (210-213½) of 1.90 % Zn
1' (214-215) of 2.46 % Zn
13' (219½-232½) of 2.19 % Zn
2' (243-245) of 3.08 % Zn
3' (248-251) of 0.78 % Zn
5' (257-262) of 2.44 % Zn
11½' (270-281½) of 3.75 % Zn
16½ (289½-306) of 3.25 % Zn
1' (328½-329½) of 0.92 % Zn
1½' (340-341½) of 0.40 % Zn
1½' (342½-344) of 2.12 % Zn
Shines of sphalerite from 199 to 200, at 238, 252, 284, to 289½, 317, 323 and 384½.

Hole No. GD-19.--Located 173 feet northwest of GD-18. Coordinates N 49,851.88, E 45, 938.63; elevation at derrick floor 1,467.21. Drilling began November 20, 1958 and was completed November 26, 1958. Depth 264 feet. Brief log of hole: 0-60 overburden, collared in Kingsport formation; top of "R" bed at 105; top of "S" bed at 188 (limestone from 188 to 191½); top of "T" bed at 230; top of "U" bed at 244; hole bottomed at 264.

Mineralization:--Scattered shines of sphalerite from 115 to 118; 12' (118-130) of est. 2 % zinc (50 % core recovery); shines at 173, 178; 1' (183-184) of est. 1 % zinc; shines at 185, 188 and 191.

Hole No. GD-20.--Located 205 ' due west of GD-18. Coordinates N 49,765.02, E 45,889.46; elevation at derrick floor 1,488.46, ground elevation 1,486.96. Drilling began December 1, 1958 and was completed December 10, 1958. Brief log of hole: 0-58 overburden, collared in Mascot formation; top of "R" bed at 157½; top of "S" bed at 223; top of "T" bed at 274; top of "U" bed at 290; hole bottomed at 310 feet.

Mineralization:--2' (204-206) of est. 5 % zinc; shines of sphalerite from 216 to 219; 3½ (222½-226) of est. 1 % zinc; 1' (238½-239½) of est. 2½ % zinc; 1' (242½-243½) of 0.75 % zinc, shine at 254; 2' (254½-256½) of 1 % zinc; shines of sphalerite at 261 and 296.

No drilling was in progress on the date of this inspection due to breakdown of equipment. Hole No. GD-21, located 103' southwest of GD-20 has been collared but is expected to be redrilled if fishing for string of tools, which twisted off in the hole, is unsuccesful.

Inspected: December 16, 1958

L. E. Shirley, Mining Eng neer
U. S. Bureau of Mines

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
ROOM 2-B POST OFFICE BLDG.
KNOXVILLE 2, TENN.

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O. M. E.
RECEIVED DEC 8 1958

DATE	INITIALS	CODE
12/8	E	220
12/8	Kling	500

December 5, 1958

Memorandum

To: Operating Committee, OME - Washington, D.C.

From: Field Team, OME - Region V - Knoxville, Tennessee

Subject: DMEA-4580, Idm-E1088(zinc) B. H. Putnam, Operator. Puncheon Camp Creek area, Grainger County, Tenn.

Enclosed are two copies each of the Operator's logs, with assays, of holes GD-7 through 11, which were drilled at the Operator's own expense.

Also enclosed are 2 copies each of the assays of holes GD-12, 14, 15 and 16. GD-13 was a blank hole.

Robert A. Laurence

Robert A. Laurence
EXECUTIVE OFFICER
OME FIELD TEAM
REGION V

V. J. Lynch

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

Budget Bureau No. 42-R1036.5

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

JAN 15 1959
D.M.E.

PAID ON VOUCHER & SCHEDULE OF PAYMENTS K-

OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of December, 1958 Docket No. DMEA-1580C Contract No. Idm-E-1088
Operator's Name B. H. Putnam Minerals Zinc
Address 512 Third Street, Marietta, Ohio
Contract Amount, $ 170,125.00 Government Participation: 50 % Amount, $ 85,062.00

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	2,025.00	63,012.00	65,037.00	1/21/59	W.R.K.	
Bulldozing						
Crosscutting						
Drifting						
Reaming	62.00	1,240.00	1,302.00			
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
Core boxes	—	290.25	290.25			
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis	76.25	87.50	163.75	66.25	87.50	153.75
Payroll Taxes						
Liability Insurance						
(8) Contingencies (specify):						
Incid. allow. @ .18/ft.	121.50	3,780.72	3,902.22	X		
TOTALS	2,284.75	68,410.47	70,695.22	2274.75	68,410.47	70,685.22

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

Date 12/29/58 *Payee B. H. Putnam

Per William Thief 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:

$ 1137.37

Signature Helen R. Miller
(Authorized Certifying Officer)

Date JAN 13 1959 Vou. No. 73
(See other side)

13

1137.38

(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-1088 in accordance with the terms of the contract.

Signature [illegible] Title GEOLOGIST, U. S. G. S. Date JAN 5 1959

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature [illegible] Title ACTING EXECUTIVE OFFICER OME REGION V Date JAN 5 1959

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

JAN 15 1959 U.M.E.

OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of December 195 8 Docket No. DMEA 4580 Contract No. Ion-E 1088
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	2,025.00	675	65,037.00	21,679	3.00	50,000	3.00
Churn Reaming	Foot	62.00	31	1,302.00	651	2.00	5,000	2.00
Auger Sampling	Each	~~76.25~~	53	163.75	123	1.25	550	1.50
Stripping Core boxes	Each	——— 66.25	—	290.25	150	1.935	150	2.00
Trenching								
Test Pits								
Roads and Trails Inc. A16w. @ .18/ft.	Foot	121.50	675	3,902.22	21,679	.18	50,000	.18
TOTAL DISTRIBUTED COSTS		2,284.75		70,695.22				TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS		2,284.75		70,695.22				

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 12/29/58 Operator B. H. Putnam

Per William T. Hall 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)

GEOLOGIST, U. S. G. S.
JAN - 5 1959

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 PUNCHEON CAMP CREEK PROJECT
GRAINGER COUNTY, TENNESSEE, FOR:

December, 1958

By: W. T. Hill

Docket No. 4580
Contract No. Idm-E 1088

During the month of December two holes were drilled on the Puncheon Camp Creek Project. Hole GD-20 was drilled 100 feet southwest of GD-19. The hole collared in the Kingsport formation and was drilled to a depth of 310 feet.

DEPTH	FORMATION	KEY HORIZON	ZINC MINERALIZATION	REMARKS
0-58	Overburden	—	—	—
58-274	Kingsport	"R" @ 157½; "S" @ 223; "T" @ 274	204-206, 2' @ 7.04%; shines 216-219; 238½-239½, 1' @ 5.00%; 242½-243½, 1' @ .75%; 254½-256½, 2' @ 1.36% shine @ 261	dolomite, re-xl; crackle breccia
274-310	Longview	"U" @ 290	shine @ 295	dolomite and re-xl; crackle breccia

Hole GD-21 was drilled 100 feet southwest of GD-20. The hole collared in the Kingsport formation and was drilled to a depth of 365 feet.

0-70	Overburden	—	—	—
70-328	Kingsport	"R" @ 210½; "S" @ 298½; "T" @ 328	—	dolomite and re-xl; numerous green shales and sands above "R"; "dry" breccia in "R" and "S"
328-365	Longview	"U" @ 338; L-4 @ 365	—	dolomite, recrystalline, and silica; brecciated, sealed with silica and gangue

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JAN 2 - 1959
U. S. Geological Survey
Geologic Division
Knoxville, Tenn.

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INSPECTIONS and TESTS

The Bruce Williams Laboratories

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JOPLIN, MISSOURI

BATESVILLE, ARKANSAS | ST. LOUIS, MISSOURI | PICHER, OKLAHOMA

Mr. B. H. Putnam
P. O. Box 65
Thorn Hill, Tennessee

10-13-58

		ZINC
798053	GD-12-1	6.22
054	GD-12-2	1.30
055	GD-12-3	0.26
056	GD-15-1	1.45
057	GD-15-2	0.80
058	GD-15-3	1.30
059	GD-15-4	5.52
060	GD-15-5	0.72

gf/nls 67-788

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MAIN OFFICES
620 Joplin Street
JOPLIN, MISSOURI

Mr. B. H. Putnam

STATEMENT OF
YOUR ACCOUNT P. O. Box 65

TERMS CASH
NO DISCOUNT

Thorn Hill, Tennessee

THE JOPLIN PRINTING CO., JOPLIN, MO. SN 1 46 14444

DATE	ASSAY NO.	DESCRIPTION	
1958 Oct.		Statement rendered for work from 9-26 to 10-25-58 incl.	
		TOTAL AMOUNT DUE	$28.75

OK. W. T. Tate Appr.

Please duplicate all copies (10 copies) and return

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JOPLIN, MISSOURI

BATESVILLE, ARKANSAS

ST. LOUIS, MISSOURI

PICHER, OKLAHOMA

Mr. B. H. Putnam
P. O. Box 65
Thorn Hill, Tennessee

10-18-58

				ZINC
798307	GD-16-1	234½ - 235½	1	6.40
308	GD-16-2	238½ - 239½	1	1.56
309	GD-16-3	245 - 246	1	3.22
310	GD-16-4	247 - 249	2	4.52
311	GD-16-5	250 - 252	2	2.44
312	GD-16-6	252 - 254	2	2.56
313	GD-16-7	261 - 263	2	0.30
314	GD-16-8	263 - 264	1	0.60
315	GD-16-9	265 - 267	2	1.76
316	GD-16-10	269 - 270	1	10.72
317	GD-16-11	273½ - 274	½	2.52
318	GD-16-12	275½ - 277½	2	4.22
319	GD-16-13	281 - 282	1	3.30
320	GD-16-14	308 - 310	2	1.06
321	GD-16-15	319 - 321	2	1.22

9' @ 2.47%

8½' @ 2.40

cf/nls 67-852

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MAIN OFFICES
620 Joplin Street
JOPLIN, MISSOURI

Mr. B. H. Putnam

STATEMENT OF YOUR ACCOUNT

P. O. Box 65

Thorn Hill, Tennessee

TERMS CASH
NO DISCOUNT

THE JOPLIN PRINTING CO. JOPLIN, MO. 58 - 99 14999

DATE	ASSAY NO.	DESCRIPTION		
1958 Nov.		Statement rendered for work from 10-26 to 11-25-58 incl.		
		TOTAL AMOUNT DUE		$37.50

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ESTABLISHED 1898
Main Office 618-624 Joplin Street Telephone 556
JOPLIN, MISSOURI

Connell Hotel Lobby
Picher, Oklahoma
Telephone 710

St. Louis, Missouri
306 Valley Drive
Telephone Hobart 7-3226

November 25, 1958

Mr. B. H. Putnam
P. O. Box 65
Thorn Hill, Tennessee

			ZINC
799751	GD-18-1	203-204	5.36%
752	GD-18-2	210-213½	1.90%
753	GD-18-3	214-215	4.26%
754	GD-18-4	219½-221	7.46% 13'-
755	GD-18-5	221-223	4.80% 2.19% ZN
756	GD-18-6	221½-232½	7.32%
757	GD-18-7	243-245	3.08%
758	GD-18-8	248½-251	0.78%
759	GD-18-9	257-258	3.14%
760	GD-18-10	259½-261½	2.54%
761	GD-18-11	261½-262½	5.24%
762	GD-18-12	268-268½	2.32%
763	GD-18-13	270-271	3.94%
764	GD-18-14	272-274	4.08%
765	GD-18-15	274-276	6.28% 11½'-
766	GD-18-16	276-278	4.34% 3.75% ZN
767	GD-18-17	278-280	1.82% 49'-
768	GD-18-18	280-281½	4.12% 2.46% ZN
769	GD-18-19	284-285	2.82% 36'-
770	GD-18-20	285-286½	1.50% 2.93% ZN.
771	GD-18-21	287½-289½	1.76%
772	GD-18-22	289½-291½	3.16%
773	GD-18-23	291½-293½	6.88%
774	GD-18-24	297-299	4.76% 16½'-
775	GD-18-25	299-301	3.38% 3.25% ZN
776	GD-18-26	301-302	2.20%
777	GD-18-27	304-306	7.56%
778	GD-18-28	328½-329½	0.92%
779	GD-18-29	340-341½	0.40%
780	GD-18-30	342½-344	2.12%

THE BRUCE WILLIAMS LABORATORIES

Bruce Williams

cf/nls 68-194

Invoice
Marietta, Ohio

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

December 28, 1958

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR 4-6761

Statement for drilling Puncheon Camp Creek Project DMEA Contract No. 4580 - Dec. 1958

Core Hole No. GD-20

Footage drilled	310 ' @ $3.00/ft.	$930.00
Reaming	31 ' @ $2.00/ft.	62.00

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

B. H. Putnam, Operator

By: _____
A. R. Eddy
Drilling Superintendent

Invoice
Marietta, Ohio

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

December 28, 1958

In account with
PUTNAM DRILLING COMPANY
P. O. Box 647

512 Third Street

Phone: FR-4-6761

Statement for drilling Puncheon Camp Creek Project DMEA Contract No. 4580 - Dec. 1958

Core Hole No. CD-21

Footage drilled	365' @ $3.00/ft.	$1,095.00

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

B. H. Putnam, Operator

By: _____
A. R. Eddy
Drilling Superintendent

B. H. Putnam DD-GD-20

Copper Ridge Project-Punchson Camp Creek

DMEA Idm-E-1068

Hole No.:	GD-20	Collared:	12/1/58
Farm:	Green-Dalton	Bottomed:	12/9/58
Loc.: N	49,765.02	Depth:	310'
E	45,889.46	Casing:	BX-58'; AX-131
Elev.:	1488.46	Reaming:	31'
Drilled by:	Putnam Drlg. Co.	Cement:	none
Logged by:	W. T. Hill	Water table:	?

Top Kingsport	—
Top "R" bed	158
Top "S" bed	223
Base Kingsport	274
Top "U" bed	290
Base "U" bed	—

OD-20

0-58	Overburden
58-62	Lt-med grey dol; 6" sed congl @ 58½ plus hvy ss; 6" ss @ 59½ plus CMSS (1½' core 58-62)
-65	Med grey mott dol; TGS @ 63½
-72	Med slip
-74½	Lite grey dol; mott
-76	Med grey shaly dol; banded; dip 36½°
-82	Very lite grey dol; lightly banded
-91	Lite grey dol; mottled; brn sh nod @ 89, 90
-93	Med grey dol; well mott & banded, lite scatt ss 92-93. TBS @ 93
-98	Med grey dol; blue sh nod @ 93, 95, 96, 98
-114	Lite grey dol; well banded lite ss @ 105, 114; sh nods @ 101½, 105, 110, TGS @ 105, 105½; dip - 38° @ 102
-114½	Brn sh
-119	Lite-med dol; banded 114½-116½; oxid @ 115; mott 116½-119. TBS @ base; oxid dip - 40° @ 116
-119½	Med grey dol; hvy mott
-127	Lite grey dol; banded, thin ss @ 124 (3' core loss 119½-124; 95% core loss 124-127)
-130	Opening
-131½	Lite grey dol; sh nod @ base
-132½	Med grey dol
-138	Lite grey dol; mott 137-138; TGS @ 135½, 136
-141	Med grey dol; sh nod @ 138,140
-148	Lt grey dol; (1' core recovery)
-153	Med grey dol; mott; TGS plus ss @ 150½; TGS @ 152
-157	Lite grey dol; ruggy; mott; sh nod @ base; lite crackle
-159½	Dk grey semi-xl 157-157½; broken shale @ 157½; green sh band 158½; crackle
-163	Med dk greenish-grey dol; shaly; crackle; fine disseminated FeS throughout
-165	Med grey mott dol; sugary; lite crackle
-166	Lite grey mott dol; ruggy lite shears @ 165½
-166½	Green shale underlain by thin bed of re-xl
-171	Dk-grey (black) sugary dol; crackle
-174	Re-xl, coarse brn; 4" hvy green shale @ 172½
-174½	Dol, lite grey
-177½	Re-xl, dk brn, ruggy; hvy grn sh @ 175, sh @ 174½; crackle
-180	Lite grey dol; 6" hvy grn sh @ 178 plus lite ss, lite shears @ 177½-180; banded, dip - 60°
-184½	Re-xl; brn; ruggy (filled with sh, mott, lite crackle)
-185½	Med grey; semi-xl; mott; lite crackle; TGS @ 185
-188½	Lite grey dol, mott, ruggy; sh nod @ 188, lite crackle 188; lite shears @ base
-189	Re-xl, coarse brn, crackle, oxid TGS @ base
-193½	Med-dk dol; well banded & mott (dip 40°) FeS shines @ 192
-196	Med dol, mott, lite crackle
-200	Lite dol, well banded 196-197; mott 197-201; lite crackle @ base
-204	Med-dk dol, sh nod 203½, darker toward base; two sh nods @ base (white); base TGS
-206	Re-xl, coarse brn, siliceous; Est 5% ZS 204-206
-207½	Chert, some re-xl, oxid white & brn
-215½	Dol, dk grey (hvy core loss)
-219	Dol, dk, some breccia; oxid; mott; (50% core loss) traces ZS
-222½	Dol, med grey; banded 219-221; lite oxid shears & crackle; hvy ZS shine @ base
-242	Re-xl coarse, brn & black & white, siliceous; 6" white sh @ 227½; Est 1% ZS 222½-226; brecciated, oxid FeS 232½-237; strong ZS shine @ 239
-243½	Dol, lite grey; breccia sealed with re-xl & white gangue; Est 1/4% ZS 242½-243½

-262 Re-xl, brn; dk brn & sil to 246; brn & wh & vuggy to 249; brn & crackle to 254; breec brn to 256; 254½-256½ Est 1% ZS, 1% FeS; dk re-xl to 261 plus ZS shine @ 258½; 1% FeS 258-260; vuggy from 261-262 and banded

-263 Lite del, banded, sandy, dip - 35°

-272½ Dk brn re-xl, matt, some black & white TOS @ 268; siliceous

-274½ Lite-med del, breec sealed with re-xl & gangue

-289½ Med del; 6" shear @ 275 & 288; RP shear @ 280; ch 277, 278, 281; lite crackle

-290½ Chert; oolite over white chert band

-298 Del, med, well matt; breec 293-296; ZS sh @ 296; lite FeS shines 293-296; ch med @ base

-299 Re-xl, brn & black, matt; ZS plus hvy FeS @ base; ls, breec @ top (3") with hvy FeS shines

-302 Re-xl, brn

-310 del, med grey, as @ 306

B. H. Putnam DD-CD-21

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm-E 1068

Hole No.: CD-21

Farm: Gowan-Dalton

Loc: N 49,680.01

E 45,837.82

Elev.: 1497.76 F.F. 1496.26 Grnd.

Drilled by: Putnam Drlg. Co.

Logged by: W. T. Hill

Collared: 12/10/58

Bottomed: 12/23/58

Depth: 365

Casing: BX TD, AX 110

Reaming: None

Cement: None

Top Kingsport	—
Top "R" Bed	210
Top "S" Bed	298½
Base Kingsport	328
Top "U" Bed	338
Base "U" Bed	—

GD-21

0-	Overburden
-106	Lite-med del; lite mott; TBS @ 103½
-110½	Med del; hvy mott; TBS @ ;07, exid 106-107½
-119	Very lite grey del; mott; 3' core loss @ base (ground); ch wkd @ 119'
-127	Med grey, well banded del; ch wed @ 120,121; TS @ 122; 2' as from 125-127 lower 1'very heavy & congl; dip @ 120 - 40°
-130	Med grey well mott del; ch & TGS @ top
-130½	Semi-re-xl, ½" gen sh @ 130½; mott
-141	Lite grey del; ch mods @ 131½, 132½, 136; lite shears 140-141; opening 134½-136
-145	Med grey; banded; ch wed 141½, lower part mott; lite as @ base plus ch and TGS
-147	Med grey del; lite scatt shears; breec @ top
-148½	Dk grey del; ch wed @ base; scatt shears
-155½	Lite-med del; hvy gen sh @ 150 plus exid; very lite crackle; TBS @ base
-160	Med grey del; ch wed @ 158; TGS plus very lite as @ base
-167	Lite-med del, banded; crackle @ 161½; dip @ 161½ - 41°; lite as @ 166½; ch plus TGS @ base
-168½	Med del, ch congl @ base
-171	Lite grey del; wh ch mods @ 168½, 169
-176	Med grey del, thin as @ 172; lite mott @ base
-177	Semi-xl; sed breec; greenish mott
-179½	Med-dk grey del; breec @ 179 sealed with lite del
-182	Med grey del, banded; TGS @ 180½, 182; lite as @ 182
-189	Med grey del, banded & mott; breec @ 186½ sealed with lite del; scatt as 188-189; TGS @ base
-190½	Med-dk del; breec sealed with lite del plus green sh; mott @ base; TGS @ base
-193	Med del; crackle 191-192 with lite del matrix
-194	Med-greenish del
-201	Lite-med del, eyelets 194-200, ch breec @ 198
-210½	Med-grey del, litely banded; breec 206-207 sealed with lite del-gen sh-wh gangue; TGS @ 208½; lite as plus TGS @ base
-214½	Lite-med del; well mott; few eyelets
-216	Med grey del; crackle breec
-220	Lite-med del, well mott; few eyelets, lite breec & shears @ base
-224	Med grey del; breec sealed with greenish del & white gangue; FeS shine @ 223; lite as @ 223
-227	Lite med del, mott
-229	Del, dk grey; lite as @ 228
-231½	Re-xl, coarse; brn; TGS @ base
-234	Del, lite-med; lite as plus TGS @ base; breec 132½-134; sealed with dk re-xl
-235½	Re-xl, brown; lite crackle
-236½	Del; breec sealed with dk re-xl, gen sh, wh gangue
-237½	Del, med grey, banded; dip - 46°
-240	Del, med grey, banded; breec sealed with re-xl and white gangue
-243	Del, med dk greenish grey; strongly mott with green sh
-243½	Del; breec sealed with green sh & re-xl & ch
-245	Del, lite, hvy mott; dry breec 244-245
-246½	Re-xl, dk brn; TGS @ base
-248½	Del, dk grey, mott; crackle sealed with greenish and white gangue
-251	Del, lite grey; breec sealed with gangue & gen sh
-257	Del, lite-med grey; lite as @ 255; mott; TGS @ base, very little crackle
-261	Del, lite-med grey; breccia, dry (rounded frags)
-262	Re-xl, dk brn; breec, dry

-265 Re-xl, dk brn; crackle; dry
-266 Del, med grey, breccia block
-269½ Re-xl, grn-brn, mott, crackle
-270½ Del, med, banded; brecc block
-274 Re-xl, brn, coarse, mott, crackle
-275½ Del, brecc, sealed with brn re-xl
-277 Re-xl, dk
-278½ Del, med, brecc, dry
-281 Re-xl, dk
-290 Del, med grey, dry brecc
-291 Re-xl, brown, mottled TGS @ base, crackle
-294 Del, dk grey; brecc dry and white gangue
-295 Chert, brecc, sealed with green sh
-296½ Semi-xl, dark green shale bands, crackle w wh gangue
-298½ Del, med grey, brecc 297½-298½, wh gangue
-299½ Re-xl, greenish brown, crackle
-303½ Del, med grey, crackle, with dry brecc matrix; lite ss @ 303; TGS @ base
-307 Re-xl, brn, mott, reef-like with gastroped shells, jaspereid near base
-309 Del, med; brecc; dry brecc; black maspereid near base
-310½ Re-xl, brn; brecc; some jaspereid
-312 Del, med; mott; lite crackle
-319½ Re-xl, coarse; TGS and ss @ top; ss @ 319; crackle
-320½ Del, med; brecc
-323 Re-xl, brown; mott; green near base; hvy ss @ top
-325 Del, med; brecc & sealed with brn re-xl
-328 Re-xl, brn; mott
-329 Del, lite grey; mott; sugary
-335 Del, med-dk grey; mott 329-330; TGS @ 332; lite crackle w white gangue
-338 Del, dk grey; crackle breccia
-338½ Chert, blue; top oolitic
-339 Re-xl, grey
-343½ Del, med; mott; brecciated with lite FeS shines; hvy green shale @ base
-345 Re-xl, hvy mott; TGS @ base
-346½ Re-xl, greenish brown crackle; lite FeS shines
-348½ Del, med grey; breccia sealed with white gangue and some chert; 6" chert brecc @ 346½-347
-351 Re-xl, brn, siliceous; hvy chert @ 350; shears (vert) @ 350
-352 Del, med grey; lite shears
-355 Re-xl; 50% silica; sh nods @ 352½, 353½, 355; banded
-359 Del, med grey; crackle; lite ss @ 356½
-363 Re-xl, brn, siliceous; sandy 360½; TGS @ base
-365 Re-xl, brn and white congl; 2" hvy ss @ top; 6" hvy white chert @ base

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DATE	INITIALS	CODE

PORCUPINE GAUP CREEK

ASSAYS FROM DD HOLE GD-16 -

Sample	Footage	Thickness	Assay	
GD-16-1	234½-235½	1	6.40	5' @ 1.59% Zn
2	238½-239½	1	1.54	
3	245 -246	1	3.22	
4	247-249	2	4.52	9' @ 2.47% Zn
5	250 -252	2	2.44	
6	252 -254	2	2.54	
7	261 -263	2	0.30	
8	263 -264	1	0.60	6' @ 0.78% Zn
9	265 -267	2	1.74	
10	269 -270	1	10.72	
11	273½-274	½	2.52	8½' @ 2.40%
12	275½-277½	2	4.22	
13	281 -282	1	3.30	
14	308 -310	2	1.06	
15	319 -321	2	1.22	

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PUNCHEON CAMP CREEK

ASSAYS FROM DD HOLE CD - 15

Sample	Footage	Thickness	Assay
CD-15-1	408½-411	2½	1.46
2	412½-413½	1	0.80
3	416 -417	1	1.30
4	418½-419½	1	5.52
5	425½-427½	2	0.72

11' @ 1.02%

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PUNCHEON CAMP CREEK

ASSAYS FROM DD HOLE GD - 12

Sample	Footage	Thickness	Assay	
GD-12-1	441 -443	2	6.22	8' @ 1.93% Zn
2	445½-447½	2	1.30	
3	447½-449	1½	0.26	

PUNCHEON CAMP CREEK

ASSAYS FROM DD HOLE GD-14 -

Sample	Footage	Thickness	Assay	
GD-14-1	292½-293½	1	2.12	
2	301½-303½	2	2.44	7' @ 1.26% Zn
3	303½-305½	2	1.40	
4	305½-307½	2	1.52	
5	307½-308½	3/4	1.16	
6	344½-346½	2	11.12	5½' @ 3.5%
7	348½-350	1½	0.54	
8	351½-352	½	4.14	
9	365-367	2	6.14	8' @ 3.52%
10	367-369	2	0.72	
11	369-371	2	3.10	
12	371-373	2	0.78	
13	378½-379½	1	0.12	5½' @ 1.64%
14	379½-382	2½	3.96	
15	382-384	2	0.80	5½' @ 0.67% Zn
16	395-396½	1½	1.24	
17	398½-400½	2	1.44	
	409-410	1		

HOLES DRILLED AT OPERATOR'S OWN EXPENSE.

Puncheon Camp Creek

Assays of Core From DD Hole GD-7

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DATE	INITIALS	CODE

Sample	Footage	Thick	Assay	
GD-7-1	336½-337½	1	1.46	
7-2	339-400	1	1.72	
7-3	459-459½	½	4.48	
7-4	487½-489	1½	3.20	
7-5	507½-512½	5	4.16	9½' @ 2.72%
7-6	516-517	1	5.00	
7-7	523-525	2	0.46	
7-8	525-527½	2½	0.22	

B.H. PUTNAM DD GD-7

Copper Ridge Project - Puncheon Camp Creek

D.M.E.A. Idm-E 1088

Hole No.:	G.D.-7	Collared:	5-24-58
Farm:	Green Dalton	BBttomed:	5-29-58
Location:	N 49,780.85	Depth:	557
	E 46,489.53	Casing:	BX70, AX 116½
Elev.:	1416.23	Reaming:	40½' (76-116½)
Drilled by Putnam Drilling Co.		Cement:	None
Logged by John W. Spears		Water Table:	?

Top Kingsport from	162
Top R bed	323
Top S bed	403
B ase Kingsport	446
Top U bed	459

0-70	Overburden
-76	Lt. med. gr. dol. (5' core loss 70-76)
-79½	Lt. gr. dol., mott. (1½' core loss 76-79)
-81½	Lt. med. gr. dol; mott.)(1' core loss 79-81)
-82½	Lt. v. silic re-xl. (25' core loss 81-111)
-109½	Lt. med. gr. dol; some lt. bands.
-111	Med. gr. dol.
-113	Med. dk. to dk. gr. dol; shaly mott; TBS at base.
-114	Med. to med. dk. gr. dol; mott.
-115	Med. gr. dol; bott 6" v. sandy & some oolitic cherts.
-116½	lt. gr. dol.
-117½	lt. med. gr. semi re-xl to sugary dol; mott; shaly at top.
-118½	lt. med. gr. dol w/ blue mott.
-122½	lt. med. to med. gr. dol; (dip 42°)
-125	med. gr. dol; mott & some silic eyelets.
-128	lt. med. gr. dol; lt bands (42° dip); scatt. ss grains bott. 6" w/ ss at base.
-130	med. gr. dol; ~~lt~~. sugary; mott; some silica.
-134	lt. gr. dol; banded (42° dip) & some scatt. sands (4' core loss 131-48).
-141	lt. med. gr. dol; lt. mott. to bands.
-142	med. dk. gr. dol; v. shaly; mott.
-150½	lt. med. gr. dol; occ. mott. zone & chert nod; some bands 146-48 w/ few eyelets; bott. 2 feet grades to med. gr. dol.
-152	med. dk. gr. dol; v. shaly mott.
-155	med. gr. dol; few eyelets 154-55.
-157½	med. dk. gr. dol; shaly mott & occ. eyelets.
-158½	dk. gr. dol; v. shaly to mott; chert nod at base.
-162	med. dk. gr. dol; bands (42°); scatt. sands bott. 6" w/ 2" CMss at ba se.
	Top Kingsport fm. 162 feet.
-166	lt. med. gr. dol; lt. bands (47° dip); few ss grains 164 & 164½; TGS 166.
-168½	Med. (l.m.) gr. dol; mott & few silic eyelets; v. mott & shaly, bott 3".
-172	lt. gr. dol; well banded top 1½ feet (47° dip)
-177	med. gr. dol; shaly mott; grades to med. dk. gr.
-180	lt. med. gr. dol; mott; TBS at base.
-182	med. dk. gr. dol; banded (41° dip).
-186	lt. med. gr. dol; few ss grains at 182½; grades to med. gr. dol.
-187½	med. gr. dol; shaly mott.
-191	med. dk. to dk. gr. dol; shaly mott.
-192	med. gr. dol; shaly mott.
-194	lt. med. (med.) gr. dol; banded (32° dip at 194).
-195½	med. gr. dol; banded, chert nod at 195.
-199½	med. dk. gr. dol; well banded (45° dip at 196; 40° dip at 197) to 198½; mott. to banded 198½-99½ w/ scatt. sands 199-99½ & TBS 199½.
-207½	lt. med. gr. dol; to 204 mott; then mott & silic eyelets 204-07½ w/ sand at 207½.
-209½	lt. gr. dol.
-219	lt. med. gr. dol; lt. mott. to bands; 211½-12½ v. sandy (to congl) w/ some cherts & an oolitic chert at 212½; sand at 213½; TBS 215½ w/ lt. mott 214½-15½; chert nod 218½; v. mott 218½-19.
-226½	med. dk. gr. dol; shaly mott; TBS at base.
-227	med. gr. dol; mott; TBS at base.

-230½ lt. med. gr. dol; well mott w/ TGS at base (40° dip).
-234 lt.med. gr. dol; banded; (dip 40° at top to 44° at base); small chert nod at base.
-236 lt. gr. dol; banded (41° dip); chert nods 235½ & 36.
-242½ lt. med. gr. dol; v. banded (wavy) (dip 40°); from 40½-42½ sandy to v. sandy; ½ " TGS at base (base bed K-3).
-244 med. gr. semi re-xl; mott; chert nod at base.
-247½ lt. gr. dol; lt. bands (40° dip) at top to 44° at base); chert nod then TGS at base.
-249½ lt. med. gr. dol; sli. sugary to lt. mott.
-253½ v. lt. gr. dol; lt. mott; several small cherts 251½-52; few ss gr. & chert nod at base.
-257½ lt. gr. dol; well banded to 255½ (40° dip) w/ chert nods 254 & 54½; v. banded (wavy) 255½-57½; tr. ss 257; TGS 257½.
-263 lt. med. gr. dol; lt. bands; chert nods 259,60,61 & 62.
-264 lt. med. gr. sugary dol to semi re-xl; mott & many specks of silica; chert nod & TGS at base (base bed K-4).
-264½ med. gr. dol; shaly mott; TBS at base.
-271 lt. gr. dol; lt. bands; (40° to 44° dip); chert nods 269 & 69½.
-272 lt. med. gr. dol; lt. bands to TGS's (dip 44°); few eyelets at top.
-295 lt. gr. dol; bands to 275 (44° dip) w/ chert nod 275; v. banded to mott 275-76½ w/ chert nods 276½,77½ & 78; lt. bands 279-80 w/ chert nod 280 (42° dip at 280); few lar ge eyelets & some ss at 280½; banded 280½-82½ (40° dip) w/ a TGS 281½; lt. mott. 282½-85 & well mott 285-85½; wavy bands (43° dip) 285½-90½ w/ few ss gr. then TGS at 290½; lt. mott 290½-92 w/ chert nod 292; wavy bands 292-94 (43° dip) scatt. ss grains 294-95; then 4" TGS & 2" chert nod.
-296 med. gr. dol; tr. edgewise congl at base. (base bed K-5).
-299 lt. gr. dol, occ. lt. bands.
-323 lt. med. gr. dol; few ss & TGS at 316; lt. 316-21; bands 321-23 (45° dip) tr. brecc. at 323. (13½' core loss (ground) 300-315)
Top R Bed 323 feet.
-325 green shale w/ blocks of dol.
-329 lt. med. gr. dol; mott; sli. sugary; tr. crackle; FeS shine at base.
-331 med. gr. semi re-xl to sugary dol; well mott; crackle.
-333 lt. med. gr. dol; mott; crackle.
-333½ br. re-xl; brecc.
-336½ brecc.; lt. med. & med. gr. dol & green shale sealed w/ white gangue.
-338½ br. re-xl; brecc; <u>est. 3% ZnS 336½-37½.</u>
-339½ med. gr. semi re-xl; brecc w/ heavy FeS.
-340½ lt. med. gr. dol; brecc. sealed w/ silica, shale & re-xl, chert nod at base.
-343½ lt. re-xl; brecc. as above; <u>strong ZnS shine at base</u>.
-346 lt. med. gr. dol; brecc. w/ silica & shale & re-xl; FeS shines bott. 6".
-352 lt. re-xl; brecc; grades to br. to gr. re-xl; FeS shines bott. 6".
-355½ lt. med. gr. semi re-xl; ~~xxxxxxx~~ mott - at base becomes lt. med. gr. dol.
-358 br. re-xl, mott; some crackle.
-366½ lt. med. gr. semi re-xl to sug. dol. to dol; lt. crackle to 364½; brecc. 364½-66½ w/ <u>ZnS shines 364½-65</u>; scatt. ss grains 366-66½ w/ TGS 366½.
-368 med. semi re -xl; mott; crakkle;
-271½ lt. med. gr. dol; lt. mott; crackle.
-373 med. dk. semi re-xl; well mott; some lt. crackle/.
-375 med. gr. dol; crackle to brecc; <u>ZnS shine at base.</u>
-376½ lt. med. gr. dol; brecc w/ gangue & re-xl; <u>ZnS shine at top</u> (the 2 shines equal about 6" at 2%.) FeS shines throughout.
-279 brecc; med. & lt. gr. dol & semi re-xl & re-xl; sealed w/ re-xl, silica, shale & some gangue; FeS shines throughout.
-384 lt. med. gr. dol; some brecc. top foot sealed w/ silica, shale & re-xl; tr. crackle 383-84.
-387 med. dk. gr. dol, many eyelets; silica & gangue; lt. crackle.

-388 med. gr. dol. (base bed K-7)
-389 med. dk. semi re-xl or re-xl; brecc sealed w/ gangue (several chert fragments).
-389½ chert, re-xl, silica & shale.
-394½ med. dk. mott. semi re-xl to sugary dol; heavy FeS shine 392.
-396½ lt. med. (med.) gr. dol, sugary, mott; large chert nod at base.
-397½ lt. med. gr. dol.
-398 brecc; br. re-xl & lt. med. gr. dol sealed w/ white gangue.
-403 lt. med. gr. dol; well banded; brecc; sealed w/ gangue to 400 w/ est. 1½% ZnS & 5% FeS from 399-400; 401-03 brecc. sealed w/ re-xl & dk. shaly silica w/ some white gangue & occ. chert.
Top S Bed 403 feet.
-405 br. re-xl, crackle; bott. 6" v. cherty.
-405½ med. gr. sugary dol.
-407½ lt. br. re-xl; top foot mostly dark silica.
-408 lt. gr. re-xl; brecc; TGS at base.
-409 gr. re-xl, mott.
-410 LS; tr. re-xl at top.
-412 brecc. chert sealed w/ dk. silica & green shale.
-413 Lt. br. re-xl, brecc.
-416 reddish to green argillaceous dol, occ sandy zone. (40° dip)
-421½ dk. dol as above.
-427 LS; some crackle & partyl re-xlized; 424-26 half torn siliceous lime; chert nod at base.
-431 lt. br. re-xl; brecc to 429½ w/ chert nod 429½.
-431½ lt. med.semi re-xl; shaly at base & few ss grains.
-435½ br. re-xl; sandy to 433½; few vugs 434½-35.
-438½ gr. re-xl; mott, scstt ss grains to 437.
-444½ lt. re-xl; shaly at 440; occ zone br. re-xl; shaly 444-44½.
-446 lt. gr. re-xl (to poss. semi re-xl) chert nod at base.
Base Kingsport fm. 446 feet.
-448 lt. med. gr. dol; some lt crackle to 447, brecc 447-48 w/ some re-xl. gangue.
-454 med. gr. dol; lt. crackle; chert nods 451 & 51½.
-459 lt. med. gr. dol; lt. crackle; brecc at base with ZnS (see below)
Top U Bed 459 feet.
-460½ br. re-xl, silic; ZnS at top (est 6" of 3%)
-464½ lt. med. gr. sugary dol to semi re-xl; mott.
-465½ med. gr. mott semi re-xl.
-471½ lt. to lt. br. re-xl; silic; mott. & some brecc; ZnS shines 470-71.
-477½ lt. med. gr. dol; crackle; chert nods 475½ & 76½; some vugs & eyelets 476½-77½ w/ scatt. ss grains & some silica bott 3-4".
-479½ lt. silic re-xl; ZnS shines 478 & 479; chert nod 479½.
-480 lt. med. gr. dol; few ss grains at base.
-480½ br. silic re-xl.
-481 lt. gr. re-xl; tr. ZnS; chert nod at base.
-483 lt. gr. semi re-xl to sugary dol.
-484½ brecc. chert & sec. chert w/ some re-xl & white gangue (1' core loss 483-503).
-485 br. re-xl; brecc.
-485½ med. gr. dol w/ some sec. chert & chert.
-486 brecc. chert.
-487½ lt. re-xl; crackle; chert nods 486½ & 87½.

-490 lt. gr. semi re-xl; brecc. to 489 w/ silic re-xl, chert & white gangue; est 3% ZnS 487½-89; few scatt. ss grains bott. 4".
-496½ lt. br. re-xl, sli silic; scatt. ss grains 492½-93; ZnS shines 493 & 94; FeS shine 493; at 494½ becomes v. silic; few ss grains bott. 4".
-497½ med. gr. dol; scatt. ss grains bott. 9" w/ thin ss at base.
-498½ br. v. silic re-xl; chert nod at top.
-500 white sec. chert.
-501 v. lt. re-xl, mott.
-501½ lt. br. v. cherty re-xl.
-502 lt. gr. dol.
-503 br. re-xl, crackle to brecc; ZnS shines 502½-03.
-504 lt. med. gr. dol; lt. mott; crackle; few ss grains at base.
-506½ lt. re-xl; mott, crackle; (4' core loss 503-12; sll apparently from 506½-12).
-512 lt. med. gr. dol., brecc; est 4% ZnS 507½-12½; poss. also a small bed of re-xl.
-515 br. silic re-xl; brecc. w/ gangue to 513 w/ ZnS shine; 512-12½ (see above) v. cherty at base (3' core loss 512-522).
-516½ lt. br. re-xl; crackle to brecc; chert nod 516; est 3% ZnS 516-16½.
-517½ gr. banded re-xl; brecc; ZnS shines
-521½ br. silic re-xl; some brecc (much core loss this bed) ZnS shine at 521.
-522½ lt. med. gr. dol; sugary; brecc w/ FeS shines; re-xl of flourite at base.
-524½ lt. re-xl; mott & brecc; strong ZnS shine 523½; FeS shines throughout.
-527½ gr. re-xl., brecc; grades to br. re-xl; est. 5% FeS & 1½% ZnS.
-531½ br. v. silic re-xl; occ. brecc; all silica at 531; tr. brecc. at base & strong FeS.
-532½ lt. be-xl., banded.
-534 lt. br. re-xl, v. silic; heavy FeS.
-538 br. re-xl, v. mott; brecc 536½-38 w/ heavy FeS (est 4% Fes 531½-38) few ss grains at base.
-539 lt. gr. dol.
-541½ br. mott. re-xl, brecc; est 5% FeS.
-555 T.D. lt. br. re-xl; crackle to brecc; est 1% FeS 541½-42½; v. silic 544-46 & est 4% FeS; several chert fragments 548-50; TGS 555; & v. cherty 555-56 w/ TGS 556; sand 556-57.

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DATE	INITIALS	CODE

Puncheon Camp Creek

Assays of Core From DD Hole GD-7A

Sample	Footage	Thick	Assay			Est.
GD-7A-1	303-305	2	.70	4' @ .94%		1% + ½
2	305-307	2	1.18			3/4% - ½
3	310½-312	1½	.50	3½' @ .72%		Shines
4	312-314	2	.88			2%
5	314-316	2	3.52	5' @ 2.04%		3% - ½
6	317-319	2	1.58			1 3/4 + 3/4
7	319-320½	1½	.46	6½' @ .3%	32' @ 1.07%	
8	320½-325½	5	.26			Shines
9	325½-328	2½	4.26	9½' @ 1.66%		6% + 1 3/4
10	330½-333	2½	.94			Good shines
11	334-335	1	2.74			2% - 3/4
12	356-358	2	1.52			3% + 1
13	358-360	2	2.36	8½' @ 1.31%		
14	360-363½	3½	.14			Shines
15	363½-364½	1	2.90			2% + .9
16	381½-383½	2	1.14			2% + 3/4
17	383½-386	2½	1.36	13' @ 1.19%		
18	386-390½	4½	.24			Shines
19	390½-394	3½	2.70			3½% + 3/4
20	402-403	1	1.88	7' @ .85		2½ + 3/4
21	407½-409	1½	2.70			2% - .7
22	437½-438½	1	4.10	3½' @ 1.31%		10% + 6
23	440-441	1	.50			Shine
24	466½-468	1½	4.20	3½' @ 2.02		10% + 6
25	468-470	2	.38			Shines

B. H. PUTNAM D.D. GD-7A

Copper Ridge Project-Puncheon Camp Creek

DMEA Idm-E 1088

Hole No:	GD-7A	Collared:	5-29-58
Farm:	Green-Dalton	Bottomed:	6-2-58
Loc:	9' offset of GD-7; towards GD-2	Depth:	541
		Casing:	BX 70'; AX 124'
Elev:	1415	Reaming:	None
Drilled By:	Putnam Drlg. Co.	Cement:	None
Logged By:	J. W. Spears	Water Table:	?

Top Kingsport	157½'
Top R Bed	309½
Top S Bed	377½
Base Kingsport	416½
Top U Bed	428
Base U Bed	440

GD-7A

0-70	Overburden
-74	lt. gr. dol; banded (30°); chert nod at base. (16' core loss 70-96)
-92	lt. med. gr. dol. (bleached from med. gr.?) mott.
-94	med. gr. dol; well mott & occ. vug; sandy at base.
-103	lt. gr. dol . (core loss 6' - 96-104)
-112½	med. (lt. med.) gr. dol; mott. & eyelets (mostly silic, but some gangue) TGS 106.
-114	med. dk. gr. dol; well mott.
-115	med. gr. dol; v. sandy at base w/ some oolitic chert.
-116½	lt. gr. dol; some ss at top.
-121	lt. med. gr. dol; sug & shaly at top; mott; grades darker.
-123	med. gr. dol; some lt. bands (40°) to 122½; then bott. 6" v. mott. w/ silic eyelets.
-124	med. dk. gr. dol; scatt. eyelets.
-127	lt. med. gr. dol; banded (39°); heavy ss at base.
-129	med. gr. dol; v. mott. & sugary w/ eyelets; lighter at base.
-136	lt. gr. dol; banded (37° dip); some sands 131-32 & few eyelets & vugs.
-140	lt. med. gr. dol; tr. shaly at 138½; then mott to 140.
-143½	lt. gr. dol; lt. bands (38° dip); chert nod at 141, TBS at base.
-147	lt. med. gr. dol; TBS 144½.
-149½	med. dk.(dk.) gr. dol; shaly mott.
-153½	med. gr. dol; (med. dk.); few eyelets.
-154½	dk. gr. dol; v. shaly bands to mott; chert nod at base.
-157½	lt. med. gr. dol; lt. bands (36°); sandy bott. 4" w/ CmSS at base. Top Kingsport Fm. at 157½ feet.
-161½	med. gr. dol; lt. shaly mott. & occ. eyelet.
-163½	med. dk. gr. dol; well mott; top 3" v. shaly.
-169½	lt. gr. dol; few vands (37° dip)
-170	med. gr. dol; TBS at base.
-171	dk. gr. dol; bands to TBS's.
-174	lt. med. gr. dol; mott.
-175½	med. dk. gr. dol, shaly bands.
-179	lt. med. gr. dol; Top foot banded & sandy.
-183	med. gr. dol; shaly mott.
-186	med. dk. gr. dol.(dk.); shaly mott.
-187	med. gr. dol; shaly bands to mott.
-190½	lt. med. gr. dol; broad bands (33° dip); large gangue eyelet at 187½; occ. small chert nod in bott. foot & chert nod at base. (at base grades to med. dk. gr.).
-192½	med. dk. gr. dol; well banded (33° dip).
-193½	lt. med. gr. dol, banded; thin ss at base.
-197	lt. gr. dol; thin ss near top; TBS 196½; 1" TGS at base.
-199½	lt. med. gr. dol (some med. gr. at top); mott. w/ silic eyelets; TBS at base.
-206½	lt. gr. dol; sandy & cherty (oolitic?) 204½-05; occ. thin ss 205-06½ w/ heavy ss & oolitic chert at 206½. (Base Bed K-2)
-208½	lt. med. gr. dol; lt. mott; ½" TBS at base.
-212	lt. med. gr. dol; becomes mott.; TBS at base.
-218	med. gr. dol; mott; TBS at 213½.

GD-7A

-227½ lt. gr. dol (v. lt.); mott. to 221½ w/ TGS at 221½; lt. bands 221½-25½ (34°) well banded 225½-27½ w/ chert nods 226,26½, & 227.
-232½ lt. med. gr. dol; v. banded (wavy) (dip 35-36°); v. sandy 231-32½ w/ 2" TGS at 232½ (base BED K-3)
-234½ med. gr. sugary dol; v. mott; tr. congl. then TGS at base.
-237½ lt. gr. dol; banded (36° dip).
-241½ lt. med. gr. dol; mott; chert nod at base.
-247 lt. med.(med.) gr. dol; banded (35°dip) to 245; then wavy bands to mott. to 247 w/ sand at 247 (45° dip at 245!).
-250 lt. med. gr. dol; chert nod 248; some lt. bands; fault 250½.
-251 med. gr. dol; shaly mott; fault at top; (base bed K-4).
-268½ lt. to lt. med. gr. dol; lt. bands to 258 (34°dip) w/ chert nods 256 & 257; TBS's 257½ & 258; mott 258-59; bands 259-61 (38° dip); few small cherts 260½-61; v. banded (wavy) 261-62½ w/ chert nod 262½; v. cherty 263½-64; bands 265-66½ (30° dip) w/ bleached chert nod 266 & some sand & eyelets at 266½; occ. steep shear w/ sli. displacement; many lt bands 266½-68½ w/ TGS at 267½ (36° dip).
-271 med. gr. dol; mott; TGS at base.
-271½ med. dk. gr. dol; v. mott.
-279½ lt. med. gr. dol; crackle; some bands (dip varies from 30 to 37°); few eyelets 271½-73½; some mott. 276-78.
-281½ med. gr. dol; mott; crackle; some sand grains 280-81; 3" TGS at base. (base Bed K-5).
-285½ lt. med. gr. dol; brecc. to crackle; some lt. shears 284½.
-286½ med. gr. dol; shaly mott.
-288½ lt. med. gr. dol; mott.
-293½ med.dk. gr. dol; some mott. to bands; chert nod 292½ (dip? 48°).
-299 med. gr. dol; occ. TBS; crackle; ZnS shine 297.
-301 lt. gr. dol; brecc. top 3" w/ ZnS shine; crackle 300-301 w/ ZnS shines, few ss grains 300-301 & some lt. bands (45-48° dip).
-307 lt. (lt. med.) gr. dol; lt. mott; brecc 303-03½ w/ est 1½% ZnS; brecc. 305-06 w/ est 1% ZnS; ZnS shine 307.
-309½ lt. gr. dol; lt. bands (42° dip); few ss grains bott. 3".
Top R Bed 309½ feet.
-310½ green shale w/ tr. brecc at base w/ ZnS shine/
-312½ med. gr. mott. sugary dol; crackle; ZnS shine 311½; brecc. 312-313½ w/ est 2% ZnS: 1" of re-xl at 312½.
-314 lt. med. gr. dol; brecc. to crackle w/ some re-xl & shale gangue.
-316 med. gr. semi re-xl; v. mott; brecc. w/ est 3% ZnS.
-321½ med. to lt. med. gr. sugary dol; mott; crackle; to brecc; 317-20½ est. 2% ZnS.; FeS shines 320-20½.
-328 gr. shaly re-xl; brecc; ZnS shines 322 &323; FeS shines 324-24½; grades to lt. br. re-xl; 325½-28 est 6% ZnS.
-329 lt. med. gr. dol; bands (40° dip) crackle (1' core loss 319-32).
-331 gr. re-xl; v. cherty top 6"; FeS shines throughout; v. heavy ZnS shine 330½.
-333 br. re-xl; brecc; ZnS shines 331-32; heavy shine 332 3/4.
-334 lt. med. gr. dol; sugary; lt. bands; few ss grains at base & 2" brecc w/ ZnS & FeS shines.

-335½ brecc; br. re-xl, semi re-xl & dol; sealed w/ white gangue & br. re-xl. est 2% ZnS 334-34½ & heavy FeS.

-336 gr. v. coarse grained re-xl.

-337¼ lt. med. gr. dol; bands.

-340½ br. re-xl; mott & crackle; ZnS shines 337¼,37 3/4 & 340½.

-343 gr. to lt. br. re-xl; mott, crackle; ZnS shine 341-42½; FeS shines 342½-43.

-346 gr. semi re-xl to sugary dol; mott; occ. crackle.

-347 lt. med. gr. dol; crackle to some shears; chert nods 346 & 346½.

-349 br. re-xl; mott. & some crackle.

-355 lt. med. gr. semi re-xl to sugary dol; mott; occ. eyelet; weak crackle; FeS shines at 349½.

-355½ br. re-xl; crackle.

-365¼ lt. gr. dol; lt. bands; brecc; 356-60 est 3% ZnS & FeS shines; ZnS shines 360-63½; est. 2% ZnS 363½-64½ w/ heavy FeS shines.

-367 dk. (med.) gr. dol; crackle to brecc; eyelets; ZnS shines 366½(base bed K-8).

-368½ brecc; lt. med. & dk. gr. dol block, sealed w/ re-xl & white gangue; ZnS shines 367 3/4; heavy FeS 367-67½; FeS shine 368.

-370½ brecc; mostly re-xl & shale w/ blocks oflt. med. & med. gr. dol. & chert fragments.

-373½ dk. gr. semi re-xl; crackle to brecc; few eyelets; some shaly mott; FeS shine 373.

-377½ ~~dkxxgrxxsemixxrexxlxxtoxbreccxxfew~~. lt. med. gr. semi re-xl to sugary dol; mott; at 376 heavy FeS shine & ZnS trace.

Top S Bed 377½ feet.

-378½ br. re-xl; crackle; chert nod top & bott.

-379½ lt. med. gr. dol; crackle.

-388 br. re-xl; v. dk. Y shaly top foot w/ few ZnS shines top 2"; occ. ZnS shine to 381½; & brecc w/ few blocks dol; est 2% ZnS 281½-86; cherty 383½-84½; shaly 385½; est 1½% ZnS ~~390½x92x~~ 387-87½.

-392 lt. br. re-xl; some brecc. & crackle; est 3½% ZnS 390½-92.

-392½ lt. med. gr. dol.

-396 br. re-xl; brecc to 394 w/ est 4% ZnS 393-94; ZnS shine 395.

-399½ lt. re-xl; brecc to 397½ w/ ZnS shine 397; then occ. small vug.

-400 lt. semi re-xl; few bands.

-405½ lt. br. re-xl; brecc; est 2½% ZnS 402-03.

-406 lt. med. gr. sugary dol; banded; crackle w/ ZnS shine; scatt. ss grain bott.

-409 lt. br. re-xl; few ss grains at top; crackle to brecc; est 2% ZnS 407-09.

-416½ br. re-xl; shaly 415-15½; chert nod at base.

Base Kingsport Fm. 416½ feet.

-420½ lt. med. gr. dol; crackle; chert nods 417-420½.

-428 med. to lt. med. gr. dol; crackle w/ ZnS shine 422-24; sugary at base & tr. ss & chert at base.

Top U Bed 428 feet.

-437½ lt. med. to med. gr. sugary dol. well mott; ZnS shines 428½-29,431,& 433; brecc. to sheared bott. foot.

-440 br. re-xl, dk. & shaly; est 10% ZnS 437½-38½.
-443½ lt. med. gr. dol; ZnS shine 440½-41; crackle.
-448 med. gr. dol; crackle; 446-48 mott. to eyelets; sugary & few ss grains bott. 4".
-448½ lt. br. shaly re-xl; ZnS shine at top.
-450½ gr. to br. re-xl; brecc.
-451 lt. med. gr. dol; few ss grains.
-451½ lt. br. coarse grained re-xl.
-455½ lt. med. gr. dol; sugary; crackle; est 1% ZnS 452½-53; mott to 453½, then lt. bands, heavy ss at base.
-459 lt. re-xl, brecc; v. cherty to 456½ w/ ZnS shine at top; v. cherty 458-58½.
-463 lt. med. gr. dol; v. cherty top 2 feet (2' core loss 459-64).
-473 br. re-xl, brecc; est 10% ZnS 466½-68; v. cherty 467-70; ZnS shines 468-70; silic 470-73.
-474½ lt. med. gr. sugary dol; several chert nods; few ss grains at base.
-476½ br. re-xl; lt. crackle.
-477½ lt. med. gr. dol.
-480½ lt. re-xl.
-487 lt. gr. dol; sugary top; lt. bands (40° dip) chert nods 484 & 485; ss at 485½, then semi re-xl w/ scatt. silica to 486; few ss grains 487.
-491½ br. re-xl; strong ZnS shine at top; silic, cherty at 488½; chert nods 489½ & 489 3/4; stron ZnS shine 489 3/4; some shaly bands 489 3/4-91; (40° dip); few ss grains 490½-90 3/4; ss at 491½.
-492½ lt. br. re-xl; top 3" silica, then silic re-xl.
-494½ br. re-xl, some silica; large chert nod at base.
-499½ lt. gr. re-xl, banded (40° dip); chert nod 496; banded silic 496-97 & some ss at 496½; brecc. 499-99½.
-500½ br. re-xl, silica.
-508 lt. br. re-xl; few vugs 501½-02; large chert nod 502; silic 502-08; crackle w/ occ. tr. FeS; grades to br. re-xl; ZnS shine at base.
-509½ lt. med. gr. dol.
-511 lt. br. re-xl., eyeylets.
-526 lt. gr. to br. re-xl, mott; crackle; sli. silic; occ. many chert fragments; few ss grains 522-23; shaly 523; v. sandy 525-26.
-541 T.D. lt. br. re-xl; crackle to brecc. to eyelets; ss at 529½-30; silic 529½-41; few ss grains 534; v. cherty 539-40.

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DATE	INITIALS	CODE

B. H . Putnam D.D. GD-8

Copper Ridge Project-Puncheon Camp Creek

DMEA Idm-E 1088

Hole No: GD-8

Farm: Green-Dalton

Loc: N 49,842.70
E 46,429.67

Elev: 1409

Drilled By: Putnam Drlg. Co.

Logged By: J.W. Spears

Collared: 6-3-58

Bottomed: 6-6-58

Depth: 400

Casing: BX 71; AX 86

Reaming: None

Cement: None

Water Table: ?

Top Kingsport Fm	-67 Est (in overburden)
Top R Bed	-225
Top S Bed	-283
Base Kingsport Fm	-347
Top U Bed	-360
Base U Bed	-376½

0-71	Overburden
-73	Med dk gr dol; mott; TGS @ base.
-76	Lt gr dol; bands top foot (40° dip); grades to lt med gr; TBS base
-80	Lt med gr dol; oxidized bott 6"
-82	Cavity
-84	Med gr dol; well mott to shaly; oxidized
-85	Med dk gr dol; wavy bands to TBS's; (dip about 40°)
-91½	Lt med gr dol; lt mott top foot w/sand & eyelets @ 86 (1' core loss 86-94)
-95	Med dk gr dol; mott; chert nod 94
-96	Med gr dol; chert nods 95½ & 96
-98½	Lt med gr dol; broad bands (41° dip); few eyelets about 97; chert nods 98 & 98½
-99½	Med gr dol; chert nod @ 99½
-108½	Lt med gr dol; lt bands (45° dip) to 102½; occ TBS 102½-08½
-113	Med gr dol; mott; grn shale 12; TGS & ss 12½; shaly & cherty (oolitic) 12½-13
-114½	Lt med gr dol; mott; ss @ 14 (1' core loss 14-35)
-117	Med dk to med to lt med gr dol
-120½	Lt med gr dol; large chert nod 18½; TGS 20½
-127	Med gr dol; shaly mott; bleached @ top; occ TBS; TGS @ base (dip 38°)
-134	Lt gr dol; well mott to 31 w/chert nod then 1" TGS @ 31;lt bands 31-34 (41° dip) w/chert nod 134
-135	Lt med gr dol; bands (38° dip 35) chert nods 34½, 35
-136	Med (l.m.) gr dol; banded; chert nods 36-36¼ & 36½ (dip 43°)
-141½	Lt med gr dol; well banded to wavy (41° dip) to 40½ w/few ss grains 40-½; v sandy 40½-41½ w/a TGS @ 41½ (base bed K-3)
-145	Med gr sugary dol; well mott; tr of congl @ 44½; then oolitic chert w/TGS @ 45
-148	Lt gr dol; few lt bands (41° dip) 1" TGS @ base
-149	Lt med gr sugary dol; bands to mott
-154	Lt med gr dol; mott; chert nods 51½ & 54; becomes lighter @ base
-156½	Med gr dol; bands; few scatt ss grains bott 4"
-161½	Lt med gr dol; several cherts 158-59 & a chert nod 161
-162 3/4	lt semi re-xl; silic; ½" TGS @ base
-163¼	Med gr dol; shaly mott & oxidized; TGS @ base (base bed K-4)
-170	Lt gr to lt med gr dol; lt bands (dips from 41-45°); TBS 66; chert nods 68 & 69; TGS 70
-170½	Lt med gr dol; few eyelets; mott & sugary; TGS @ base
-179	Lt med gr dol; mott to 71; then banded (46° dip, some dips to 50°) to wavy bands to 75 w/few ss grains & small chert nod @ 75; few bands 75-77 (45° dip) w/large chert nod 77-77½; banded 77½-79 & grades to med gr dol w/chert nod 79; then thin ss w/eyelets
-181½	Lt med gr dol; wavy bands to 80 w/TGS 80; bands 80-81½ (dips 44-42°); a large eyelet @ 80½
-184½	Med gr sugary dol; oxidized; mott; TBS 83½ & shaly @ base
-190	Lt (l.M.) gr dol; lt mott top foot; then bands to well banded & occ eyelet (dip 50°) TGS 190
-196½	Lt gr dol (top foot l.m. & mott); few lt bands (dip 47-48°) few ss grains 95-½; tr brecc 95½; brecc chert then 2" TGS @ 96½
-200	Lt med gr dol; grades to lt gr; few lt bands (41° dip) & occ eyelet
-201	Lt med gr sugary dol; TGS @ base
-224	Lt med gr dol; lt mott to 205 w/chert nod 03½; lt bands (45° dip) to 07½ w/chert nod 05½ & TBS 07½; lt mott & occ band to 10½; lt bands 10½-15 (43-45° dip) & occ lt crackle w/small cherts 14½-15; TGS 17; lt mott 17-22; lt bands (39° dip) 22-24 TOP R BED 224'
-224½	Grn brecciated shale; thin ss @ top
-225½	Br re-xl; chert frags & shaly w/TGS @ base
-226	Med gr sugary dol; mott; lt crackle
-228	Lt med gr dol; mott; TGS @ base
-230½	Med semi re-xl; mott to bands
232½	Lt med (med) gr sugary dol; mott
-233	Med mott semi re-xl
-234	Lt med gr dol; crackle w/FeS shine

-235½ Lt br to greenish re-xl; 1" TGS @ top
-237 Br mott re-xl
-238 Lt med gr dol; lt mott & lt crackle; brecc chert nod @ base
-240 LS; 1" chert then 1" re-xl @ top
-242 Dk br re-xl; crackle; fault 41½; 3" dol @ 42
-243½ Br v mott re-xl; 1" TGS @ base
-244½ Lt med gr dol; sugary
-254 Lt br re-xl; lt mott & eyelets; grades to semi re-xl; then to sugary dol; chert nods 253 & 54
-257 Br re-xl
-269½ Lt med gr (to greenish) sugary dol; some semi re-xl @ top
-270 Dk mott re-xl
-274 Med dk gr dol; occ eyelet & few bands (dip about 39°) (base bed K-7)
-274½ Dk re-xl; TGS then 2" of LS @ base; ZnS tr @ top of LS
-275 Mixture of grn shale & some re-xl
-277½ Dk semi re-xl to sugary dol; mott; crackle
-279½ Lt re-xl (to semi re-xl) lt. mott; some crackle
-280 Lt br mott & cherty re-xl; tr ZnS @ base
-283 Lt med gr dol; sugary; lt bands (35° dip) occ tr crackle; bott 3" brecc w/some re-xl gangue
TOP S BED 283'
-285 Br coarse grained re-xl; brecc top foot w/some dol blocks & chert frags; bott 3" grades to LS
-291½ LS; pt re-xlized to 86; tr crackle 86½ w/ZnS shine; 1" re-xl & dol @ 88 w/tr ZnS; shaly & cherty 88-90 w/occ lt crackle; bott 6" becomes re-xl then @ base grades to re-xl
-293½ Lt br re-xl; @ base grades to LS
-299½ LS; large chert nod 94-½; tr crackle 95½; sli re-xl 95½-96½; bott 3" grades to re-xl
-308½ Lt br re-xl; 04½-06 grn shale & LS about vertical; some jasporoid 07½-08½; TGS @ base
-310½ Lt med (med) gr dol; crackle w/gangue & brecc w/re-xl
-315 Lt br re-xl; 13-15 mostly brecc chert (1' core loss 06-15)
-320 Lt br to br re-xl; mott & eyelets; lt crackle
-320½ Lt med semi re-xl; few ss grains @ base
-326 Lt br re-xl; some lt bands; ZnS shine @ 22; lt crackle; bott 6" some dk silica & chert fragments
-326½ Lt med gr dol; (sug); crackle; few ss grains
-327 Br to lt br re-xl; cherty
-327½ Lt med gr semi re-xl; crackle
-332 Lt br re-xl; mott & eyelets; occ jasporoid zone
-332½ Lt med gr dol; sugary; bands; ss @ base
-345 Lt br re-xl; mott & lt crackle; some silic 37-38½; brecc 38½-41; crackle 41-43; brecc 43-45
-347 Lt gr re-xl (to semi re-xl)
BASE KINGSPORT FM 347'
-350 Lt gr dol; cherts @ 48 & 50
-360 Lt med grading to med gr dol; lt bands (44° dip) to 53; then lt mott & some silic eyelets; cherty 55½; chert nod 58; sugary 59-60
TOP U BED 360'
-361 Br re-xl; silic; chert nod @ top
-367½ Lt med gr mott sugary dol to semi re-xl; lt crackle to shears; stronger shears bott 6" & chert nod @ base
-370 Br re-xl; thin fault (1") @ 69; fault brecc @ base
-371 Med gr dol; shears
-376½ Br re-xl; fault brecc 71-72; crackle 73½-76½
-384½ Lt med gr dol; crackle to 79½; fault brecc 79½-82; crackle to shears 82-84½ (& med gr) w/chert nod 384½

-386 Med to med dk gr dol; mott & eyelets; crackle
-388½ Br re-xl; chert nod @ base
-389 Lt med gr dol; some brecc w/br re-xl; scatt ss grains bott 2"
-389½ Lt br re-xl
-392½ Lt med gr dol; sugary; mott; crackle; chert nod 90; chert nod just above base & hvy ss @ base & FeS
-394 LS, chert nod @ base
-396 Br re-xl; brecc cherts top & bott 6"
-399 Med (l.m.) gr dol; lt crackle; chert nod near top; scatt ss grains @ base
-400 Gr mott re-xl (TD)

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DATE	INITIALS	CODE

Puncheon Camp Creek

Assays of Core From DD Hole GD-9

Sample	Footage	Thick	Assay		
GD-9-1	429-432	3	1.64		14' @ 1.32%
9-2	432-435	2	.02		
9-3	435-437	2	1.12	8' @ 1.77%	
9-4	437-439	2	.88		
9-5	439-441½	2½	.76		
9-6	441½-443	1½	5.12		

B. H. Putnam D.D. GD-9

Copper Ridge Project-Puncheon Camp Creek

DMEA Idm-E 1088

Hole No:	GD-9	Collared:	6-6-68
Farm:	Green-Dalton	Bottomed:	6-12-58
Loc: N	49,759.35	Depth:	544
E	46,686.13	Casing:	BX 17'; AX 151'
Elev:	1375.02	Reaming:	112' (39-151)
Drilled By:	Putnam Drlg. Co.	Cement:	None
Logged By:	J. W. Spears	Water Table:	?

Top Kingsport Fm	200
Top R Bed	363
Top S Bed	445
Base Kingsport Fm	489½
Top U Bed	500½
Base U Bed	515

0-17	Overburden
-17½	Med gr dol; (lt med); mott to bands, eyelets, sandy; 2" CMss @ base & some sec chert @ top; dip about 42°; (4' core loss 17-29)
-19	Lt med gr dol; lt reddish mott; few eyelets & scatt ss grains
-20	Lt semi re-xl; some re-xl; mott & silic; ox @ base
-27½;	Med (med dk) gr dol; mott; bott 6" semi re-xl
-30	Lt med gr dol; mott; v sandy 29-30 (3½' core loss 29-36)
-32	Lt gr dol; bands (to mott) v sandy
-37½	Lt med gr dol; mott & eyelets
-44	Dk gr dol; v mott to 39 (1½' core loss 39-42; 3½' core loss 42-47)
-47	Med gr dol; faulted
-52	Med dk gr dol; mott to well mott & sugary (1' core loss 47-49; 1' core loss 49-56)
-55	Cavity
-58	Lt med gr dol; lt mott; v sandy 57½-58 (base bed M-13)
-67	Med gr dol; mott w/eyelets (silic & white gangue)
-69	Med gr dol; few lt bands; sugary bott 2" w/few ss grains; TGS @ base (base bed M-12)
-71	Lt med sug dol to semi re-xl; mott
-72½	Med gr dol; sugary; mott; sec chert 72-½
-78	Lt gr dol; lt bands (40° dip); fractured (2½' core loss 72-78)
-80½	Lt med gr dol; crackle w/sec chert; TGS & tr re-xl @ 80; (1' core loss 78-84)
-81½	Lt med v mott semi re-xl
-83	Med v mott semi re-xl (to sugary dol); few ss grains @ base
-86	Lt gr dol; 83-84 some crackle w/sec chert; chert nods 85 & 86 (2' core loss 84-90)
-91½	Lt med (to med) gr dol; fractured; few lt bands
-92	Lt med gr dol; mott & few eyelets; TGS @ base
-93	Sec chert; grades to re-xl
-94½	Lt med gr dol; top foot mott
-98½	Lt gr dol; bands (38° dip) occ thin sand bott 2'
-101	Lt med (med) gr sugary dol to semi re-xl
-104	Lt med gr dol; lt mott; chert nod & TGS @ 102
-105	Med gr dol; sugary & well mott w/scatt ss grains thruout; TGS @ base
-108½	Lt med gr dol; lt mott
-111½	Med gr dol; mott to banded
-112	Lt med gr dol; scatt sand grains
-141	Cavity
-142	Med (lt med) gr dol; mott
-143	Lt med gr dol; few eyelets @ top; TBS @ base
-151	Med gr dol; silic eyelets; TGS @ 45
-152	Med dk gr dol; mott
-153½	Med gr dol; 52½-53½ sandy w/oolitic cherts
-154½	Ltg gr dol; lt bands (about 37° dip)
-159½	Lt med gr dol; mott; top sugary; TBS @ base
-164	Med gr dol; mott; TBS 60½; some silic eyelets & darker bott 2'
-167	Lt med gr dol; v lt bands; shears @ 65; scatt ss grains @ base, then TGS
-170½	Lt med to med gr dol; mott & silic; @ base grades into bed below
-175	Lt med gr dol; well banded (about 40°, but some to 43°) sandy top few inches; thin sands 72½-73½ w/TBS 73½; sandy & eyelets 73½-74; @ base grades to med gr
-178	Med gr dol; well banded (37° dip) becomes mott @ base
-180½	Med dk gr dol; mott
-184½	Lt med gr dol; large chert nods 81 & 81¼; banded to mott 81½-83; then banded (dip @ 84 is 45°) becomes darker @ base & grades into bed below
-186	Med gr dol; lt bands; TBS @ base
-196	Med dk (some med @ top) gr dol; shaly mott & few gangue eyelets
-197	Dk gr dol; shaly bands to mott; chert nod @ base
-200	Lt gr dol; lt bands (41-42° dip) bott 3" CMss
	TOP KINGSPORT FM 200'
-202	Lt med gr dol; lt mott; few ss grains 201½
-205	Med gr dol; shaly mott; chert nod @ base

-206½ Lt med (med) gr dol; sugary; well mott; shaly @ base
-210 Lt med gr dol; lt bands to 208½ (dip 42°) w/few ss grains @ 208; lt mott 08½-10 & ~~sff~~ becomes darker
-213 Med gr dol; shaly mott; TBS @ base
-214½ Med dk gr dol; shaly bands w/several TBS's bott 3" (dip 41°)
-217½ Lt gr dol; shaly mott
-219 Med dk gr dol; bands to shaly mott (about 40° dip)
-222 Lt med gr dol; sandy @ 19½; lt. mott
-224½ Med gr dol; shaly mott; ½" TBS @ base
-228½ Med dk to dk gr dol; v mott (shaly) cherty @ base
-240 Lt med gr dol; to 230½ some wavy bands & eyelets; broad bands 30½-36 (42° dip) w/ chert nods 32½, 33½; thin bands 36-37½ w/sandy @ 36½ & few ss grains to 37½; lt mott 37½-40 & shale @ 240
-244 Lt med (med) gr dol; mott w/occ eyelet; tr ss then 1½" FeS @ 44
-248 Lt gr dol; v lt bands to lt mott (42° dip) to 47; v sandy & oolitic cherts 47-48 (base bed K-2)
-259 Lt med gr dol; banded to 49 w/ss & oolitic chert @ 49; mott 49-58 w/some shears 56-58; TGS 259
-264 Lt med (med) gr dol; mott w/silic eyelets; TGS @ base
-268½ V lt gr dol; mott; ½" TGS @ base
-274½ Lt gr dol; lt bands to mott to 71½ w/small chert @ top & bott; banded 71½-74½ (40° dip) w/chert nods 72½, 73 & 74½
-280½ Lt med (lt) gr dol; v banded (wavy) to mott; chert nod 75; few ss grains 77½-79; v sandy 79-80½ w/TGS 80½ (base bed K-3)
-283 Med gr v mott sug dol to semi re-xl; some congl & chert @ base; TGS @ base
-286½ Lt gr dol; lt bands (dip 42-43°); TGS base
-289½ Lt med gr dol; lt wavy bands (dip 41°)
-296½ Lt gr dol; lt mott to 91½; lt bands 91½-93 (40° dip) bleached chert nods 93, 93¼ & 93½; well banded (wavy) 93½-96½ w/few ss grains 96¼ & chert nod 96½
-302 Lt med gr dol; chert nods 99, 99½ & 301½
-303 Lt sugary dol; scatt specks of silica; few ss grains; TGS @ base
-303½ Med gr dol; mott; sugary @ base; TGS base (base bed K-4)
-311 Lt gr dol; few eyelets top 9"; lt bands to 09 (40-41° dip) chert nods 307, 08½, & 09; well banded 09-11 (dip 38-39°) w/few ss grains 310½-11
-312 Lt med gr dol; bands to mott
-316 Lt gr dol; lt bands @ top to well banded (38° dip) chert nod 12½, 14½, 15 & 16 w/ few ss 15 3/4-16
-317½ Lt med gr dol; v cherty
-324 Lt gr dol; lt bands; <u>v large chert 19 to tr ZnS @ base</u> then TGS (36° dip 19); chert nod 20, thinss 20½, bands 20½-24 (dip 37°)
-327 Lt med gr dol; lt mott
-335 Lt gr dol; well banded (wavy) (dip 36-39°); few ss grains & TGS @ 31; tr brecc @ base
-336½ Lt med gr dol; lt mott; v sandy @ base then 2" TGS (base bed K-5)
-337½ Med to lt med gr dol; chert nod near top.
-341 Lt med gr dol; v banded top 1½' (39° dip) then lt bands to lt mott; TGS base
-342 Lt med sug dol; mott; TGS @ base
-344 Lt gr dol; lt mott; tr of brecc near base
-346½ Lt med gr dol; mott to 345 w/tr brecc 345
-363 Lt gr dol; lt bands to 55 (37° dip) w/small chert nod 55; few ss grains 56; then occ sand grain to 56½ w/TGS 56½; lt mott 56½-61½ & occ lt crackle; lt bands 61½-63 (39°dip) TOP R BED 363'
-364 Grn shale; brecc
-367½ Lt med gr sugary dol; mott; occ lt crackle to shear; TGS @ base
-372 Lt med (med) mott semi re-xl
-373 Lt med gr dol; lt shears; few ss grains @ base
-377 Lt gr re-xl to semi re-xl; lt mott; 3" TGS @ top
-378½ Br re-xl; few vugs
-380½ Lt med (med) gr dol; sugary; chert nod 79½; then brecc to 80 w/ss @ 80; mostly chert 80-½

-385 Br re-xl; v shaly to 82; crackle 83-85
-386 Lt gr dol; few ss grains; brecc w/gangue, chert, silica & re-xl
-386½ Blk silica, grn shale & some re-xl
-388 Lt med gr dol; banded (dip 36°) lt crackle
-393 Lt br re-xl; occ lt crackle; grades to lt gr semi re-xl
-395½ Lt gr semi re-xl; mott; becomes sugary dol
-398½ Lt gr dol; 396-98 sheared to faulted; chert nod @ 98
-402 Lt br mott re-xl
-403 Lt gr semi re-xl
-407 Lt med gr sug dol to semi re-xl; mott; lt crackle
-408½ Lt br re-xl
-409½ Lt med gr dol; fault @ 409
-411 Med gr semi re-xl; fault @ 10½; FeS shines thruout
-414 Lt med gr dol; mott; crackle; FeS shines @ 12; some br re-xl is brecc @ 12½; bott foot grades to semi re-xl
-415 Lt br re-xl
-416½ Med gr dol; lt bands; crackle to brecc; few ss grains @ base; hvy FeS bott 6" & some re-xl
-423 Lt gr dol; brecc to 19, then crackle; <u>est 1½% ZnS 16½-17</u> w/FeS shines; <u>ZnS sh 18</u>
-426½ Med gr dol; brecc 25-26½ sealed w/much dk shale, re-xl; <u>ZnS shine 425½</u>
-428 Dk shaly re-xl as above brecc filling
-432 Dk semi re-xl to sugary dol; mott; brecc 29-32 sealed w/white gangue & re-xl; <u>est 3% ZnS & 2% FeS</u>
-434 Med gr sugary dol & dk semi re-xl; brecc sealed w/re-xl & some white gangue; occ chert nod; <u>est 1% ZnS 32-32½</u>; est 4% FeS 32-33½
-435 Med gr sugary dol; mott; @ base some brecc w/br re-xl & strong FeS shine
-439½ Med gr dol; brecc; occ black dk gr dol; sealed w/gangue & some re-xl; <u>est 1½% ZnS & 1% FeS</u>
-440 Lt br re-xl; crackle; <u>ZnS shine @ base</u>; then band of FeS
-445 Brecc; mostly med gr dol; but occ dk dol & re-xl blocks; sealed w/white gangue & some re-xl; <u>41½-43 est 2½% Zn & 3% FeS</u>
TOP S BED 445'
-448 Lt br re-xl; bott 6" brecc sealed w/jasporoid (2' core loss 45-46)
-448½ Lt med gr dol; crackle sealed w/re-xl
-449½ Lt br re-xl
-451 Gr mott semi re-xl to re-xl; poss brecc blocks
-453 Lt med gr dol
-454½ LS, some brecc w/gangue; top 2" chert, re-xl & grn shale
-456 Lt gr re-xl; top 3" sli Limy
-458 Coarse grained br to white vuggy re-xl (3½' core loss 56-65)
-459 Lt med gr dol; sheared to brecc
-464 Lt br mott re-xl; silic; vuggy
-467 Lt re-xl
-468 Lt med semi re-xl (to re-xl) few vugs
-474 Lt br re-xl; brecc 68-69 w/1" TGS 69; chert nod 70; vuggy 70-73
-475 Lt med semi re-xl; banded; sandy bott 6"; crackle
-488 Lt gr to br re-xl; shaly 76-77
-489½ Lt gr to med gr re-xl to semi re-xl
BASE KINGSPORT FM 489½'
-494 Lt gr dol; lt bands; lt crackle; chert nod @ base
-500½ Lt med gr dol; lt mott to occ silic eyelet (dip @ 41°) occ lt crackle; chert nods 97, 500; crackle 500-½ w/FeS shine & some silica gangue
TOP U BED 500½'
-501½ Br re-xl; oolitic chert nod @ top
-510 Lt gr mott semi re-xl to sugary dol; lt crackle; sli darker towards base
-515 Br re-xl; <u>est 3/4% ZnS 10½-11½</u> & FeS shines
BASE U BED 515'

-519½	Med gr sugary dol (poss semi re-xl); mott 17-19½ w/some eyelets & small cherts; shaly @ base
-521½	Br re-xl; sli siliceous; crackle
-522	Lt sugary dol; mott; chert nod is in middle
-523	Br v silic re-xl
-526	Lt med gr dol; lt mott; chert nod 25½; v hvy sand (2") @ 26
-527½	Sec chert
-528½	Mixture of chert, sec chert & br re-xl
-530½	Lt br re-xl; several chert nods
-532	Lt med gr semi re-xl (re-xl?) chert nod 31; few ss grains bott 3"
-534	Gr mott re-xl
-536½	Br re-xl; bott 6" mostly grn shale w/few ss grains 35½-36
-538	Med gr dol; top 4" some brecc w/grn shaly re-xl
-539	Br re-xl; chert nod @ base
-540	Med gr dol
-544	Br mott re-xl (TD)

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DATE	INITIALS	CODE

Puncheon Camp Creek

Assays of Core From DD Hole GD-10

Sample	Footage	Thick	Assay		
GD-10-1	490½-492½	2	3.02		
10-2	492½-495	2½	1.82	12' @ 2.18%	
10-3	498½-499½	1	7.30		17½' @ 1.90%
10-4	501½-502½	1	8.32	9½' @ 2.28%	
10-5	506½-508	1½	4.02		
10-6	508½-509¼	3/4	0.72		
10-7	579½-580	½	6.62		
10-8	587-587½	½	4.32	21½' @ 0.57%	6' @ 1.0%
10-9	590-590½	½	5.34		
10-10	592½-593	½	2.32		
10-11	600½-601	½	2.98		

B. H. Putnam DD - GD - 10
Copper Ridge Project-Puncheon Camp Creek
DMEA Idm-E 1088

Hole No:	GD 10	Collared:	6-16-58
Farm:	Green-Dalton	Bottomed:	6-21-58
Loc: N	49,673.93	Depth:	630
E	46,737.08	Casing:	BX 38; AX 120
Elev:	1379.22	Reaming:	48' (72-120')
Drilled By:	Putnam Drlg Co	Cement:	None
Logged By:	J. W. Spears	Water Table:	?

Top Kingsport Fm	282'
Top R Bed	447'
Top S Bed	513½'
Base Kingsport Fm	559½'
Top U Bed	571½'
Base U Bed	583½'

0-38	Overburden
-41	Med gr dol; mott to silic eyelets; scatt gangue eyelets & some pinpoint vugs
-42½	Med dk gr dol; v mott to silic eyelets; scatt ss grn's bott 3" & shaly chert nod @ base
-45	Med gr dol; lt mott
-46	Med dk gr dol; silic eyelets; TGS @ base
-48	Med gr dol; lt bands (40° dip) few eyelets; thin ss @ base
-50	Lt med gr dol; sli banded; scatt ss grains top 6"; then bott 1½' is brecc chert sealed w/shale & silica
-56	Cavity
-56½	Lt med gr dol; sugary & mott
-57½	Lt gr dol
-64½	Dk gr dol; sugary; top foot oxid; banded to shaly mott (dip @ 38°) v mott bott 2½' & v shaly bott 3"
-66	Lt gr dol; many eyelets & vugs
-67½	Lt med to med gr dol; mott; silic eyelets & occ gangue eyelets
-73½	Med gr dol; mott; silic eyelets
-78	Dk gr dol; shaly mott to 76 w/chert nod @ 76; bands 76-8 (37½° dip)
-80	Lt gr dol; sands top 3"; mott to bands; chert nod @ base
-83½	Lt med gr dol; lt bands; chert nod @ 81; some oxid 82-83
-84½	Med gr dol; mott; few ss grains; few bands near base; ss & TGS @ base
-86	Lt med gr dol; lt bands
-89½	Lt gr dol; lt mott to bands to 88; then banded (40° dip) & sandy to 89½ w/3" CMss @ 89½
-98¼	Lt med gr dol; some lt bands (dip 37°) some ss @ 90-½; occ thin shear 95-7 (N 60° E 70°)
-99	Lt (lt med) gr dol; sandy; oolitic chert nod @ base
-100	Lt gr dol; scatt ss grains
-101	Lt cherty re-xl
-101½	Sec chert & oolitic chert
-103½	Lt med to med gr mott semi re-xl
-106	Lt med gr sugary dol
-110	Med gr dol; mott
-113½	Lt gr dol; from 11-13 v sandy
-115½	Lt med gr dol; lt mott; grades to med gr dol
-127½	Med dk (med) gr dol; mott; silic & gangue eyelets
-128½	Dk gr dol; shaly mott
-132	Med dk gr dol; mott
-133½	Med dk gr dol; sugary & mott
-134½	Med gr dol; mott; hvy ss @ base
-139	Lt med gr dol; mott to sli banding (40° dip) v sandy bott 6"
-143½	Med gr dol; mott to silic eyelets; some gangue eyelets
-149	Med dk gr dol; mott; grades to med gr dol; few eyelets; chert nod near base
-150	Lt med gr dol; banded (37° dip)
-152	Lt med sugary dol; to semi re-xl; scatt ss grains @ top; some silica
-153½	Med semi re-xl; grades to sugary dol
-154	Sec chert
-157½	Lt gr dol; bleached chert nod @ top; banded to 57; sandy & few eyelets 57-½
-158½	Lt med mott semi re-xl; cherty
-159	Lt gr dol; chert nod @ base
-160	Med gr dol; sli bands; chert nod @ base
-161½	Lt gr dol
-164	Lt med semi re-xl; mott; many large eyelets
-166½	Med semi re-xl; @ base thin ox shear (dip 70° to NE)
-167½	Lt med gr dol; chert nod @ base
-171	Lt gr dol; few bands (38° dip) chert nod 70; brecc chert 171
-176½	Lt med gr dol
-177	Med gr dol; sugary; tr congl; large chert nod @ base
-179½	Lt med gr dol; mott; large gangue eyelets
-183½	Lt gr dol; well banded (39° dip) few ss grains 81-½ & 82½-83; chert nod @ 83½

-188 Lt med gr dol; mott; sug @ top
-189½ Med to med dk gr dol
-192½ Lt gr dol
-194½ Lt med gr dol to med gr dol; mott
-196½ Lt med gr dol; some bands; sandy bott 3" & few fractures filled w/grn shale
-198½ Lt med gr dol; v mott; 1" sandy grn shale @ top; then 1" of scatt ss grains
-199½ Lt gr dol; sugary; silic; some grn shale
-209 Lt med (lt?) gr dol; lt mott to 201, then bands (38° dip) to 207, then mott to 09
-213½ Lt med to med gr dol; well mott w/silic eyelets
-215 Med dk gr dol; some shaly bands
-217½ Lt med gr dol; grades to med gr; well banded (40° dip)
-218 Lt med gr dol; v sandy
-220½ Lt gr dol; lt mott to 19½ w/3" band sec chert @ 19½; then banded to base
-221½ Lt med v silic re-xl; cherty @ base
-223½ Med semi re-xl; mott; scatt ss grains @ base
-226½ Lt gr dol; lt mott; several eyelets 24-25; TBS @ base
-234 Med gr dol; some med dk gr top 2'; mott w/many eyelets, silic & gangue
-235½ Dk gr dol; shaly; few gangue eyelets
-237½ Med gr dol; bott 6" v sandy w/oolitic cherts
-238 Lt gr dol
-246½ Lt med gr dol; banded to lt mott; (1½' core loss 238-47)
-247 Med gr dol
-250 Lt gr dol; scatt ss grains 48-50 w/ss @ 49 & hvy ss & TGS @ 50
-252 Med gr dol; sugary, silic, v mott; few ss grains near base
-261 Lt gr dol; v banded (37° dip); scatt ss grains 52-55; @ about 57 grades to lt med gr dol & is sli banded; bott 6" mott w/1" TGS @ base
-263 Med gr dol; mott; chert nod @ base
-264½ Lt med gr dol; lt bands; brecc chert nod @ 64; pt oolitic
-267½ Lt gr dol; v banded to wavy (@ 37° dip)
-271 Lt med to med gr dol; lt bands to mott
-277 Med gr dol; lt mott (top 9" shaly); occ gangue filled fracture (N 50° E, 60°)
-278½ Dk gr dol; shaly mott & occ eyelet; fractures as above; chert nod @ base
-282 Lt med to lt gr dol; banded (37-38° dip) lt fractures (N 50° E, 60°) scatt ss grains bott 6" w/½" CMss @ base
TOP KINGSPORT FM @ 282'
-286 Lt gr dol; lt mott; scatt sand to 83; few gangue fractures (N 50° E, 52°)
-288 Lt med (med) gr dol; well mott; chert nod 87; TBS @ base
-291 Lt med gr dol; bands to 89 & few fractures as above (N 50° E, 60°) lt mott & becomes med gr dol from 89-91
-295 Med (to med dk) gr dol; shaly mott; occ shearor fracture (N 50° E, 70°) sev TBS bott 3"
-298 Lt gr dol; lt mott
-299½ Lt med gr dol; few bands (38° dip) TBS @ base
-303½ Lt gr dol; ss @ 300; TBS base
-305 Lt med gr dol; TGS @ base
-306½ Lt med (med) gr dol; lt bands to mott
-309 Med (med dk) gr dol; mott w/silic eyelets; chert nod @ base
-318 Lt med gr dol; mott to 10½ w/chert nod @ 10; broad bands 10½-15 (dip 36-40°) w/chert nods 313 & 14 & occ large eyelet; banded 15-18 (38° dip) w/scatt ss grains 16½-18 & hvy sand @ 318
-321 Lt gr dol; lt mott; shaly & chert nod @ 321
-324 Lt med gr dol; well mott
-329 Lt gr dol; a sand near top; occ lt band; bott 6" v sandy w/oolitic cherts
-339 Lt med gr dol; hvy ss 30; lt mott 30-32 w/TBS 32; mott 34-5; lt bands 35-39 w/TGS's 37-39
-343 Lt med (med) gr dol; mott &some silic eyelets
-348 V lt gr dol; shaly mott; TGS @ base
-354 Lt gr dol; chert nods 51½, 52 & 52¼; banded 52-54 (41° dip) w/chert nod @ 54
-360½ Lt med gr dol; well banded (wavy); few ss grains 57-59; v sandy 59-60½ w/1" TGS @ base

-362½ Med semi re-xl; mott & vuggy; bott 4" is chert nod
-366½ Lt gr dol; lt bands (38° dip) TGS @ base
-367½ Lt med gr sugary dol; lt mott
-374½ Lt gr dol; lt mott to 370½; then lt bands (37° dip) thin shears @ 70½ (N 60° E 65°; chert nods 71½ & 72; occ small chert to 74½
-376½ Lt med gr dol; v wavy bands; tr ss @ 76; sand, chert nod @ base
-383 Lt gr dol; chert nods 78½, 79, 80½, 81¼, & 82
-384 Lt semi re-xl; many specks silica & few ss grains; TGS @ base
-385 Med gr dol; sugary; TGS @ base
-391½ Lt gr dol; several large eyelets top 9"; then lt bands to well banded to 87½ (dip 38-39°) lt bands 87½-91½ w/½" TGS @ base; @ 91 a gangue filled shear (N 60° E, 65°)
-392 Lt med gr dol; lt mott & sugary
-403 Lt gr dol; lt mott to 94 w/chert nod 93; banded 94-95½ (dip 38°) w/chert nod 95; v wavy bands 95½-96½ & cherty @ 96½; lt mott 96½-97½ w/chert nod @ 97½; lt bands 97½-99 w/chert nod 98½ & 3" sugary & silica @ 99 w/TGS @ 99; chert nod 400; lt bands 400-03 (36° dip) w/tr ss & eyelet @ 400½ & few eyelets @ 401
-406 Lt med gr dol; mott w/silic eyelets; TGS @ 405½
-410½ Lt gr dol; lt mott top 6"; then banded (36-37° dip) w/some crackle; few ss grains then ½" TGS @ base
-411 Lt med gr dol; lt mott
-415 Lt gr dol; well banded (37° dip) chert nod 412; few ss grains 14½-15 & TGS @ 15 (base bed K-5)
-415½ Med gr dol; v. cherty
-419 Lt gr dol; lt bands to 418 (36° dip) fault 19 (N 50° E, 70°)
-419½ Lt med gr sugary dol; shaly; TGS @ base
-422 Lt gr dol; lt mott & few eyelets; TBS @ base
-423½ Med gr dol; chert nod @ top; mott to bands; TGS @ base
-434 Lt med gr dol; banded to 25½ (34° dip) w/chert nods 24 & 25½; some lt bands to 34 (dip @ 33 is 39°) w/1" TGS @ 434
-442 Med gr dol; mott; crackle to brecc
-447 Lt med gr dol; lt mott to bands; crackle (@ 46 dip is 47°) few ss grains Near base TOP R BED 447
-448 Grn brecc shale & some br re-xl
-451½ Lt med to med gr sugary dol; mott; 1" TG S @ base
-453½ Lt med shaly mott semi re-xl
-455½ Med mott semi re-xl; bott 6" brecc
-456½ Med gr dol; brecc; <u>tr ZnS @ 56</u>; bott 3" is chert fragments & re-xl
-457 Grn shale & shaly re-xl
-462½ Med (lt med) mott shaly semi re-xl (3' core loss 457-64)
-464½ Br vuggy re-xl; cherty @ 64; jasporoid to 64½ & shaly @ 64½
-465 Lt br shaly re-xl
-468 Lt br to br re-xl; occ vug; brecc 67½-68
-469 Brecc chert w/silic & grn shale & some re-xl
-471½ Lt med gr dol; sug (2' core loss 469-72)
-473 Lt br re-xl (1' core loss 472-74)
-477 Lt med semi re-xl (1' core loss 474-81)
-479 Lt med gr dol; chert nod 478
-483 Br re-xl; 81-83 shaly & mott (1' core loss 81-84)
-485 Lt med (med) semi re-xl
-486 Lt br to gr re-xl; crackle 85-½ w/FeS shines
-487 Lt med gr dol; TGS @ base
-487½ Med grn to gr shaly semi re-xl
-492½ Lt gr dol; some sugary; crackle to 90½, then brecc; <u>est 2% ZnS 90½-92½</u>
-494 Dk gr dol; brecc w/few lt med gr blocks; <u>est 2% ZnS</u>
-495 Lt med gr dol; some dk gr blocks; <u>est 2% ZnS</u>
-499 Mixture of dk & lt med gr dol; white gangue to 97; br shaly re-xl & grn shale gangue 97-99
-500 Med gr sugary dol & dk sug dol; <u>est 5% ZnS</u>; some shale @ base

-501 Dk gr sugary dol; lt crackle
-503 Med gr dol & some blocks dk gr; 501½-02½ est 7% ZnS; 502½-03 sealed w/shale & re-xl
-503½ Coarse re-xl & shale w/occ block dol & some white gangue
-504½ Med dk gr dol; brecc sealed w/re-xl & shale & some white gangue
-506½ Dk gr dol; eyelets; some crackle
-507½ Med gr dol; brecc
-508½ Dk gr dol; brecc; est 4% ZnS 06½-08; hvy FeS 06½-08½
-513½ Lt med gr dol; brecc to 509¼; est 2% ZnS 508½-9¼; banded 10-13 (dip @ 48°) 13-½ brecc w/re-xl & some chert
TOP S BED 513½
-516 Lt br re-xl; chert nod 514½; large chert nod 516
-520 Med gr dol; crackle top 6" w/chert nod 16½; sugary 16½-20 & mott w/some crackle w/FeS shines; occ banded re-xl base; bott 6" mostly re-xl & chert
-523½ Lt med gr dol; 21½-23½ much re-xl gangue (2' core loss 20-25)
-527½ Chert & fosseliferous silica
-530½ Lt br re-xl; v. cherty
-532½ Lt med gr dol; some brecc sealed w/cherty re-xl
-536½ Brecc chert & some re-xl (1½' core loss 535-39)
-539 Lt med gr dol; mott; lt crackle; occ brecc zone w/re-xl
-539½ Brecc chert
-542½ Lt br re-xl (dry brecc?) occ shaly zone
-543½ Med gr dol; chert nod @ top; TGS @ base
-544½ Lt re-xl; v. silic & occ block dol
-545 Lt br re-xl
-546 Lt semi re-xl; banded; few ss grains
-547½ Lt re-xl; sandy @ 46½; then silic
-548 Br re-xl; few vugs
-548½ Lt semi re-xl; few ss grains
-552 Lt br re-xl; v silic; some brecc; sli banding @ base then TGS
-558½ Lt br re-xl; mott; scatt grn to white silica
-559½ Br re-xl
BASE KINGSPORT FM 559½'
-567½ Lt med gr dol; chert nods 61, ½, 62; tr sugary @ 62½; lt crackle
-571½ Med (lt) gr dol; mott; crackle; oolitic chert nod 576
TOP U BED 571½'
-572½ Lt br coarse grained re-xl; oolitic chert nod @ top
-574½ Br mott re-xl
-578½ Lt med gr dol; sugary to semi re-xl; mott; brecc 77-78½
-579 Lt shaly re-xl; band grn silica @ base
-580 Lt br re-xl; mott (or brecc) hvy ZnS shine @ 580
-583½ Gr to br re-xl; v jasporoid
-585 Lt med gr dol; several chert nods
-586½ Med gr dol; mott & some eyelets; few ss grains bott 3"
-588 Lt re-xl; silic; crackle; est 2% ZnS 87-88
-589 Br re-xl; few vugs; crackle
-589½ Lt med gr dol; chert nod @ top
-590½ Br re-xl
-594 Lt med gr dol; strong ZnS shine @ top; then chert nod near top; brecc 92-93 w/est 1% ZnS 92½-93; chert nod 93½; hvy ss 94
-595 Lt cherty re-xl
-595½ Dk br re-xl
-597 Brecc chert
-599 Lt med gr dol; bands top 6" (33° dip) w/large chert nod 97½; few scatt ss gr's bott 6"
-600 Br to grn mott re-xl
-602 Lt br to br re-xl; hvy ZnS shine 600 3/4; scatt ss grains 01½-02
-605 Br coarse gr re-xl; v cherty bott foot & some FeS near base
-606 Med to lt gr dol; brecc; few ss grains @ base
-610 Lt br re-xl; brecc; FeS shines 07½-08; v silic & vuggy 08-10
-618 Br re-xl; crackle to brecc to 15; shaly 14-15 & few ss grains 14½-15; mott 15-18

-619½ Lt med gr dol; sugary; mott
-624½ Lt gr dol; crackle; few bands; chert nod 23½; few ss grains 24 (2' core loss 23-30)
-626 Lt br re-xl
-629 Silic to v silic lt re-xl, some brecc; chert nod @ base
-630 TD Med gr banded semi re-xl

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DATE	INITIALS	CODE

B. H. Putnam DD GD-11

Copper Ridge Project - Puncheon Camp Creek

DMEA Idm-E 1088

Hole No:	GD-11	Collared:	6-23-58
Farm:	Green-Dalton	Bottomed:	7-1-58
Loc: N	49,586.61	Depth:	679
E	46,785.72	Casing:	BX 24'; AX 45'
Elev:	1386.53	Reaming:	None
Drilled By:	Putnam Drlg. Co.	Cement:	None
Logged By:	J. W. Spears		

Top Kingsport	353
Top R Bed	510
Top S Bed	564½
Base Kingsport	611
Top U Bed	620½
Base U Bed	638

0-24	Overburden
-28	Lt med gr dol; lt mott (dip @ 40°)
-32½	Med gr dol; v mott & few eyelets to 29 w/few ss grains 28½-29 & a TGS @ 29; oxid 29-31; sli banded to mott 29-32½ (dip @ 38°)
-33½	Med gr sug dol; v mott & siliceous
-34	Sec chert
-34½	Dk gr dol; cherty
-36½	Lt med gr dol; (occ med gr) banded (36° dip) chert nod @ base
-40	Med gr dol; banded
-42½	Med v mott semi re-xl
-44	Med dk v mott semi re-xl
-47	Lt med gr dol; few bands (36° dip) TBS @ base
-51	Lt gr dol; sandy top foot; then lt bands to well banded (37° dip)
-53	Lt med gr dol; well mott top 6"; then mott
-59	Med gr dol; mott; tr brecc @ base
-60	4" chert; 3" silic; then becomes re-xl
-65½	Lt med gr dol; mott to bands (wavy)
-68½	Med gr dol; sugary to semi; v mott (dip @ 37°)
-79	Med gr dol; sandy 77½-78; v hvy ss @ base (1½' core loss 71-78)
-80½	Lt gr sugary dol; few ss grains (1' core loss 78-84)
-84	Lt med gr dol; few eyelets top foot
-84½	Sec chert
-87½	Lt gr dol; fractured; sand @ base
-88½	Lt med gr sugary dol; mott & some silica
-90	Lt med gr dol; lt mott; sandy bott 2"
-94½	Lt med gr sugary dol; mott; 92-93 silic & semi re-xl
-99	Lt gr dol; lt bands; v sandy 97-98; mott to congl 98-99
-101½	Lt med gr dol; lt mott; many gangue eyelets; grades to med gr
-103½	Med gr dol; mott
-108½	Dk gr dol; mott
-113½	Lt gr dol; lt mott to bands; poss fault @ top; occ eyelet
-115	Lt med gr dol; mott to bands; chert nod @ 114½
-117½	Med gr dol; v mott & some silic eyelets; @ base a few ss grains & TGS
-120	Lt med gr dol; TBS @ base (towards base becomes darker)
-126	Med gr dol; lt mott; ox shears 125; sandy @ base & TGS
-127½	Lt med gr dol; lt mott; few thin shears (or fractures) 60° to N 55-60 E
-130	Med to med dk gr dol; lt mott; many gangue eyelets 128½-30
-133	Med gr dol; lt bands & eyelets top 1½' (dip @ 39°)
-134½	Lt med gr sugary dol; mott; chert nod @ top; occ sand grain.
-139	Lt med gr dol; lt bands (38°) chert nods 37½ & 38; grn shale 38½-40; v steep
-142½	Med gr dol
-146½	Dk gr dol; shaly mott to 45 w/tr FeS 45; lt bands 45-46½
-149	Med dk gr dol; v mott; scatt sand grains bott 4"
-157	Lt med to med gr dol; lt mott; gangue eyelets to 153; then silic eyelets
-161	Med dk gr dol; shaly mott to 160
-161½	Med (lt) gr dol; lt bands (dip 38½°)
-164½	Lt med gr dol; lt bands (36° dip) hvy ss @ top; large chert nod @ base
-168½	Med gr dol
-169½	Lt med gr dol; TGS & chert nod @ base
-173½	Lt gr dol; scatt sand bott foot w/3" CMss @ base
-180½	Med gr dol; TBS @ 176
-181	Lt med gr dol; v sandy
-184½	Lt sandy silic semi re-xl (or re-xl) oolitic chert @ base
-188	Med gr mott semi re-xl
-191½	Med gr to lt med gr sugary dol; mott
-192½	Med dk gr dol; sugary; mott
-195½	Lt gr dol; 93½-95 v sandy w/some eyelets & vugs
-196½	Lt med gr dol; mott

-198 Med gr dol; mott
-208½ Med dk to dk gr dol.
-214½ Med gr dol; bedding plane fault 209½-11; some dk & shaly @ 12½; mott 11-½ (2' core loss 211-20)
-217 Med dk gr dol; mott; bott 4" semi re-xl; oxid w/few ss grains
-221 Lt med gr dol; lt mott (top 6" sugary) v hvy ss bott 4"
-222 Lt med (m) gr dol; mott w/silic eyelets; TGS @ base
-229½ Med gr dol to med dk gr dol; mott w/silic eyelets
-230½ Lt med gr dol; bands (38° dip)
-231½ Lt semi re-xl; silic; TGS @ base
-234½ Lt med mott semi re-xl to sugary dol; few eyelets; large chert nod @ base
-238½ Lt gr dol; lt bands (39° dip) sandy bott 6" (1' core loss 235-37)
-239½ Lt silic semi re-xl; bott 4" silica
-240 Dk semi re-xl; banded
-241½ Lt med gr dol
-245 Lt med gr dol; sug; mott to well mott
-246½ Med mott semi re-xl; becomes cherty w/large chert nod @ base
-249½ Lt gr dol; few bands @ 48 (37° dip) large chert nod @ base, pt oolitic
-254 Lt med gr dol
-255 Lt med to med gr mott sugary dol; chert nod near base
-258 Lt med gr dol; lt bands
-261 Lt gr dol; well banded (dip 36°) few ss grains bott 6"; TGS @ base
-264 Lt med to med gr dol; mott
-266½ Med dk gr dol; shaly mott; scatt ss grains bott 3"
-267½ Med gr dol; mott
-270 Lt med gr dol; mott
-272 Med gr dol; well mott to bands
-273½ Lt med gr dol; lt bands; v sandy @ base
-274 Lt med mott semi re-xl
-280½ Lt gr dol; to 75 sandy w/small vugs; large bleached chert nod 78½; chert nods 79½ & 80½ (2' core loss 74-79)
-284 Lt med gr dol; banded (37° dip) to 82½; then lt mott
-289 Med gr dol; mott
-290 Dk gr dol; shaly; TBS @ base
-293 Med gr dol; banded (36½° dip) w/occ eyelet; sandy bott 4" w/few bedding plane shears
-295 Lt gr dol; few lt shears @ top; @ base grades to lt med gr
-296½ Lt med gr dol; mott
-298 Med gr v mott semi re-xl; cherty to silic top foot; then bott 6" scatt ss grains & few congl pebbles (Base Bed M-7)
-301½ Lt gr dol; mott; few ss grains near top; eyelets 99½-300½
-304 Med dk gr dol; shaly mott; large eyelets bott foot
-306 Med gr dol; mott w/silic eyelets
-311½ Dk gr dol; shaly mott; gangue eyelets; occ thin shears
-312½ Med gr dol; banded; bott 3" v sandy w/some chert fragments; large eyelet near base w/ FeS shine
-314 Lt gr dol
-319½ Lt med to med gr dol; mott w/some silic eyelets; TBS @ base
-321½ Med dk to dk gr dol; shaly mott
-323½ Med to lt med gr dol; banded; sandy bott 3" w/TBS @ base
-326½ Dk gr dol; shaly mott; several strong shears (dip to N @ 65°)
-334½ Lt med gr dol; banded (33° dip) chert nod near top, then few ss grains; grades to med gr dol; few thin sands 29-½
-336½ Med dk gr dol; shaly mott
-337½ Med to med dk gr dol; banded
-341 Lt gr dol; well banded (34° dip)
-350 Med dk gr dol; shaly mott; occ gangue eyelet; occ gangue filled fractures (N 40-45° E, 55-60°) bott 6" dk gr
-353 Lt med gr dol; banded; tr brecc @ top; few ss grains bott 6" w/a 1" CMss @ base

TOP KINGSPORT FM 353'

-360 Lt med gr dol; sand dike 54-55; TBS 56; sli darker 56-57½; v. mott 57½-60 w/TGS @ 60
-366 Lt gr dol; lt bands (35° dip)
-367½ Lt med gr dol; lt shaly mott; shaly @ base
-371½ Lt gr dol; lt mott to bands; few eyelets; TBS @ base
-372½ Lt med gr dol; lt bands; shaly @ base
-376½ Lt gr dol; scatt sands top 6"; some gangue filled crackle; TBS 76½
-378½ Lt med to med gr dol
-382 Med dk gr dol; shaly mott
-383 Med gr dol; mott
-389 Lt gr dol; cross banded; (Q 38° dip) chert nods 84½, 85, 85½ & 86½
-390 Med gr dol; shaly bands; sandy
-395½ Lt med gr dol; few scatt sand grains to 90½ w/ss @ 90½; lt mott; TGS's 93 & 95½; shears to crackle 95-½
-400 Lt gr dol; occ steep shear
-403 Lt med gr dol; sandy @ 401; poss sedimentary brecc 401-02; sandy oolitic chert @ 02
-404½ Med gr dol; TBS @ base
-409 Lt med gr dol; 406½-07 3/4 v mott to silic; TBS 409
-409½ Med gr dol; shaly mott
-415 Lt med gr dol; mott; TGS @ 14½ & 14
-420 Lt (to white) gr dol; TGS @ base
-424½ Lt gr dol; bands (33° dip) chert nods 422½, 23 & 24½
-429½ Lt med gr dol; v banded to mott; v sandy 28-29½; TGS 29½ (base bed K-3)
-433 Med gr sugary dol; some brecc; occ chert or shale; some congl; (3' core loss 26-37)
-451½ Lt gr dol; <u>brecc 37½-38 w/ZnS shines</u>; shears 38-½; chert nods 40½, 41½ & 42 <u>w/ZnS shine @ 442</u>; shears 42-½; TGS 42½; chert nod 43; well banded 43-45½ (dip 33°); oolitic chert nod 46½; crackle 46½-47½ w/chert nods 47½, 48, 50 & 51
-452 Lt semi re-xl; many specks white silica
-453 Med gr sugary dol; 1" TGS @ base (base bed K-4)
-465 Lt gr dol; occ lt crackle; banded (@ 55 dip is 27°); 1" TGS then chert nod @ 61; chert nod 63½ (dip 64 is 25°)
-467½ Lt med gr dol; brecc 65-66 sealed w/gangue & brecc chert; <u>ZnS shines 65½-66</u>
-468 Lt med gr sugary dol; shaly; chert nod @ base
-473 Lt gr dol; well banded to 470 (dip 26°) then mott & grades to lt med gr sugary dol; shaly @ 473
-473½ Lt med gr sugary dol; mott
-481½ Lt gr dol; grades to lt med gr dol; banded to mott; TGS 478; scatt ss grains 80½-81 then 4" grn shale & chert nod (base bed K-5)
-486 Lt med gr dol; lt bands; crackle
-487 Lt med gr sugary dol; shaly
-490 Lt gr dol; lt mott; some lt crackle; shears @ 489
-492 Lt med gr dol; brecc; chert nod 490½; <u>ZnS shines thruout</u>
-503½ Lt gr dol; chert nods 492½ & 93; banded; @ 94½ banded oxidized shale (some bright red) w/tr re-xl & <u>some FeS & ZnS</u>; 494½-502 bands to lt mott; crackle to shears 494½-96½; brecc 498½-502 <u>w/ZnS shines 500-502</u>; TGS 503½
-507½ Lt med gr dol; lt bands to mott; occ crackle; sugary
-509½ Lt med (lt) gr dol; banded; crackle
TOP R BED 509½
-511½ Br shaly re-xl; mostly grn shale top 6"
-514 Lt med gr dol; mott; band of grn shale & re-xl @ angle @ 12; tr crackle w/re-xl near base
-515½ Lt med sugary to semi re-xl; shaly & mott
-518½ Med gr mott semi re-xl; <u>brecc 16½-18 w/est 3% ZnS & 1% FeS</u>; tr brecc @ 18½
-519½ Lt med gr dol; poss brecc blocks; crackle (2' core loss 11-29, mostly 25-29)
-521½ Lt br shaly re-xl; 3" TGS @ top
-523 Br re-xl; crackle top 6"; occ vug
-524 Med gr sugary dol to lt med gr dol; banded (74° dip) lt crackle; few ss grains @ base

-524½ Lt br re-xl & grn shale
-527 Br re-xl; occ vug; some brecc w/grn shaly re-xl
-529½ Lt med gr dol; some brecc w/re-xl & silica gangue
-534½ Lt re-xl; lt crackle; ZnS shine @ 31; lt mott
-536 Lt med gr sugary dol; crackle; chert nod 35½
-536½ Jasporoid re-xl
-541 Lt gr to lt br re-xl; shaly mott; brecc 37-38 w/est 10% FeS; crackle 38-39½ w/est 2% FeS
-542 Br vuggy re-xl
-544 Med gr dol; shaly @ 543
-546½ Lt med gr dol; bott 6" crackle to brecc
-547 Lt med gr & med dk gr dol; brecc; ZnS shines
-551 Med dk gr dol; brecc to crackle, to 549½ some eyelets; ZnS shines 47-49½
-553 LS, shaly
-554 Br shaly & mott re-xl
-557 Med dk gr semi re-xl to sugary dol; shaly mott; bott 6" brecc w/FeS shines
-560 Lt med gr dol; mott; brecc to 58 w/FeS shines; bott 6" brecc chert
-564½ Lt med gr dol; bleached chert nods 61 & ½; brecc @ 62; banded 62-64½ (26° dip)
TOP S BED 564½
-569½ Br mott re-xl; occ shale & a chert fragment; sli silic; 68-69 v silic
-570 Lt med gr dol; crackle w/FeS shines; few ss grains @ base
-572 Br re-xl; some dol blocks; occ chert; bott 4" jasporoid re-xl w/chert nod @ base
-573 LS, shaly
-576½ Lt med gr dol; sugary; mott; crackle to 75½; brecc 75½-76½ w/some re-xl, est 2% ZnS & 1% FeS 76-½
-580½ Lt br re-xl; tr ZnS @ top; occ chert fragment & some crackle; bott becomes v limy
-591 LS; sli re-xlized; cherty to brecc 83-85; v re-xlized 88-89; @ base grades to lt br re-xl
-593 Lt br re-xl; large chert nod @ base
-593 3/4 Lt gr dol
-597 LS; v sandy 94½-95; @ base grades to lt br re-xl
-599 Lt br re-xl
-599½ Lt gr banded semi re-xl; few ss grains @ base
-609 Lt br re-xl; silic 600½-03; many eyelets to brecc 600½-02½; shaly 603; eyelets to brecc 604½-05½ & 608-09; ZnS shine 608½
-611 Lt gr re-xl to semi re-xl
BASE KINGSPORT FM 611'
-612½ Lt gr dol; TGS @ base
-620½ Lt med gr dol; 12½-14½ mott to bands; chert nod 14, 15; few bands 15-20; chert nod 20¼ (pt oolitic)
TOP U BED 620½
-622 Dk br re-xl; large oolitic chert nod @ top
-627 Lt re-xl to semi re-xl; mott
-628½ Lt br to br re-xl; grades to LS @ base
-637½ LS; 30-35 shaly w/some red oxidized shales; @ base grades to lt br re-xl
-638 Lt br re-xl; chert nod @ base
BASE U BED 638'
-640½ Lt med gr dol; mott; fractured to sheared
-641½ White to greenish re-xl
-642¼ Br & white mott re-xl
-643 Lt gr dol; chert nod near top; few ss grains @ base
-644 Br re-xl
-646½ Lt med gr dol; sug & mott top 6"; v hvy to CM sands bott 3" w/TGS @ base (dip 33°)
-648 LS
-650 Br re-xl; v cherty
-652½ Lt med gr dol; occ chert to 51; thin ss @ base (4' core loss 48-59)
-658½ Br to gr mott re-xl
-660 Lt med gr dol; scatt ss grains bott 6"
-664 Br re-xl; silic
-665 Lt br re-xl; silic

-671	Br silic re-xl; chert nod 669
-672½	Lt med gr dol; sugary
-673½	Dk br re-xl
-675	Lt br re-xl; mott
-679	Lt gr dol; chert nods 78 & 79.

* Total Depth