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Dragoon
CAP 153-74

Quintana Minerals Corporation

1892 WEST GRANT ROAD
TUCSON, ARIZONA 85705

602/622-4801

MEMORANDUM

To; W. E. Saegart & File 9/27/72

From; L. C. Arnold

Subject; Prospect offered by Hanley, Mosier & Terrell near Dragoon, Cochise Co., Arizona.

The enclosed sketch maps represent a compilation of most of the pertinent information available on the property being offered to Quintana by Hanley, Mosier & Terrell.

The property includes both state owned and federally owned parcels on which lode claims have been located.

The east half of section 26, T16S R24W (State owned) is the most favorable parcel in as much as it is closest to the area of closely spaced drilling by Superior Oil Co. It is unfavorable however because it is small (± 3000 ft. wide), bounded by fresh to weakly altered premineral outcrop on both sides, and has been drilled by Superior Oil Co. as well as Phelps Dodge Corp. (see sketch map). Although adjacent to the mineralized area controlled by Superior Oil Co., the offered property is also separated from the area of strong mineralization by a fence of drill holes which presumably limit the Superior Oil Co. mineralization in a westerly direction.

Anyone undertaking a project including the east half of section 25 will be faced with eventually obtaining a state mineral lease. The existance of the Superior drill hole in this parcel implies that this possibility was at least considered and investigated with discouraging results.

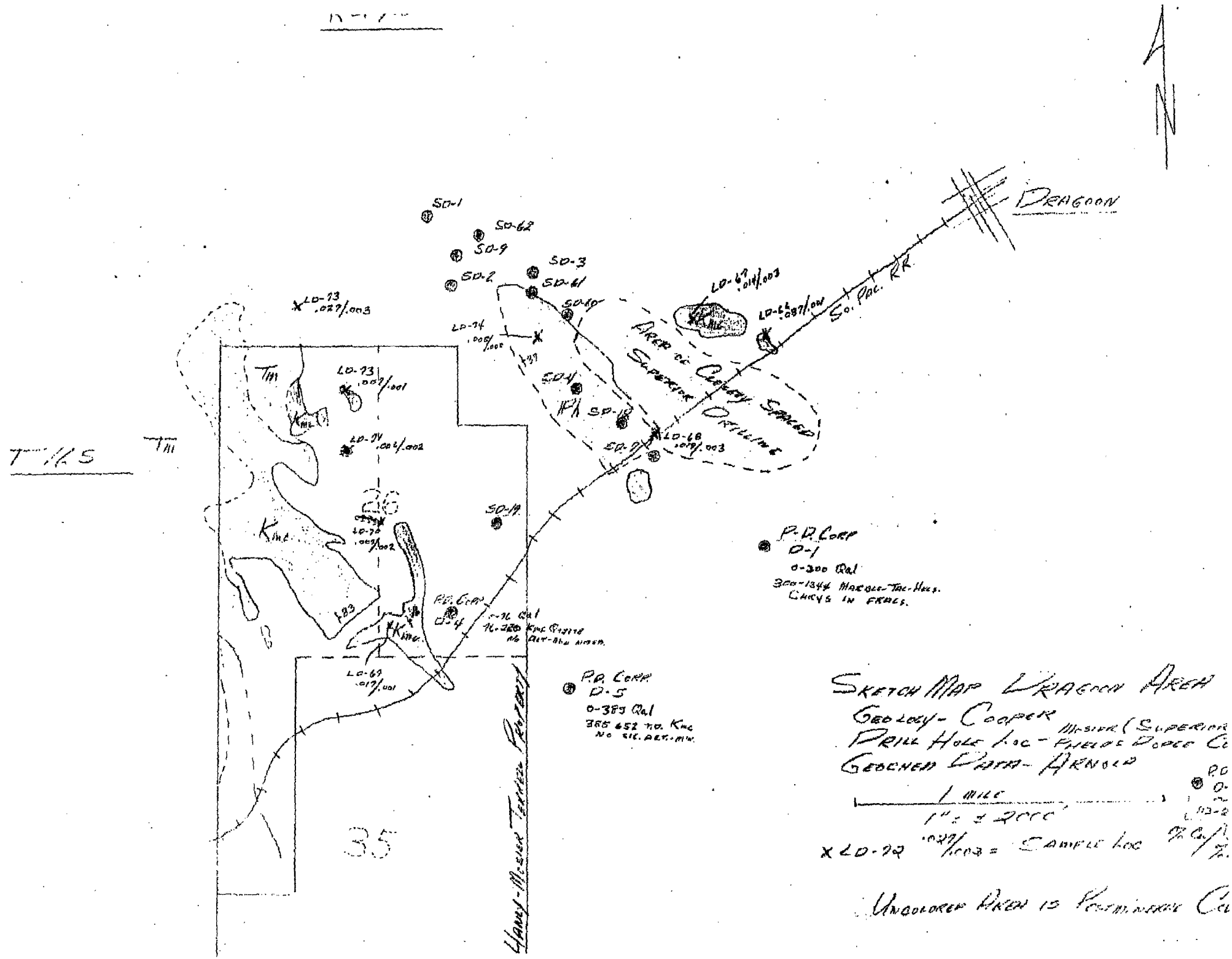
The area is one of considerable structural complexity and the apparent sharp termination of the Superior Oil Co. alteration and mineralization suggests possible control by large displacement post-mineral faulting. Because of the extent of previous drilling and generally unfavorable appearance of the premineral outcrop in section 26 and 35 T16S R24W, a project involving the Hanly, Mosier & Terrell property would almost have to be based on a post mineral structural control of copper mineralization.

Some favorability of the parcels adjacent to the Hanly, Mosier & Terrell property is suggested by the results of the P. D. Corp. drilling (memo attached), but with the information presently available a specific target based on a structural interpretation is not possible. However, a review of the geologic mapping in the Dragoon area in light of new drill hole data would seem justified and might well be combined with the work suggested in the enclosed memo of 5/23/72.

L. Clark Arnold

L. Clark Arnold

LCA:sjb


N
DRAGOON
SO. PAC. RR
SO-1
SO-62
SO-9
SO-2
SO-3
SO-61
SO-10
SO-4
SO-18
SO-7
SO-19
LD-73 .027/.003
LD-74 .006/.002
LD-73 .027/.001
LD-71 .006/.002
LD-72 .027/.002
LD-69 .017/.001
LD-67 .014/.003
LD-66 .027/.001
LD-68 .027/.003
AREA OF SUPERIOR CHERRY SPRINGS OUTLINE
T 16 S
T 11
P.D. CORP D-1
0-300 Qal
300-1344 MARBLE-TAC-HELG.
CHKYS IN FRACS.
P.D. CORP D-4
0-76 Qal
76-220 KMC QTZITE
NO ALT-BLU MINER.
P.D. CORP D-5
0-385 Qal
385 652 TD. KMC
NO SIG. ALT-MIN.
HANLY-MOSER TENTEN PROPERTY
35
SKETCH MAP DRAGOON AREA
GEOLOGY - COOPER
DRILL HOLE LOC - PHELPS DODGE CO
GEOCHEM DATA - ARNOLD
1 MILE
1" = 2000'
X LD-72 .027/.003 = SAMPLE LOC
UNCOLORED AREA IS PORPHYRY CU

Johnson Camp
Bowen

Quintana Minerals Corporation

1892 WEST GRANT ROAD
TUCSON, ARIZONA 85705

602/622-4801

May 22, 1972

W. E. S.
MAY 22 1972

TO: W. E. Saegart

DATE: May 23, 1972

FROM: L. Clark Arnold

SUBJECT: Phelps Dodge Corporation

Information received in trade from Mr. Bud Walker in Douglas includes typewritten logs, rock samples and a 2000 scale location map for drill holes D-1 through D-10. I have tabulated and summarized the drilling information on the attached log sheets.

Eight of the 10 holes intersected unaltered or weakly altered Paleozic or Cretaceous sedimentary rocks, but holes D-1 and D-10 intersected significant alteration and copper mineralization at shallow depth beneath postmineral gravels. The mineralization in D-1 may represent fringe-type mineralization peripheral to the Superior C.F. & I. deposit west of Dragoon. However, D-10 would seem to be too distant to show affects from that deposit.

Offset drilling to the north and east of D-1 and D-10 was carried out in the course of the Phelps Dodge project. The two favorable holes have apparently not been offset to the south and west, however. Based on the results of D-1 and D-10, I feel that a scout drilling target exists beneath postmineral cover in Section 31, T16S, R23E and Section 36, T16S, R22E which sections are presently covered by state prospecting permits held by C.F. & I. Steel Corporation.

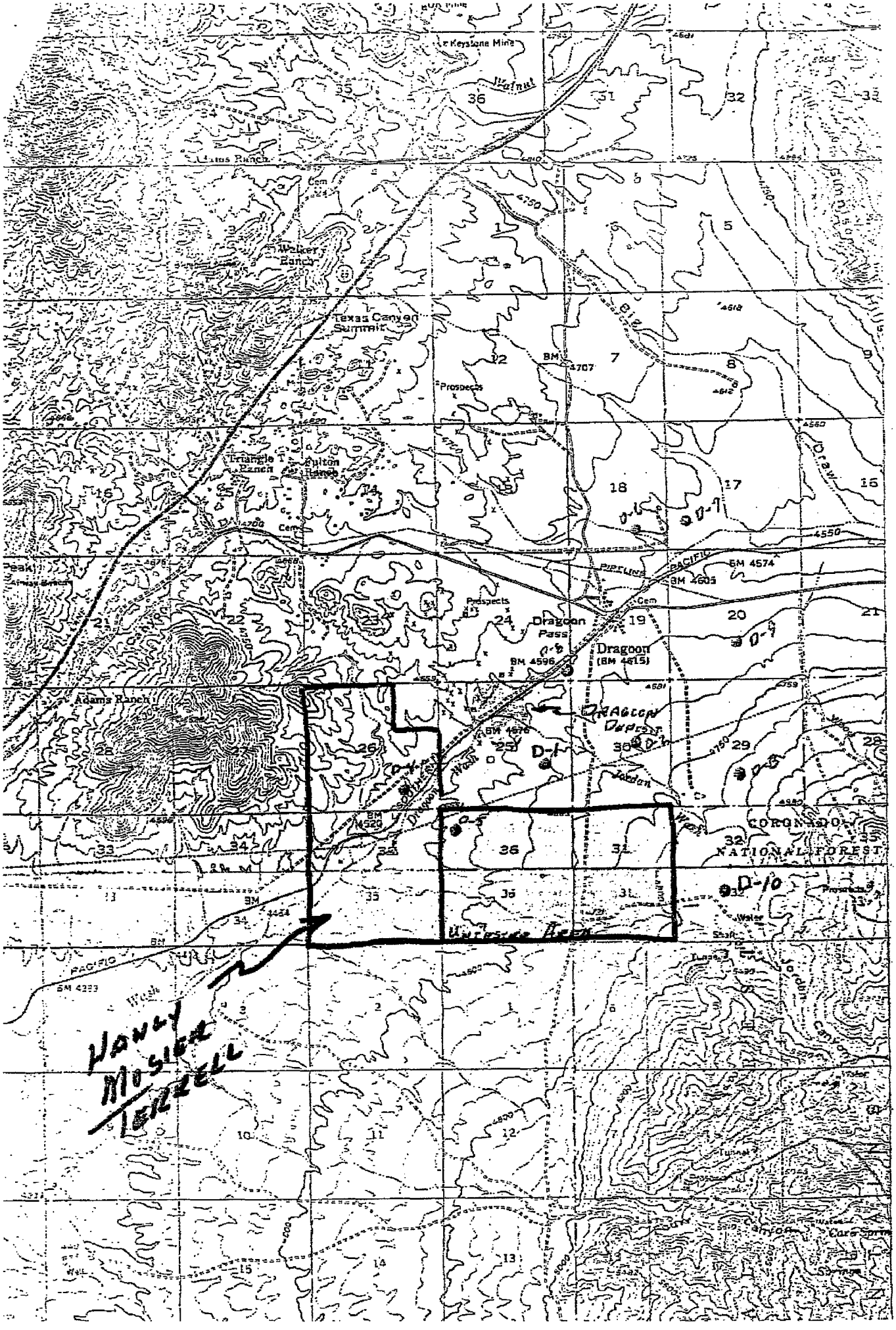
Should these parcels become available, I suggest that they be obtained and that offset holes be drilled in the untested area south and west of D-1 and D-10.

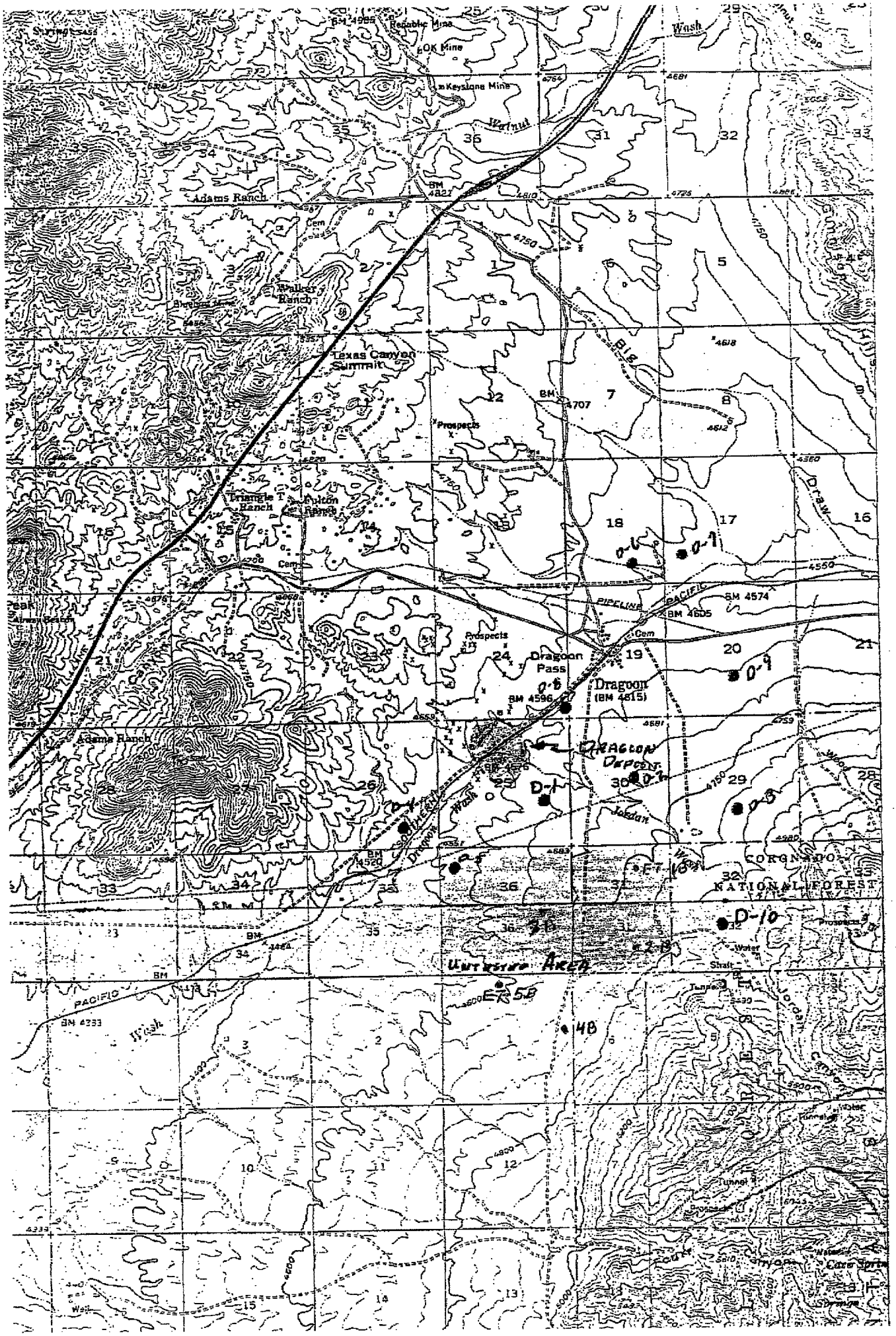
L. Clark Arnold

L. Clark Arnold

LCA pr

Enc.


Keystone Mine
Walnut
Adams Ranch
Cem
Walker Ranch
Texas Canyon Summit
BM 4707
Prospects
Triangle T Ranch
Sulton Ranch
Big
Draw
PIPELINE
PACIFIC
BM 4574
BM 4605
Dragoon Pass
Dragoon
(BM 4615)
BM 4596
Adams Ranch
Dragoon Depot
BM 4576
Dragoon
Wash
Jordan
CORONADO
NATIONAL FOREST
D-1
D-5
D-6
D-7
D-9
D-10
Wilcox Area
BM 4423
BM 4283
Water
Tunnel
Cave Spring
Canyon
Wash
Hanly
Mosier
Terrell


Spring
Republic Mine
OK Mine
Keystone Mine
Walnut
Wash
Adams Ranch
Cem
Walker Ranch
Texas Canyon Summit
Prospects
Big
Draw
Triangle T Ranch
Fulton Ranch
PACIFIC
PIPELINE
BM 4574
BM 4605
Dragoon Pass
Dragoon
(BM 4615)
BM 4596
Dragoon Depot
Jordan
Wash
CORONADO
NATIONAL FOREST
Water
Shaft
Tunnel
Unit Area
ER 5B
4B
D-1
D-9
D-10
Wash

DRILL HOLE NO. D-1 Phelps Dodge - Duncan PROJECT

COLLAR ELEVATION ±4622 Greenlee COUNTY Arizona

COORDINATES

PAGE 1

BY LCA - 5-77

BEARING — INCLINATION 90° SCALE 1"=200'

DEPTH 1344 STARTED COMPLETED

% Core Recovery	Structure	Alteration	Mineralization	Rock Type	GEOLOGY	CORE ASSAYS INTERVAL FROM	TO	MINERAL
					0-300 Alluvium			
					200			
					300-1344 T.D.			
				Me	400 Marble - tactite & hornfels			
					±500 Very weak but persis. traces of Cu Ck.			
				Om	600 Mostly chkys in frags.			No Assay Data
					500			
				Cau				
					1000			
					±1100 (1024 approx. lower limit of oxidation.)			
				Cam	1200 ½-1% dissem. Py. in some strata below 1200'			
					T.D. 1344			
					Summary: D-1 encountered significant alteration in Pal. Lms section and weak but persis. Cu Ck & pyrite not suggestive of fringe-type por. mineralization. LCA 5-30-77			

DRILL HOLE NO. D-2 Rains Loop - Pearson PROJECT PAGE 1

COLLAR ELEVATION 4701 Cochise COUNTY Ariz. BY LCH 5-23-

COORDINATES

BEARING — INCLINATION 90° SCALE 1"=200'

DEPTH 1202 STARTED COMPLETED

% Core Recovery	Structure	Alteration	Mineralization	Rock Type	GEOLOGY	CORE ASSAYS INTERVAL FROM	TO	MINERAL
					0 S-1000 Dolomite (Lower portion is dom. cong. - Pennsylvanian Epoch)			
					200			
					400			
					600			No Assay Data
					800			
				Cau	1000 Shale & Dolomitic Conglom. 1000-1202 T.D. V. sparse Lm/Py. No Cu mineralization Alt. not described			
					1200 T.D. 1202			

Summary:

D-2 encountered steeply dipping upper Abrigo formation at 1000'. Very sm. Lm/Py & no alt. mineralization

LCH
5-23-72

DRILL HOLE NO. D-3 PHELPS DODGE DRAGOON PROJECT

COLLAR ELEVATION 4841 COCHISE COUNTY ARIZONA

COORDINATES

PAGE 1

BY LCH - [illegible]

BEARING — INCLINATION 90° SCALE 1"=200'

DEPTH 1682 STARTED COMPLETED

% Core Recovery	Structure	Alteration	Mineralization	Rock Type	GEOLOGY	CORE ASSAYS INTERVAL FROM	TO	MINERAL
					0 — 0-960 ALLUVIUM - SOFT			No Assay Core
					200			
					400			
					600			
					800			
					1000 — 960-1513 CONGLOM. - WELL LITHIFIED - PROBABLY GILA EQUIVALENT			
					1200			
					1400			
					1513-1682 DOLOMITIC SHALE W. SPARSE LIMEY - NO CA MINERALS AS DET. DESCRIBED			
				Cau	1600			
					T.D. 1682			

SUMMARY. D-3 ENCOUNTERED UPPER ABRIGO FORMATION AT 1513. DIP STEEPLY & VARIABLE. V. SPARSE LIM IPY - NO ALTERATION

DRILL HOLE NO. D-4 PHELPS DODGE - PARADISE PROJECT PAGE 1

COLLAR ELEVATION 4564 COCHISE COUNTY ARIZ. BY LCA - 5-22-2

COORDINATES

BEARING — INCLINATION 90° SCALE 1" = 200'

DEPTH 220 STARTED COMPLETED

% Core Recovery	Structure	Alteration	Mineralization	Rock Type	GEOLOGY	CORE ASSAYS INTERVAL FROM	TO	MINERAL
					0 0-76 Alluvium			
				K6	76-220 Quartzite - White, massive. Sparse Epidote. No mineralization			No Visible Copper
					200 T.D. 220			
					Summary D-4 intersected unalt. unmin. Bisbee Group starting at 76'. Contin. in that formation to T.D. 220' LCA - 5-22-2			

DRILL HOLE NO. D-5 Pierce Road-Dragoon PROJECT

COLLAR ELEVATION 4526 Cochise COUNTY Arizona

COORDINATES

PAGE 1

BY LCH 5-22-72

BEARING — INCLINATION 90° SCALE 1" = 200'

DEPTH 652 STARTED COMPLETED

% Core Recovery	Structure	Alteration	Mineralization	Rock Type	GEOLOGY	CORE ASSAYS INTERVAL FROM	TO	MINERAL
					0 0-385 Alluvium			
					200			No Assay Data
				Kb	400 385-652 T.D. Quartzite - some epidote veins and v. sparse Lim/Py			
					600 T.D. 652			
					Summary: D-5 encountered only alt. Quartz of Bisbee Group at 385. Note v sparse Lim/Py 385-652 T.D. No significant alt. or min. recognized. LCH 5-22-72			

DRILL HOLE NO. D-6 Pueblo Lime-Pearson PROJECT

COLLAR ELEVATION 4600 Cochise COUNTY Arizona

COORDINATES

PAGE 1

BY LCH-5-22-72

BEARING — INCLINATION 90° SCALE 1" = 20'

DEPTH 845 STARTED COMPLETED

% Core Recovery	Structure	Alteration	Mineralization	Rock Type	GEOLOGY	CORE ASSAYS INTERVAL FROM	TO	MINERAL
					0-680 Alluvium			No Assay Done
				Me	680-845 T.D. LIMESTONE. MINOR SHALE. NO EVIDENCE ALT. OR MINERALIZ. T.D. 845			
					Summary: D-6 ENCOUNTERED UN ALT. UNMIN. LMS OF ESCABROSO FORMATION 680 AND CONT. IN THAT FORMATION TO 845 T.D. LCH 5-22-72			

DRILL HOLE NO. D-7 Valley View Drainage PROJECT
COLLAR ELEVATION 4575 Cochise COUNTY Arizona
COORDINATES

PAGE 1
BY LCA - 5-22-7

BEARING — INCLINATION 90° SCALE 1" = 200'
DEPTH 1313 STARTED COMPLETED

% Core Recovery	Structure	Alteration	Mineralization	Rock Type	GEOLOGY	CORE ASSAYS INTERVAL FROM	TO	MINERAL
					0 0-1250 Alluvium			
					200			
					400			No Assay Data
					600			
					800			
					1000			
				Me Pp	1250-1313 T.D. Limestone & Marble - Aps 30° No evid. of Alt. or Min. 1200			
					1313 T.D.			

Summary:

D-7 intersected limestones and marbles at 30° inclination in Naco formation at 1250' and continued in that formation to T.D. 1313. No evid. of Alt. or Min. was recognized.

L.C.A. 5-22-77

DRILL HOLE NO. D-8 Pecos Power Project PROJECT

COLLAR ELEVATION 4600 Coconino COUNTY Ariz.

COORDINATES —

PAGE 1

BY LCD-5-22-72

BEARING — INCLINATION 90° SCALE 1"=200'

DEPTH 745 STARTED ____ COMPLETED ____

% Core Recovery	Structure	Alteration	Mineralization	Rock Type	GEOLOGY	CORE ASSAYS INTERVAL FROM	TO	MINERAL
					0 — 0-480 Alluvium			
					200			
					400			
				Me	480-745 T.D. Marble & Hornfels - coarse grained alt & frac. Serpentite veins. No evid. sulfides. 600			
					T.D. 745			
					Summary: D-8 intersected alt. out crimin. marbles of the Escabrosa Form. @ 480' and continued in that formation to 745 T.D. L.C.H. - 5-22-72			No Assay Data

DRILL HOLE NO. D-9 Kelly Dome-Dragon PROJECT PAGE 1

COLLAR ELEVATION 4650 Grant COUNTY Dragon BY [illegible]

COORDINATES

BEARING — INCLINATION 90° SCALE 1" = 200'

DEPTH 1495 STARTED COMPLETED

% Core Recovery	Structure	Alteration	Mineralization	Rock Type	GEOLOGY	CORE ASSAYS INTERVAL FROM	TO	MINERAL
					0 — 0-1415 Alluvium			
					200			
					400			
					600			No Assay Core
					800			
					1000			
					1200			
					1400			
			Pe		1415-1495 T.D. Argillite - Chloritic Shale. No evid. sulfides - no alt. recog. T.D. 1495			

Summary

D-9 intersected Ekm (?) formation at 1415 and contin. in that form to 1495 T.D.

No evidence Sulfides - No alteration.

DRILL HOLE NO. D-10 [illegible] PROJECT

COLLAR ELEVATION 4875 [illegible] COUNTY [illegible]

COORDINATES

PAGE 1

BY [illegible]

BEARING — INCLINATION 90° SCALE [illegible]

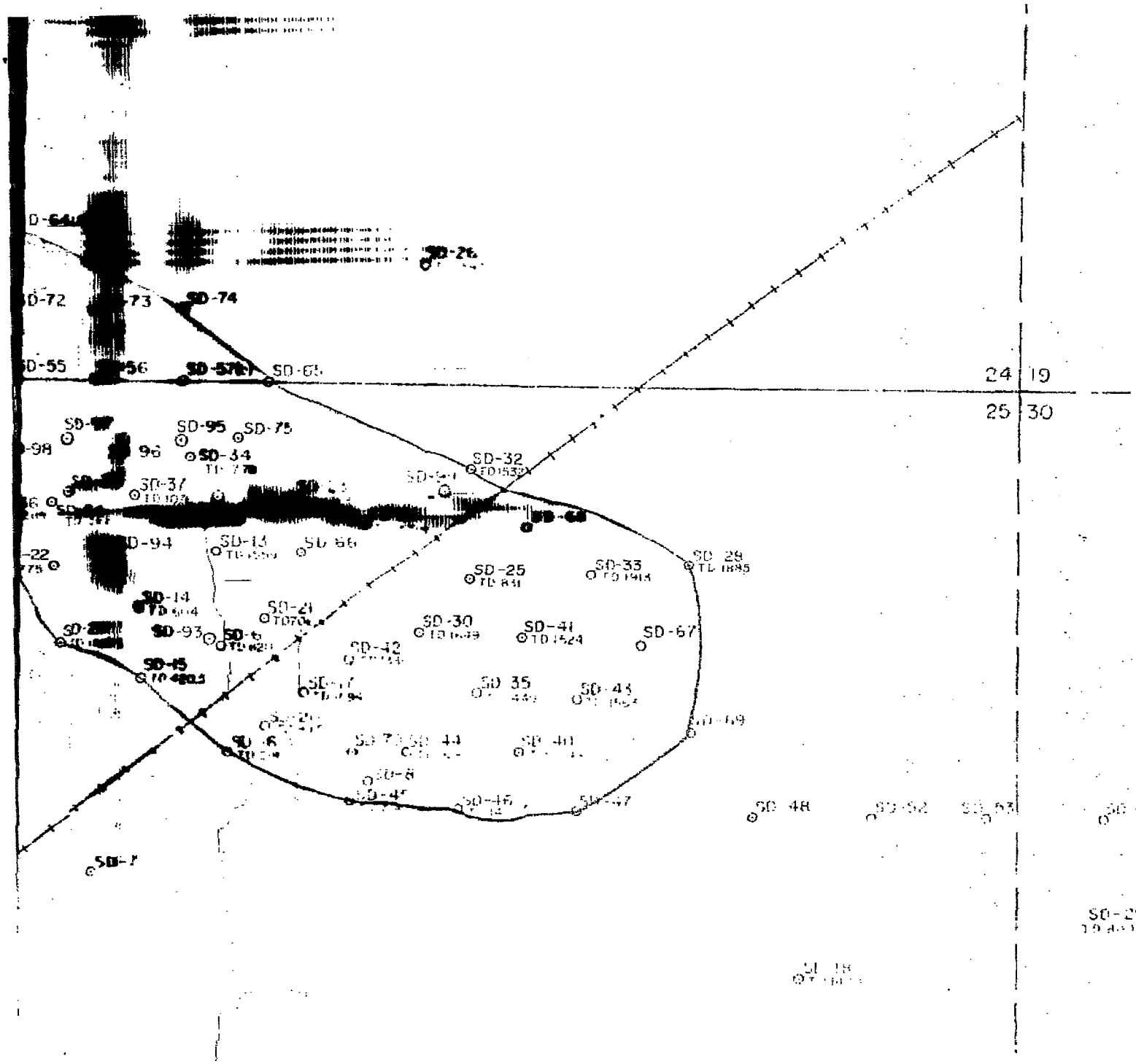
DEPTH 298 STARTED COMPLETED

% Core Recovery	Structure	Alteration	Mineralization	Rock Type	GEOLOGY	CORE ASSAYS INTERVAL FROM	TO	MINERAL
					0-113 [illegible]			
				X X X X	113-298 T.D. Granite [illegible] Replaced tev. Py 1 1/2% No Cu min. Recognized Minor epi			1% Py [illegible]
					298 T.D.			

Summary:

D-10 intersected wk diss py in pe (?) granite at 113' and cont. in same formation to 298 T.D. Sulfide min. suggestive of possible primary fringe-type effect.

[illegible] 5-22-72



THE SUPERIOR OIL COMPANY
Minerals Division

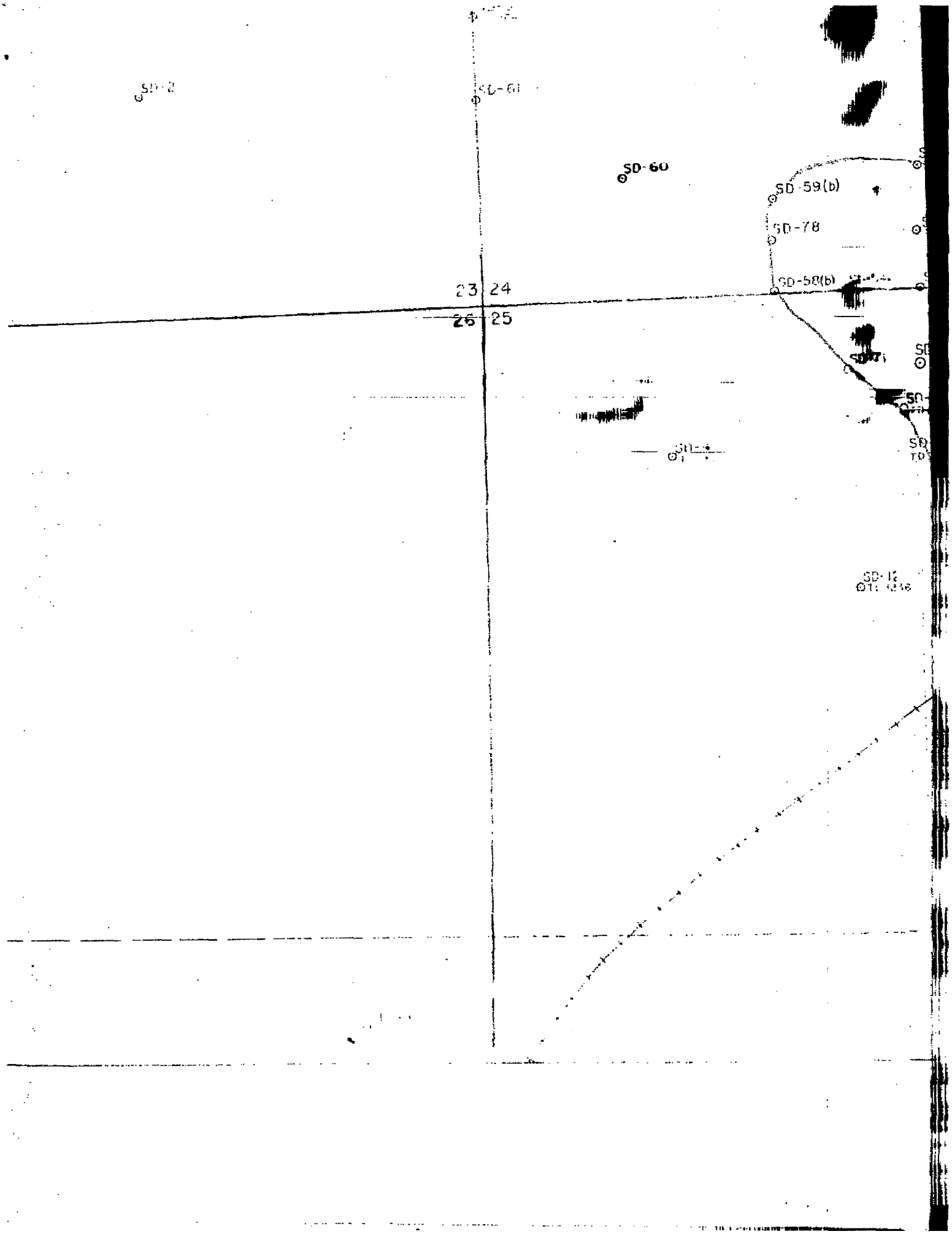
DRAGOON PROJECT

DRILL HOLE LAYOUT

Cochise County, Arizona

MARCH, 1972

SCALE 1" = 500'


SD-60
SD-59(b)
SD-78
SD-58(b)
23
24
26
25

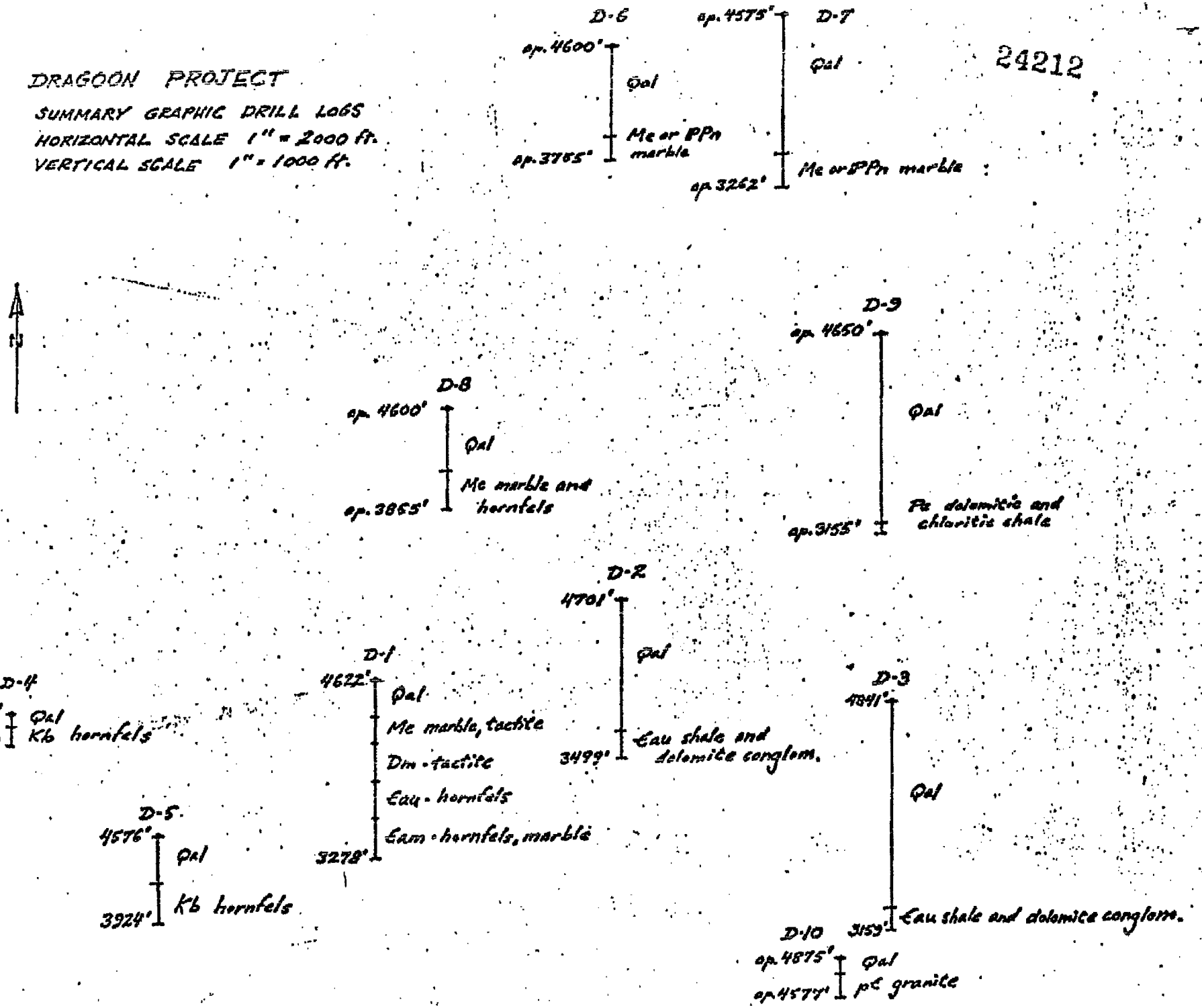
24212

DRAGOON PROJECT

SUMMARY GRAPHIC DRILL LOGS

HORIZONTAL SCALE 1" = 2000 ft.

VERTICAL SCALE 1" = 1000 ft.



VERITY, SMITH & CLARK, P. C.
ATTORNEYS AT LAW
902 TRANSAMERICA BUILDING
177 NORTH CHURCH AVENUE
TUCSON, ARIZONA 85701

VICTOR H. VERITY
LEO N. SMITH
LARRY D. CLARK
PATRICIA G. MUNGER

TELEPHONE
(602) 623-5961

August 26, 1982

COPY

HAND DELIVERED AT DRAGOON, ARIZONA

Mr. Jerry F. Wilbur, Jr.
Post Office Box 746
Madisonville, Kentucky 42431

Dear Mr. Wilbur:

I am writing this letter to advise you of the manner in which Pillar, Lowell & Associates will be conducting drilling operations on five State of Arizona Type B mining claims which it has located, each encompassing twenty acres and more particularly described as follows:

Name of Claim	Legal Subdivision	Section	Township	Range
ET #1	S½NW¼NE¼	31	16 South	23 East
ET #2	W½SW¼SE¼	31	16 South	23 East
ET #3	N½NE¼SE¼	36	16 South	22 East
ET #4	S½SE¼NE¼	1	17 South	22 East
ET #5	N½NE¼NW¼	1	17 South	22 East

The State of Arizona statutes and regulations provide that in instances where a state mining claim is located (rather than where operations are conducted under a state prospecting permit), the State Land Department does not issue a lease until the discovery has been completed. In recognition of your rights as grazing lessee from the State of Arizona of the lands encompassed within the mining locations, Clark Arnold of Pillar, Lowell & Associates assures me that the drilling operations heretofore conducted on ET #1, ET #2 and ET #4 and to be conducted on the other two claims will be conducted only on the twenty acres

Dragoon Drill Hole Summary
CAP

ET-1B Collar ± 4760'
Collared in post mineral alluvium & continued to a depth of 1460'. At 1460', Cambrian Bolsa qtzite was encountered & continued to 1485' T.D. Alt of hairline veinlets of chlorite?, or sericite? - Mineralization 1-2% coarse lim/py.

ET-2B Collar elev ± 4750'
Qal from collar to 1100'. ∈ Bolsa from 1100' to 1217' T.D. Mineralized, 2-3% coarse cubic lim/py.

ET-3B. Collar elev ± 4630'.
Qal from surface to 1160'. Paleozoic marble from 1160' to 1390' T.D. Alt of weak chlorite/epidote along bedding lineations. Mineralization, less than 1/4% lim/py as fine diss.

ET-4B Collar elev ± 4745'
Qal from surface to 890'. ∈ Bolsa qtzite from 890 to 983' T.D. Alt of weak chlorite & Fe2+ staining. Mineralization weak lim/py.

ET-5B Collar elev ± 4590'.
Qal to 440'. Paleozoic from 440' to 544' T.D. Marble & dolomite w/ chlorite, silica & epidote (sparce). Min ± 2% lim/py.

WESTERN METALS CONSULTING ASSOCIATES
3013 NORTH FIRST AVENUE
TUCSON, ARIZONA 85719
602-623-9780

L. CLARK ARNOLD
GEOLOGIST

October 14, 1987

Mr. Ben Donegan
Leonard Minersals Co.
3224 Candelaria, N.E.
Albuquerque, NM 87107

Dear Ben:

As a follow-up to our conversation last Friday, I would like to summarize my thoughts on oxide copper deposits which are potentially viable and possibly available in southeastern Arizona. There are three such deposits with which I am familiar. One is the Peach-Elgin deposit in the Rosemont District, southeast of Tucson, the other two are in the Johnson District, northeast of Benson.

The Benson district was controlled and extensively explored by Anamax in the 1960's. This work delineated the Rosemont or East Helvetia and Broad Top Butte sulfide deposits and the Peach-Elgin oxide deposit. The area controlled by Anamax was recently purchased outright by our client Mr. Bob Cote of Tucson.

The Rosemont deposit contains 350 million tons of ore averaging 0.65% sulfide copper, 0.25 oz Ag and 0.019% Mo per ton. The deposit has a high grade center averaging 0.85% Cu which could be mined from an open pit with a stripping ratio of about 3.2:1 waste to ore.

The Peach-Elgin deposit located three miles northwest of Rosemont contains 10 million tons of 0.7% oxide copper ore which is well situated for open pit mining.

Mr. Jim Sullivan of Phoenix controls two deposits in the Johnson district. These are the I-10 deposit which spans the highway of the same name, and the Dragoon deposit which spans the Southern Pacific right of way west of Dragoon. Both deposits were extensively explored ten years ago by a joint venture between Cyprus and Superior Oil. The Dragoon deposit was the focus of in situ leaching tests by the same group. Mr. Sullivan is very optimistic regarding the in situ potential of both deposits.

The I-10 deposit appears to contain 170 million tons of 0.47% copper ore. I believe that ¼ to 1/3 of this may be shallow enough

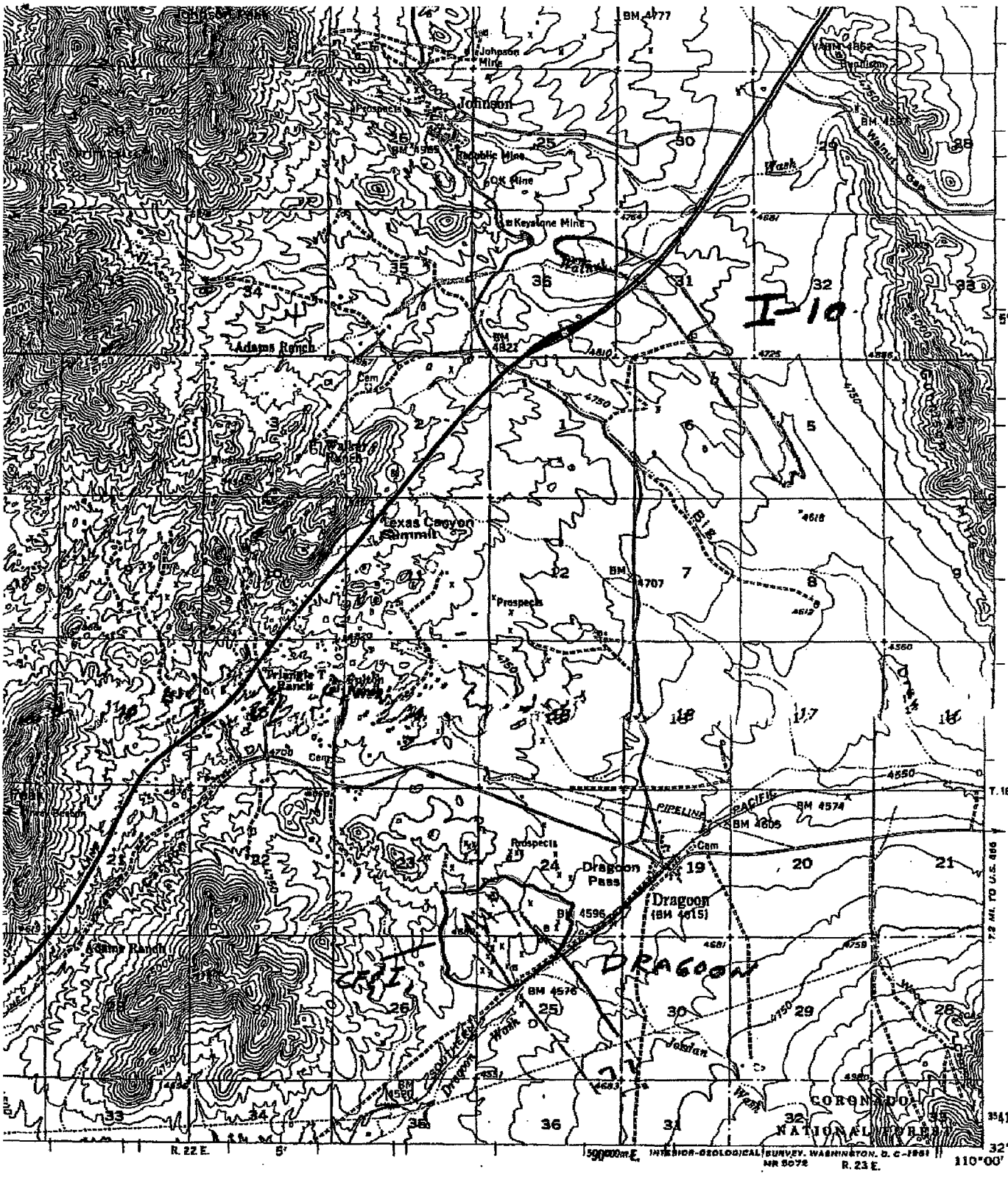
to permit open pit mining and metallurgically suitable for conventional heap leaching.

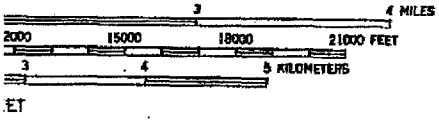
The Dragoon deposit contains 27 million tons of 0.47% oxide copper ore of which perhaps ½ may be suitable for open pit-heap leach treatment.

If your contact with Sullivan proves productive, I suggest that we spend a couple of days reviewing the extnesive data in an effort to assess the potential of his holdings.

As ever,

L. Clark Arnold





ROAD CLASSIFICATION

Heavy-duty — Light-duty

Medium-duty — Unimproved dirt

State Route

QUADRANGLE LOCATION

DRAGOON, ARIZ.

NA2000—[illegible]

OLORADO OR WASHINGTON 25, D. C.
OLS IS AVAILABLE ON REQUEST

One copy ASE Dave File
" " Dewey Lake
(Dave)

KRUEGER ENTERPRISES, INC.
GEOCHRON LABORATORIES DIVISION

24 BLACKSTONE STREET • CAMBRIDGE, MA. 02139 • (617)-876-3691

Jordan Cyn

POTASSIUM–ARGON AGE DETERMINATION — ***REPORT OF ANALYTICAL WORK***

PRIORITY SAMPLE

Our Sample No. M-6184 — **Date Received:** 4/29/82

Your Reference: Letter of 4/26/82 — **Date Reported:** 4/30/82

Submitted by: L. Clark Arnold
Pillar, Lowell and Associates
5115 N. Oracle Road
Tucson, AZ 85704

Sample Description & Locality: Sample DRAG-AD-1, altered aplite from southeastern Arizona.

Material Analyzed: Sericite concentrate, -100/+200 mesh.

Ar^{40*}/K^{40} = .002448 — **AGE = 41.4 +/- 1.6 M.Y.**

Argon Analyses:

Ar^{40*}, ppm.	Ar^{40*}/ Total Ar^{40}	Ave. Ar^{40*}, ppm.
.01966	.463	.02006
.02045	.627	

Potassium Analyses:

% K	Ave. %K	K^{40}, ppm
6.746	6.715	8.192
6.684		

Constants Used:

$\lambda_\beta = 4.72 \times 10^{-10}$/ year

$\lambda_e = 0.585 \times 10^{-10}$/ year

$K^{40}/K = 1.22 \times 10^{-4}$ g./g.

$$AGE = \frac{1}{\lambda_e + \lambda_\beta} \ln\left[\frac{\lambda_\beta + \lambda_e}{\lambda_e} \times \frac{Ar^{40*}}{K^{40}} + 1\right]$$

Note: Ar^{40*} refers to radiogenic Ar^{40}.
M.Y. refers to millions of years.

From large pit at mouth of Jordan Canyon S of Dragoon.

KRUEGER ENTERPRISES, INC.
GEOCHRON LABORATORIES DIVISION
24 BLACKSTONE STREET • CAMBRIDGE, MA. 02139 • (617)-876-3691

Carlton Copper

POTASSIUM–ARGON AGE DETERMINATION — REPORT OF ANALYTICAL WORK

Our Sample No. M-6432 **Date Received:** 1/3/83

Your Reference: Letter of 12/16/82 **Date Reported:** 1/27/83

Submitted by: J. David Lowell
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DRAGOON

Sample Description & Locality: Sample DRAG-AD-2, altered porpyhry.

Material Analyzed: Sericite concentrate, -80/+200 mesh.

Ar^{40*}/K^{40} = .002716 AGE = 45.9 +/- 1.7 M.Y.

Argon Analyses:

Ar^{40*}, ppm.	Ar^{40*}/ Total Ar^{40}	Ave. Ar^{40*}, ppm.
.02950	.754	.02833
.02898	.561	
.02651	.721	

Potassium Analyses:

% K	Ave. %K	K^{40}, ppm
8.566	8.551	10.432
8.535		

Constants Used:

$\lambda_\beta = 4.72 \times 10^{-10}$/ year

$\lambda_e = 0.585 \times 10^{-10}$/ year

$K^{40}/K = 1.22 \times 10^{-4}$ g./g.

$$AGE = \frac{1}{\lambda_e + \lambda_\beta} \ln\left[\frac{\lambda_\beta + \lambda_e}{\lambda_e} \times \frac{Ar^{40*}}{K^{40}} + 1\right]$$

Note: Ar^{40*} refers to radiogenic Ar^{40}.
M.Y. refers to millions of years.