ORE RESERVES

At present there are no measurable ore reserves proven on the property. The indicated or probable ore reserves are about two or three thousand tons. The possible ore reserves are, of course, considerable but at this stage relatively indeterminable.

WATER SUPPLY

At present the Randolph shaft water is at the 60' level. No. 13 shaft has 5 feet of water, and there appears to be some seepage in the lower workings at No. 7 shaft. However, until these workings are deepened it is felt that the best source of water would be a well drilled in the lowest portion of the main Randolph Basin where sufficient water should be reached above 500 feet.

In lieu of these two possible sources, a collection system could be established in the vicinity of the Silver Mine and the water piped to the property and, if this failed, as a last resort, a well could be put down either in Randolph, Fraser, or Hewitt canyons and pumped up to the property. The capacity of already existing wells and water supplies in the district should be investigated and compared with the needs of the present project.

W. Blakemore Jr.
May 1951

HIRAM R. NICHOLS
President

VERNON B. SMITH
Vice-President

~~JOE A. FILIPPINI~~
Sec.-Treas.

OGDEN CONSTRUCTION COMPANY

INCORPORATED

Steel Contractors

PHONE KE. 6983

DENVER 1, COLORADO

P. O. BOX 2450

Reply to:

September 14, 1951

Mr. W. E. Heinrichs
Tucson, Arizona

Dear Mr. Heinrichs:

Enclosed are two copies of the Flow-Sheet made by the Denver Equipment Company on our lead and zinc ore.

I believe it might help speed things up if you would submit a copy to the Bureau of Mines.

Yours very truly,

OGDEN CONSTRUCTION COMPANY, INC.

V. B. Smith

V. B. Smith, Secretary-Treasurer

VBS:af

Enc: 2

DENVER EQUIPMENT COMPANY
ORE TESTING DIVISION
Denver, Colorado

August 4, 1951

Ogden Construction Company
P. O. Box 2450
Denver, Colorado

Reference: Ore Test CW-18868

Gentlemen:

We are pleased to submit the following report of laboratory test work conducted on your sample of lead-zinc ore.

SAMPLE IDENTIFICATION

Our laboratory received, on June 4, 1951, three sacks of ore via personal delivery by Mr. Filippini and Mr. Nichols for the Ogden Construction Company. The shipment had a gross weight of 243 pounds.

OBJECT OF THE TEST

The object of the test was to conduct a gravity and selective flotation investigation to recover lead, zinc, copper, gold and silver values from the submitted sample. It is understood that the tonnage which will be treated is contemplated to be 100 tons per 24 hours.

SAMPLE PREPARATION

The entire sample, as received, was crushed to approximately 3/4 inch utilizing a Denver laboratory jaw crusher. A representative portion of the 3/4 inch material was crushed to minus 10 mesh by means of a laboratory roll crusher. The minus 10 mesh material was well mixed, a representative portion split out for a chemical head analysis, and the remainder retained for testing.

DESCRIPTION OF SAMPLE

A chemical analysis of the head sample is as follows:

Gold	0.08 oz/ton
Silver	0.52 oz/ton
Copper	0.23 percent
Total lead	6.18 percent
Nonsulfide lead	0.67 percent
Zinc	4.15 percent
Iron	4.45 percent
Sulfur	2.76 percent
Insoluble	63.68 percent

ALL RECOMMENDATIONS AND OPINIONS EXPRESSED IN THIS REPORT ARE BASED ON METALLURGICAL RESULTS OBTAINED IN THE ORE TESTING LABORATORY OF THE DENVER EQUIPMENT COMPANY, AND APPLY ONLY TO THE TREATMENT OF MATERIAL CONFORMING TO THE SAMPLE SUBMITTED BY THE SUBJECT COMPANY

The following minerals were identified in a closely panned sample of ore:

Galena
Pyrite
Cerussite
Sphalerite
Chalcopyrite

The galena was partially oxidized, as indicated by a bright yellow coating formed on the galena when it was treated with an acetic acid-potassium iodide solution. Some of the galena has been oxidized completely to form cerussite, a lead carbonate.

The zinc was present in a yellow colored sphalerite which graded into a dark brown marmatitic sphalerite. No free gold was observed by microscopic examination of the closely panned sample.

A portion of the ore was pulped with an equal weight of water. The pH of the Denver water was 7.4, and the pH of the 1:1 pulp was 6.8. Testing of this solution for dissolved salts disclosed the presence of sulphate ion and zinc ion.

The specific gravity of the ore was 2.77.

TEST RESULTS

A resume of the tests conducted upon your sample follows:

TEST NO. 1 — DENVER "SUB-A" SELECTIVE FLOTATION

This test is shown in detail on Data Sheets No. 1 and 2. A 2500 gram sample of minus 10 mesh ore was ground 18 minutes in the Denver laboratory 12" x 5" ball mill. The pulp was classified at 65 mesh and the sands were re-ground for 20 minutes.

The ground pulp was transferred to a 2000 gram Denver laboratory flotation machine and a rougher lead concentrate was removed. The rougher lead concentrate was cleaned once producing a cleaned lead concentrate and a lead cleaner middling. The tailings from the lead rougher flotation were conditioned with suitable reagents and a rougher zinc concentrate removed. This rougher zinc concentrate was cleaned once producing a cleaned zinc concentrate and a zinc cleaner middling.

The tailings from the zinc rougher flotation were conditioned with sulfidizing reagents followed by flotation to produce a sulfidized lead concentrate and a final tailing.

By combining the cleaned lead concentrate and the sulfidized lead concentrate a combined lead concentrate is obtained that assays 63.98 percent lead, 6.53 percent zinc, 0.71 ounces gold per ton and 4.31 ounces silver per ton, and represents a recovery of 79.4 percent of the total lead, 65.6 percent of the total gold and 39.4 of the total silver in the ore.

The cleaned zinc concentrate assays 52.60 percent zinc, 2.47 percent lead, 0.03 ounces gold per ton and 2.67 ounces silver per ton, and represents a recovery of 52.8 percent of the total zinc, 1.7 percent of the total lead, 1.54 percent of the total gold, and 16.7 percent of the total silver.

TEST NO. 2 — DENVER MINERAL JIG

A 2000 gram sample of the minus 10 mesh head ore was treated on the 1-M Denver Mineral Jig as shown on Data Sheet No. 3. The operation approximated a jig installed in the grinding circuit. The test was run to study the possible use of a jig to recover a granular galena-cerussite concentrate ahead of flotation.

The jig gravity concentrate obtained represented 5.31 percent of the original ore by weight, and assayed 51.55 percent lead, 13.36 percent zinc, 0.07 oz gold per ton, and 1.23 oz silver per ton. The jig concentrate represented a recovery of 45.8 percent of the total lead, 19.7 percent of the total zinc, 5.3 percent of the total gold, and 13.8 percent of the total silver.

REMARKS AND RECOMMENDATIONS

The tests shown herein indicate that the submitted sample is amenable to selective flotation concentration to yield lead and zinc concentrates of acceptable grade, representing fair recoveries.

By conventional methods of flotation, separate lead and zinc sulfide concentrates were obtained. By subjecting the tailings from the zinc flotation to sulfidization and flotation, an additional 18.3 percent of the total lead can be recovered in a sulfidized lead concentrate assaying 53.4 percent lead.

A recommended flowsheet for the treatment of your ore is shown on Print No. A-5340. It includes crushing the ore to approximately 3/4 inch, grinding to 65 mesh utilizing a ball mill-classifier circuit, selective flotation to recover separate

concentrates of lead, zinc, and sulfidized lead, and thickening and filtering of the flotation concentrates.

A mineral jig is recommended in the grinding circuit to remove a granular galena-cerussite concentrate ahead of flotation.

The flotation concentrates filter rapidly and a filter capacity of 300 pounds per square foot per 24 hours should provide adequate area. Thickeners are recommended ahead of filtration to reduce the load carried by the filters and to supply storage capacity for concentrates. A thickener area of 10 square feet per ton per 24 hours should furnish adequate thickening capacity.

In order to determine the best method of treating your ore, a number of trial tests were conducted, the results of which were judged by microscopic examination. The reagents recommended are based on the flotation test described in this report and are listed in detail on Data Sheet No. 1.

The grindability of the ore should be classed as "medium soft" to grind to minus 65 mesh.

Respectfully submitted,

DENVER EQUIPMENT COMPANY

Clarence Thom
Clarence Thom, Director
Ore Testing Division

Henry J. Gisler
Henry J. Gisler, Manager
Ore Testing Division

3 Copies to Customer

A.

DENVER EQUIPMENT COMPANY ORE TESTING DIVISION

Denver, Colorado

Denver "Sub-A"
Selective Flotation

FLOTATION TEST DATA: CONDITIONS AND REAGENTS

SAMPLE IDENTIFICATION: Minus 10 Mesh Ore

REPORT NO. CW-18868 TEST NO. 1

TEST PROCEDURE: A 2500-gram portion of minus 10 mesh ore was ground for 18 minutes at 67 percent solids and classified at 65 mesh. The sands were reground for 20 minutes. The ground pulp was transferred to a 2000-gram Denver laboratory flotation machine and a rougher lead concentrate removed. This rougher concentrate was cleaned once producing a cleaned lead concentrate and a lead cleaner middling. The lead rougher tailing was conditioned with suitable reagents followed by removal of a rougher zinc concentrate. The rougher zinc concentrate was cleaned once, producing a cleaned zinc concentrate and a zinc cleaner middling. The zinc rougher tailing was subjected to additional scavenger flotation to see if more zinc could be removed. The scavenger tailing was conditioned with sulfidizing reagents, followed by removal of a sulfidized lead concentrate and leaving a final tailing.

Grinding and Treatment				Reagents: Pounds per ton heads—(2)								
Operation	Time Min.	Percent Solids	pH	Na_2CO_3	$ZnSO_4$	NaCN	Z-3	M.I.C.	Lime	$CuSO_4$	Z-5	NaHS
Grinding (1)	38	67	7.0	6.0	2.0	0.24	-	-	-			
Lead Rougher	5	20	7.6	2.0	-	-	0.05	0.05	-			
Lead Cleaner	5	10	7.5	0.5	0.5	0.04	0.02	0.02	-			
Conditioner	10	20	9.0	-	-	-	-	-	8.0	1.0	0.04	
Zinc Rougher	5	20	9.0	-	-	-	-	-			0.04	
Zinc Scavenger	5	20	9.0	-	-	-	-	-				
Zinc Cleaner	4	10	9.0	-	-	-	-	-	0.7			
Conditioner	5	20	10.0	-	-	-	-	AF-31 0.01	-		0.04	
Sulfidized Lead Rougher	5	10	10.0	-	-	-	-	-	-		0.04	

NOTES: GRINDING PERFORMED IN STANDARD DENVER 12"x 5" DENVER BALL MILL. BALL CHARGE = 40 POUNDS, R.P.M. = 54.

CLASSIFICATION BY DECANTATION THROUGH LIMITING SCREEN, UNDECANTED SANDS REGROUND.

FLOTATION PERFORMED IN DENVER "SUB-A" LABORATORY FLOTATION MACHINE.

Grinding (1)

Time, minutes 18
Classification, mesh 65
Sands reground, minutes 20

(2) Reagent Symbols:

Na_2CO_3 - Sodium Carbonate
$ZnSO_4$ - Zinc Sulfate
NaCN - Sodium Cyanide
Z-3 - Bear Brand Xanthate Z-3
M.I.C. - Methyl Isobutyl Carbinol
$CuSO_4$ - Copper Sulfate
Z-5 - Bear Brand Xanthate Z-5
NaHS - Sodium Hydrosulfide
AF-31 - American Cyanamid Aerofloat - 31

DATA SHEET NO. D-1

B.

DENVER EQUIPMENT COMPANY ORE TESTING DIVISION

Denver, Colorado

Denver "Sub-A"
Selective Flotation

FLOTATION TEST DATA: METALLURGICAL RESULTS

SAMPLE IDENTIFICATION: Minus 10 Mesh Ore

REPORT NO. CW-18868 TEST NO. 1

	PRODUCT	Percent Weight	ASSAYS - Percent - Lead	Zinc	- oz/ton - Gold	Silver
	Head Assay		6.18	4.15	0.08	0.52
	Calculated Head	100.00	5.79	3.92		
1	Cleaned Lead Concentrate	5.20	68.20	8.50	0.97	5.03
2	Lead Cleaner Middling	2.11	15.72	15.08		
3	Cleaned Zinc Concentrate	3.94	2.47	52.60	0.03	2.67
4	Zinc Cleaner Middling	2.49	6.90	9.55		
5	Zinc Scavenger Concentrate	2.21	6.62	2.70		
6	Sulfidized Lead Concentrate	1.99	53.40	1.40	0.04	2.46
7	Final Tailing	82.03	0.54	0.94		
	1 & 6 Combined Concentrates	7.19	63.98	6.53	0.71	4.31

	PRODUCT	Percent Weight	PERCENT RECOVERY Lead	Zinc
	Calculated Head	100.00	100.0	100.0
1	Cleaned Lead Concentrate	5.20	61.1	11.2
2	Lead Cleaner Middling	2.11	5.9	8.2
3	Cleaned Zinc Concentrate	3.94	1.7	52.8
4	Zinc Cleaner Middling	2.49	2.9	5.9
5	Zinc Scavenger Concentrate	2.21	2.4	1.5
6	Sulfidized Lead Concentrate	1.99	18.3	0.8
7	Final Tailing	82.03	7.7	19.6
	1 & 6 Combined Concentrates	7.19	79.4	12.0

SCREEN ANALYSIS OF Final Tailing

Mesh	Percent Weight
+ 65	0.04
+100	1.15
+150	6.96
+200	11.17
-200	80.68
	100.00

DATA SHEET NO. D-2

DENVER EQUIPMENT COMPANY — ORE TESTING DIVISION

Denver, Colorado

METALLURGICAL RESULTS REPORT NO. CW-18868 TEST NO. 2

TYPE OF TEST Denver Mineral Jig Test

SAMPLE IDENTIFICATION: Minus 10 Mesh Ore

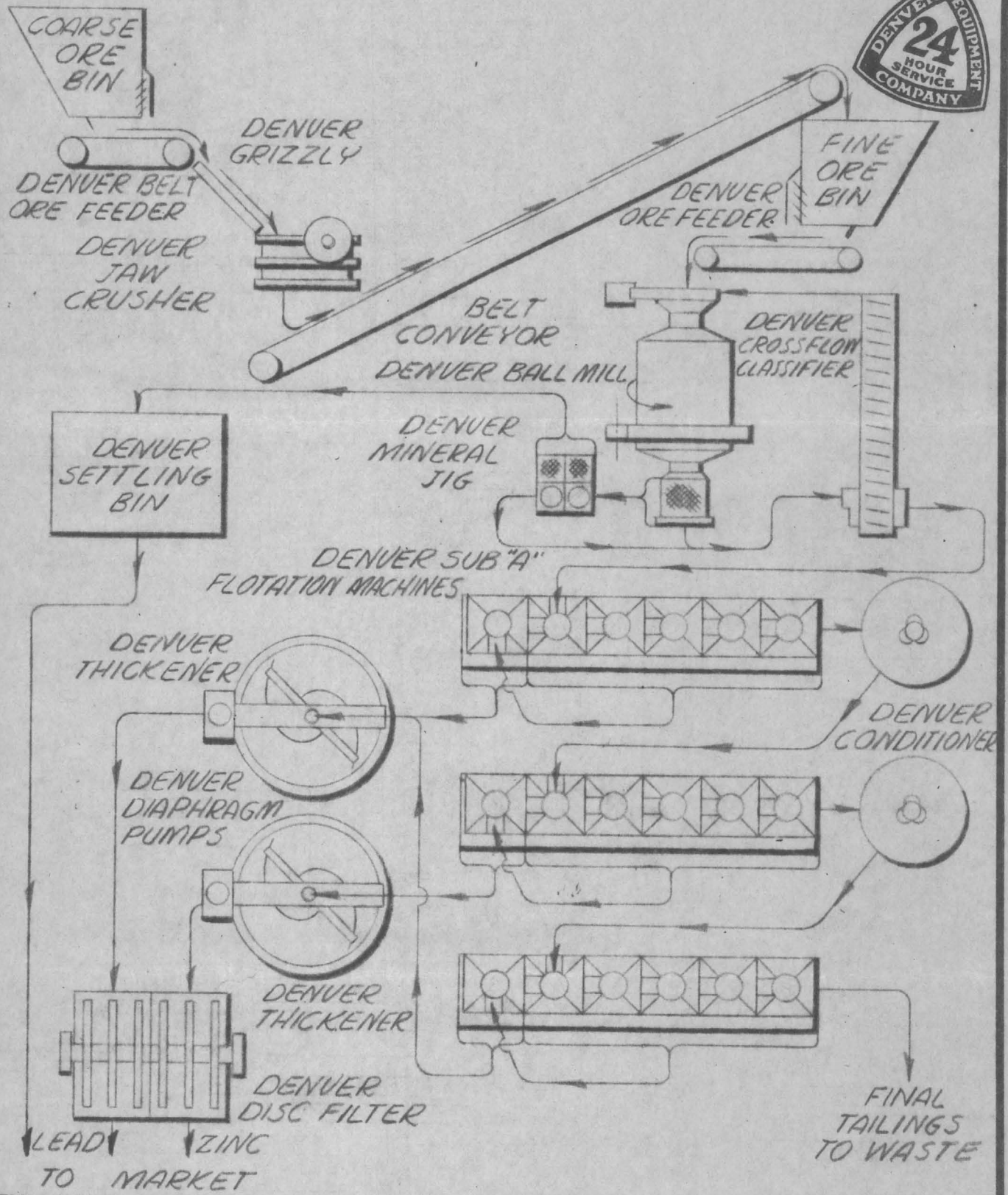
TEST PROCEDURE: A 2000 gram portion of minus 10 mesh ore was passed over a Denver Mineral Jig to study the possible use of a jig to remove a coarse pyrite-cerussite concentrate ahead of flotation.

PRODUCT	Percent Weight	ASSAYS -----Percent---- --oz/ton--					PERCENT RECOVERY			
		Lead	Zinc	Copper	Gold	Silver	Lead	Zinc	Gold	Silver
Head Assay		6.18	4.15	0.23	0.08	0.52				
Calculated Head	100.00	5.98	3.61		0.07	0.47	100.0	100.0	100.0	100.0
Jig Concentrate	5.31	51.55	13.36		0.07	1.23	45.8	19.7	5.3	13.8
Jig Tailing	94.69	3.42	3.06		0.07	0.42	54.2	80.3	94.7	86.2

REMARKS:

ROCKY MOUNTAIN BANK NOTE CO.

DATA SHEET NO. D-3



This print loaned subject to return upon demand and under the express condition that it is not to be used, directly or indirectly, detrimental to Denver Equipment Co.

PRINTED AUG - 7 1951

ORDER NO. ORE TEST CW-18868

FOR OGDEN CONSTRUCTION CO.
LEAD & ZINC FLOTATION
RECOMMENDED FLOWSHEET

SCALE ~

DENVER EQUIPMENT CO.
1400 - Seventeenth St. - Denver, Colo.

DRAWN BY Tash 8-7-51
CHECKED BY

A-5340

HIRAM R. NICHOLS
President

VERNON B. SMITH
Vice-President

JOE A. FILIPPINI
Sec.-Treas.

OGDEN CONSTRUCTION COMPANY

INCORPORATED

Steel Contractors

PHONE KE. 6983

DENVER 1, COLORADO

P. O. BOX 2450

Reply to:

P.O. Box 2450
Denver 1, Colorado

August 7, 1951

Mr. W. E. Heinrichs
Tucson, Arizona

Dear Mr. Heinrichs:

Our Randolph Mining Claims were assigned Serial No. M.S. - 0798. The Exploration Loan application was assigned No. DMA - 1634X, Randolph Group.

We have written Washington, D.C. but have not been able to find out more about our loan application. We would appreciate it if you would call Mr. Sturm or stop by and see him and find out what you can regarding the status of our application for the exploration loan. I believe that our application has been forwarded to the Tucson office of the Bureau of Mines.

We received a favorable report and Flow Sheet from the Denver Equipment Co. on the 200 lb. sample that we submitted to them. Will show you their report when I come to Tucson again.

Your report has not yet been submitted to the Bureau of Mines. We wrote them stating that we had it but they have not requested it as yet.

Several loans have been made in the Colorado area. I am enclosing clippings from last night's Denver Post.

Anything that you can do to help us expedite this loan will be greatly appreciated.

Hope all is going well with you. Best of luck.

Yours very truly,
OGDEN CONSTRUCTION CO., INC.

Joe A. Filippini
Sec. - Treas.

2356 South Campbell Ave.
Tucson, Arizona
August 14, 1951

Mr. Joe A. Filippini
Ogden Construction Company
P. O. Box 2450
Denver 1, Colorado

Dear Joe:

In reference to your letter of August 7th and following phone call, I have contacted Mr. Storms of the Tucson Bureau of Mines Office and have the following to relate: The reference in your letter from Mr. Billings, Chief of the lead zinc branch in Washington, the term "field team" apparently means the regional office in Denver and its appropriate sub-organizations. The routine will be about like this: Upon receipt of the information by the Denver office it will be indexed and forewarded on to Tucson for scheduling here. In as much as application No. 1633X has already been received here yours would appear to be the next one in order to arrive--possibly this coming Friday August 17th. The proceedure here is to follow up these in order of date received. At the present time there are approximately a dozen applications on hand here yet to be acted on before yours comes up. Storms indicates at least a month will be required before these are cleaned up. However, he assured me he would notify me when his office receives the application and at such time will endeavor to give a slightly more accurate estimate of when a visit might be made to your property. In any event, he says, that it will be highly desirable and practically necessary that someone accompany the engineer or engineers on this initial visit, preferably a representative or officer of the company--in other words, someone who can speak authoritatively regarding the company affairs. I rather imagine as the previous applications are taken care of it will be possible to obtain a fairly accurate estimate of the date of their visit in advance.

Glad to hear of your encouragement in regard to the mill test.

Thank you for enclosing the Denver Post clipping.

Have not seen or heard from Mr. Smith of late

I will plan to keep in touch with Mr. Stormssand will keep you advised of any new developments and will endeavor to get in touch with you if we get to Denver next week.

With best regards,

Sincerely yours,

Walter E. Heinrichs, Jr.

EXAMINATION REPORT

RANDOLPH PROPERTY

PINAL COUNTY, ARIZONA

MAY, 1951

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INTRODUCTION

The Randolph group consists of thirteen unpatented mining claims which at one time were a part of the old Woodbury Copper Company property.

The area is known locally as Randolph Basin and is located in the Cole Mining District of northeastern Pinal County, Arizona, in what would be the approximate central-eastern portion of unsubdivided T. 1 N., R. 11 E. The property lies across the border between the Tonto and Crook National Forests in the eastern part of the Superstition Mountains at an elevation of about 3600 feet.

The claims may be reached by road, twenty-one miles from Superior, via the Queen's Station on the Magma Railroad and Hewitt Canyon wash. The eleven miles between Queen's Station and the property furnish access to several prospects and at least one nearby ranch.

The purpose of this examination was to make a quick appraisal of the possibility of rapidly developing a small but continuing operation on the property.

Three days were spent in the examination, with almost all of the time being taken up in sampling the more important openings. Not all of the existing workings were investigated, nor was any time spent in mapping the surface or underground other than notes on the general geology.

Mr. Joe Filippini of Denver, Colorado, and Mr. C. O. Carlson of Superior, Arizona, helped with the work, and their assistance was greatly appreciated.

SUMMARY AND CONCLUSIONS

From the results of the assaying and the observed nature of the occurrence, most of the ore from this property would require milling to be produced efficiently. Sufficient tonnage and grade to support a reasonable but small milling operation appear to be possible, but additional sampling and development work would be necessary to confirm this. Water for at least a small operation probably could be developed. Any possible milling problems should be investigated early by mill testing a large representative sample of the ore.

If consistent assays of about 12% combined base metal content can be maintained during a careful and thorough sampling program, then the problem becomes one of developing tonnage. The only way to accomplish this is by additional exploration and development.

The present workings at the Randolph shaft and Lead Camp would be adequate for starting such a program. If results continued favorable, then surface trenching with a bulldozer or diamond drilling might be in order.

In general, the narrow dipping vein occurrence of the ore would prevent successful application of open cut mining methods to any appreciable depth. However, a drag line could be used in the preliminary development of near surface ore on the vertical dipping veins and a shovel or dozer would be able to strip a small area at Lead Camp.

RECOMMENDATIONS

The property warrants additional exploration and sampling, and such are recommended before any large investments are made, particularly in any milling equipment. This work should be assumed under competent supervision and with constant reappraisal of the results as the work progresses.

The following program is offered:

1. Carefully clean out and sample the following workings in the order listed. Sample where the veins are completely exposed over a mineable width and take samples from wall to wall every five or ten feet:

(a) Randolph shaft and laterals.

(b) Lead Camp shaft and laterals.

2. (a) If either of the above shows definitely consistent results, then initiate a program of further lateral development and sampling in an attempt to develop tonnage at the best showing - or both, if warranted.

(b) If neither of the above--1 (a) or 1 (b)-- gives good results, then either additional lateral sampling might be done or the project should be abandoned.

3. (a) If 2 (a) is successful, continue until results show negative or until a reasonable tonnage is proven - say, 50,000 tons. Have mill test run on ore.

(b) If 2 (a) is unsuccessful, then abandon the project.

4. If good results are obtained in 3 (a), a program should be started to develop a water supply, probably in the lowest portion of the Randolph Basin proper where collection would be most likely.

The above work could best be accomplished by acquiring the services of a young, competent engineer with some knowledge of geology, mining and sampling techniques to direct the work and one or two miner-helpers.

COST AND TIME ESTIMATES

The following are for the items as listed under recommendations:

1 (a)	Time required	3 weeks
1 (b)	" "	2 "
1 Total	" "	5 "

1. Costs:

1 Engineer at $90/week	$ 450.00
2 Miners at $120/week	600.00
Assaying	300.00
Materials & Supplies	1,000.00
Additional Equipment.	500.00
Miscellaneous	400.00
T o t a l	$ 3,250.00

2. Including the above personnel and equipment:

Additional equipment for drifting and sinking	$ 2,000.00
Reparing shafts, etc.	300.00
T o t a l	$ 2,300.00

3. Including the above personnel and equipment, the time factor would be about 3 months.

Costs:

Drifting at $25.00 per foot at

4' per day;

Sinking at $60.00 per foot at

2' per day.

The overall cost of this phase would therefore approximate $10,000.00.

Other costs that might be considered here for information would be diamond drilling which, under contract, would cost about $7.00 per foot drilled.

4. If water were developed separately, the cost would be approximately $5,000.00 and would take about one month provided one well were successful.

Additional costs not immediately pertinent but of possible interest are as follows:

Power - $ 0.03 per Kw. (on property),

Electric pumping - 20 Kw. per hour,

Electric pump - $2,000.00.

At the present time an efficient 50-ton mill would probably cost about $100,000.00 to erect on the property. Many of the other costs, such as labor, lumber, bulldozing, etc., are either familiar or so variable that they are not worth stating here.

GEOLOGY

The main mineralization of the area is evidenced at the surface by several long, outcropping trends which appear as darker stained erosional remnants within a large granitic mass. These structural breaks are quite persistent over their length, but as is often the case, there is apparent surface variation in the mineralization laterally. All the veins observed were along steeply west-dipping, brecciated fault zones, except at Lead Camp where the vein dips about 30° SE. The brecciation is persistent along with the faulting but varies somewhat in degree of tightness and intensity, which probably correlates with the variation in mineralization observed. In most cases there is a fair amount of both hanging and foot wall gouge. The veins average 5' in width but vary from a 30' maximum to a zero minimum.

For the most part, the granite mass is persistently and evenly coarse grained; however, there are some minor aplitic and, also, a few basic phases and, occasionally, some variation in the texture toward a finer grained material.

The most prominent associated minerals which were noted are epidote, which occurs as random stringers in the granite, and some manganese stain on the more prominent outcrops. In several places at the surface, there has been some apparent sulfide leaching, and it is possible that a small, enriched zone might be encountered at depth. The main ore minerals are galena, sphalerite, some chalcopyrite, and the usual associated oxides and carbonates. There is some copper staining throughout the zones and there have

been some fairly high copper assays previously reported. It is possible that the copper values will increase somewhat with depth. Most of the ore carries some gold and silver (see table of assays.)

SAMPLING RESULTS

Table of Total Sampling to Date:

	Gold	Silver	Copper	Lead	Zinc
Total Assays	29	29	21	28	27
Maximum Assay	0.3 oz/Ton	2.7 Oz/Ton	1.08%	14.2%	25.16%
Minimum Assay	0.005 "	0.2 "	Nil	0.2%	Nil
Average of all Assays	0.047 "	0.74 "	Minor	4 %	3.5%
Average Value per Ton	$2.00	$0.67	Nil	$13.60	$12.25

Total Average Value per Ton $ 28.52

Current Sampling:

Sample No. 1 was taken for six feet across the back of the south drift station in the Randolph shaft at the 60 foot level just beyond the short east cross-cut. It ran 2.75% lead, 9.82% zinc, and 0.3 oz. per ton silver.

Sample No. 2 was taken for six feet across the back of the north drift station in the Randolph shaft at the 60 foot level. It ran 2% lead, 7.14% zinc and 0.6 oz. per ton silver.

Sample No. 3 was taken for eight feet across the vein in the shallow cut 25' north of the Randolph shaft, about 25' below the original surface outcrop. The vein here is about three to four feet wide and is quite altered. This sample ran 5.35% lead, 2.75% zinc, and 0.5 oz. silver per ton.

Sample No. 4 was taken for fifty inches across the north side of #7 shaft, 4' above the bottom from the hanging wall gouge to the granite foot wall. It ran 2.3% lead, 1.8% zinc, and 0.3 oz. silver.

Sample No. 5 was taken for 1-1/2 feet across the vein on the north side of #7 shaft at the 75 foot level. It ran 1.2% lead, 1.3% zinc, and 0.3 oz. silver.

Sample No. 6 represents 5-1/2' across the vein in the Lead Camp shaft, 30' deep at the NE rib of the first north drift on the down dip side. This sample showed 11.5% lead, 2.4% zinc, 0.7 oz. silver, and $3.50 in gold.

Sample No. 7 represents six feet across the vein at 25' in the Lead Camp shaft across the north drift on the up-dip side from Sample No. 6. This sample ran 11.7% lead, 1.1% zinc, 1 oz. silver, and $7.35 in gold.

Sample No. 8 was taken on the SW side of the Lead Camp shaft at 38' deep for six feet across the vein on the up-dip side of the first south drift. This sample ran 4.6% lead, 0.7% zinc, 0.7 oz. silver, and $1.05 in gold.

The average assay at the Randolph for three samples is approximately 3.4% lead and 6.8% zinc. The average for three samples at Lead Camp is 9.3% lead, 1.4% zinc, 0.8 oz. silver, and $4.00 in gold.

ORE RESERVES

At present there are no measurable ore reserves proven on the property. The indicated or probable ore reserves are about two or three thousand tons. The possible ore reserves are, of course, considerable but at this stage relatively indeterminable.

WATER SUPPLY

At present the Randolph shaft water is at the 60' level. No. 13 shaft has 5 feet of water, and there appears to be some seepage in the lower workings at No. 7 shaft. However, until these workings are deepened, it is felt that the best source of water would be a well drilled in the lowest portion of the main Randolph Basin where sufficient water should be reached above 500 feet.

In lieu of these two possible sources, a collection system could be established in the vicinity of the Silver Mine and the water piped to the property and, if this failed, as a last resort, a well could be put down either in Randolph, Fraser, or Hewitt canyons and pumped up to the property. The capacity of already existing wells and water supplies in the district should be investigated and compared with the needs of the present project.

Submitted by: W. E. Heinrichs, Jr.
Registered Engineer
Tucson, Arizona

May, 1951.

SUMMARY AND CONCLUSIONS

From the results of the assaying and the nature of the occurrence, any ore from this property would definitely require milling. Sufficient tonnage and grade to support a reasonable milling operation appear to be only possible - not probable. Water for at least a small operation probably could be developed. Milling difficulty with the zinc is possible, but this could only be appraised by mill testing a large representative sample of the ore.

If consistent assays of about 12% combined base metal content could be maintained, then the problem would resolve itself into, mainly, one of developing tonnage. The only way to accomplish this is by additional exploration, development and sampling.

The present workings at the Randolph shaft and Lead Camp would be adequate for starting such a program. If results continued favorable, then surface trenching with a bulldozer or diamond drilling might be in order.

In general, the narrow dipping vein occurrence of the ore would prevent successful application of open cut mining methods to any appreciable depth. A drag line could be used in the preliminary development of near surface ore on the vertical dipping veins and a shovel or dozer would be able to strip a small area at Lead Camp. However, it is doubtful that such work would develop a very great tonnage.

RECOMMENDATIONS

Additional exploration and extensive sampling are recommended before any large investments are made in the property, particularly in any milling equipment, and only if such is assumed under competent supervision and with constant reappraisal of the results as the work progresses.

The following program is offered:

1. Carefully clean out and sample the following workings in the order listed. Sample where the veins are completely exposed over a mineable width and take samples from wall to wall every five or ten feet:

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(b) Lead Camp shaft and laterals.

2. (a) If either of the above shows definitely consistent results, then initiate a program of further lateral development and sampling in an attempt to develop tonnage at the best showing - or both, if warranted.

(b) If neither of the above--1 (a) or 1 (b)--gives good results, then either additional lateral sampling might be done or the project should be abandoned.

3. (a) If 2 (a) is successful, continue until results show negative or until a reasonable tonnage is proven - say, 50,000 tons. Have mill test run on ore.

GEOLOGY

In general, the mineralization is rather weak and unspectacular and, although the structural breaks are very persistent, one suspects that there is probably considerable variation in mineralization, both laterally and vertically. All the veins observed were along steeply west-dipping, brecciated fault zones (except at Lead Camp where the vein dips about 30° SE) in a large, granitic mass. The brecciation is persistent along with the faulting but varies greatly in degree of tightness and intensity, which probably correlates with the variation in mineralization. In most cases there is a fair amount of both hanging and foot wall gouge. The veins average 5' in width but vary from a 30' maximum to a zero minimum.

For the most part, the granite mass is persistently and evenly coarse grained; however, there are some minor aplitic and, also, a few basic phases and, occasionally, some variation in the texture toward a finer grained material.

The most prominent associated minerals which were noted are epidote, which occurs as random stringers in the granite, and some manganese stain on the more prominent outcrops. In several places at the surface, there has been some apparent sulfide leaching, and it is possible that a small, enriched zone might be encountered at depth. The main ore minerals are galena, sphalerite, some chalcopyrite, and the usual associated oxides

and carbonates. There is a fair amount of copper staining, but it is rather weak. There have been some fairly high copper assays previously reported however, and it is possible that the copper values may increase somewhat with depth. Most of the ore carries some gold and silver (see table of assays).

SAMPLING RESULTS

Table of Total Sampling to Date:

	Gold	Silver	Copper	Lead	Zinc
Total Assays	29	29	21	28	27
Maximum Assay	0.3 oz/Ton	2.7 Oz/Ton	1.08%	14.2%	25.16%
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ORE RESERVES

At present there are actually no measurable ore reserves, as such, on the property, and the indicated or probable ore reserves could not possibly exceed two or three thousand tons.

WATER SUPPLY

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SUMMARY AND CONCLUSIONS

From the results of the assaying and the observed nature of the occurrence, most of the ore from this property would require milling to be produced efficiently. Sufficient tonnage and grade to support a reasonable, but small, milling operation appear to be possible, but additional sampling and development work would be necessary to confirm this. Water for at least a small operation probably could be developed. Any possible milling problems should be investigated early by mill testing a large representative sample of the ore.

If consistent assays of about 12% combined base metal content can be maintained during a careful and thorough sampling program, then the problem becomes one of developing tonnage. The only way to accomplish this is by additional exploration and development.

The present workings at the Randolph shaft and Lead Camp would be adequate for starting such a program. If results continued favorable, then surface trenching with a bulldozer or diamond drilling might be in order.

In general, the narrow dipping vein occurrence of the ore would prevent successful application of open cut mining methods to any appreciable depth. However a drag line could be used in the preliminary development of near surface ore on the vertical dipping veins and a shovel or dozer would be able to strip a small area at Lead Camp.

RECOMMENDATIONS

The property warrants additional exploration and sampling and such are recommended before any large investments are made, particularly in any milling equipment. This work should be assumed under competent supervision and with constant reappraisal of the results as the work progresses.

The following program is offered:

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2. (a) If either of the above shows definitely consistent results, then initiate a program of further lateral development and sampling in an attempt to develop tonnage at the best showing - or both, if warranted.

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3. (a) If 2 (a) is successful, continue until results show negative or until a reasonable tonnage is proven - say, 50,000 tons. Have mill test run on ore.

GEOLOGY

The main mineralization of the area is evidenced at the surface by several long outcropping trends, which appear as darker stained erosional remnants within a large granitic mass. These structural breaks are quite persistent over their length, but as is often the case, there is apparent surface variation in the mineralization laterally. All the veins observed were along steeply west-dipping, brecciated fault zones, except at Lead Camp where the vein dips about 30° SE. The brecciation is persistent along with the faulting but varies somewhat in degree of tightness and intensity, which probably correlates with the variation in mineralization observed. In most cases there is a fair amount of both hanging and foot wall gouge. The veins average 5' in width but vary from a 30' maximum to a zero minimum.

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ORE RESERVES

At present there are no measurable ore reserves proven on the property. The indicated or probable ore reserves are about two or three thousand tons. The possible ore reserves are of course, considerable, but at this stage relatively indeterminant.

WATER SUPPLY

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In lieu of these two possible sources, a collection system could be established in the vicinity of the Silver Mine and the water piped to the property and, if this failed, as a last resort, a well could be put down either in Randolph, Fraser, or Howitt canyons and pumped up to the property. The capacity of already existing wells and water supplies in the district should be investigated and compared with the needs of the present project.

W. D. Kinrich Jr.
May 1951

SUMMARY AND CONCLUSIONS

From the results of the assaying and the nature of the occurrence, any ore from this property would definitely require milling. Sufficient tonnage and grade to support a reasonable milling operation appear to be only possible - not probable. Water for at least a small operation probably could be developed. Milling difficulty with the zinc is possible, but this could only be appraised by mill testing a large representative sample of the ore.

If consistent assays of about 12% combined base metal content could be maintained, then the problem would resolve itself into, mainly, one of developing tonnage. The only way to accomplish this is by additional exploration, development and sampling.

The present workings at the Randolph shaft and Lead Camp would be adequate for starting such a program. If results continued favorable, then surface trenching with a bulldozer or diamond drilling might be in order.

In general, the narrow dipping vein occurrence of the ore would prevent successful application of open cut mining methods to any appreciable depth. A drag line could be used in the preliminary development of near surface ore on the vertical dipping veins and a shovel or dozer would be able to strip a small area at Lead Camp. However, it is doubtful that such work would develop a very great tonnage.

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The most prominent associated minerals which were noted are epidote, which occurs as random stringers in the granite, and some manganese stain on the more prominent outcrops. In several places at the surface, there has been some apparent sulfide leaching, and it is possible that a small, enriched zone might be encountered at depth. The main ore minerals are galena, sphalerite, some chalcopyrite, and the usual associated oxides

and carbonates. There is a fair amount of copper staining, but it is rather weak. There have been some fairly high copper assays previously reported however, and it is possible that the copper values may increase somewhat with depth. Most of the ore carries some gold and silver (see table of assays).

SAMPLING RESULTS

Table of Total Sampling to Date:

	Gold	Silver	Copper	Lead	Zinc
Total Assays	29	29	21	28	27
Maximum Assay	0.3 oz/Ton	2.7 Oz/Ton	1.08%	14.2%	25.16%
Minimum Assay	0.005 "	0.2 "	Nil	0.2%	Nil
Average of all Assays	0.047 "	0.74 "	Minor	4 %	3.5%
Average Value per Ton	$2.00	$0.67	Nil	$13.60	$12.25

Total " = $28.52

Current Sampling:

Sample No. 1 was taken for six feet across the back of the south drift station in the Randolph shaft at the 60 foot level just beyond the short east cross-cut. It ran 2.75% lead, 9.82% zinc, and 0.3 oz. per ton silver.

Sample No. 2 was taken for six feet across the back of the north drift station in the Randolph shaft at the 60 foot level. It ran 2% lead, 7.14% zinc and 0.6 oz. per ton silver.

Sample No. 3 was taken for eight feet across the vein in the shallow cut 25' north of the Randolph shaft, about 25' below the original surface outcrop. The vein here is about three to four feet wide and is quite altered. This sample ran 5.35% lead, 2.75% zinc, and 0.5 oz. silver per ton.

ORE RESERVES

At present there are actually no measurable ore reserves, as such, on the property, and the indicated or probable ore reserves could not possibly exceed two or three thousand tons.

WATER SUPPLY

At present the Randolph shaft water is at the 60' level. No. 13 shaft has 5 feet of water, and there appears to be some seepage in the lower workings at No. 7 shaft. However, until these workings are deepened it is felt that the best source of water would be a well drilled in the lowest portion of the main Randolph Basin where sufficient water should be reached above 500 feet.

In lieu of these two possible sources, a collection system could be established in the vicinity of the Silver Mine and the water piped to the property and, if this failed, as a last resort, a well could be put down either in Randolph, Fraser, or Hewitt canyons and pumped up to the property.

SUMMARY AND CONCLUSIONS

From the results of the assaying and the nature of the occurrence, any ore from this property would definitely require milling. Sufficient tonnage and grade to support a reasonable milling operation appear to be only possible - not probable. Water for at least a small operation probably could be developed. Milling difficulty with the zinc is possible, but this could only be appraised by mill testing a large representative sample of the ore.

If consistent assays of about 12% combined base metal content could be maintained, then the problem would resolve itself into, mainly, one of developing tonnage. The only way to accomplish this is by additional exploration, development and sampling.

The present workings at the Randolph shaft and Lead Camp would be adequate for starting such a program. If results continued favorable, then surface trenching with a bulldozer or diamond drilling might be in order.

In general, the narrow dipping vein occurrence of the ore would prevent successful application of open cut mining methods to any appreciable depth. A drag line could be used in the preliminary development of near surface ore on the vertical dipping veins and a shovel or dozer would be able to strip a small area at Lead Camp. However, it is doubtful that such work would develop a very great tonnage.

RECOMMENDATIONS

Additional exploration and extensive sampling are recommended before any large investments are made in the property, particularly in any milling equipment, and only if such is assumed under competent supervision and with constant reappraisal of the results as the work progresses.

The following program is offered:

1. Carefully clean out and sample the following workings in the order listed. Sample where the veins are completely exposed over a mineable width and take samples from wall to wall every five or ten feet:

(a) Randolph shaft and laterals.

(b) Lead Camp shaft and laterals.

2. (a) If either of the above shows definitely consistent results, then initiate a program of further lateral development and sampling in an attempt to develop tonnage at the best showing - or both, if warranted.

(b) If neither of the above--1 (a) or 1 (b)--gives good results, then either additional lateral sampling might be done or the project should be abandoned.

3. (a) If 2 (a) is successful, continue until results show negative or until a reasonable tonnage is proven - say, 50,000 tons. Have mill test run on ore.

GEOLOGY

In general, the mineralization is rather weak and unspectacular and, although the structural breaks are very persistent, one suspects that there is probably considerable variation in mineralization, both laterally and vertically. All the veins observed were along steeply west-dipping, brecciated fault zones (except at Lead Camp where the vein dips about 30° SE) in a large, granitic mass. The brecciation is persistent along with the faulting but varies greatly in degree of tightness and intensity, which probably correlates with the variation in mineralization. In most cases there is a fair amount of both hanging and foot wall gouge. The veins average 5' in width but vary from a 30' maximum to a zero minimum.

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Sample #1

Randolph Shaft

60' ± Level

6' across back of South drift from wall to wall near shaft. At what would be about a shaft station where east & west takes off.

Sample #2

Randolph Shaft

60' ± Level

6' across back of

North Drift

from wall to wall

at shaft

Sample #3

Oxidized ore 25' from surface.

6' across vein

included about 1' of

hanging & one foot

of foot wall

taken in open cut

25' N of Randolph

Shaft.

true vein width

about 3'-4'

Sample #4

#7 Shaft 4' off bottom

North face - 50" in

from W. gouge seam to granite

on E.W. east.

Sample #5

at 75' in #7 Shaft

1½ feet across vein

from W gouge to granite

on N side of shaft.

Sample #6

Cal - 5-6' across

vein at Lead Camp

N side shaft at first

short N. drift at about

30' down on down dip side.

Sample #4
#7 Shaft 4' off bottom
North face - 50" in
from W. gouge seam to granite
on E.W. east.

Sample #5
at 75' in #7 Shaft
1½ feet across vein
from W gouge to granite
on N Side of shaft.

Sample #6
Cut - 5-6' across
vein at face of
N Side shaft at first
short N. drift at about
30' down on down dip side.

E. A. JACOBS, SR.
Phone 130-R
30 So. Main

JACOBS ASSAY OFFICE

REGISTERED ASSAYERS

BEN P. JACOBS
Phone 1064-W
P. O. Box 1889

Certificate No. 48698 Tucson, Arizona, May 16th, 1961

Sample Submitted by Mr. Odgen Construction Co

SERIAL	SAMPLE MARKED	GOLD Ozs. per ton ore	GOLD Value per ton ore *	SILVER Ozs. per ton ore	COPPER Per cent Wet Assay	LEAD Per cent Wet Assay	Zinc Per cent Wet Assay
			$				
128908	#1 ±6' channel across	Traces		0 3/10	0.23	2.75	9.82
909	2 "	0.005	0.17	0 6/10	0.07	2.00	7.14
910	3 8' channel near surface	0.005	0.17	0 5/10	0.12	5.35	2.75

* Gold Figured $35.00 per oz. Troy

Charges $16.50 Paid

Very respectfully,

Ben P. Jacobs

E. A. JACOBS, SR.
Phone 130-R
30 So. Main

JACOBS ASSAY OFFICE

REGISTERED ASSAYERS

BEN P. JACOBS
Phone 1064-W
P. O. Box 1889

Certificate No. 48723 Tucson, Arizona, May 25th, 1951

Sample Submitted by Mr. Odgen Construction Co - mail W E Heinrichs

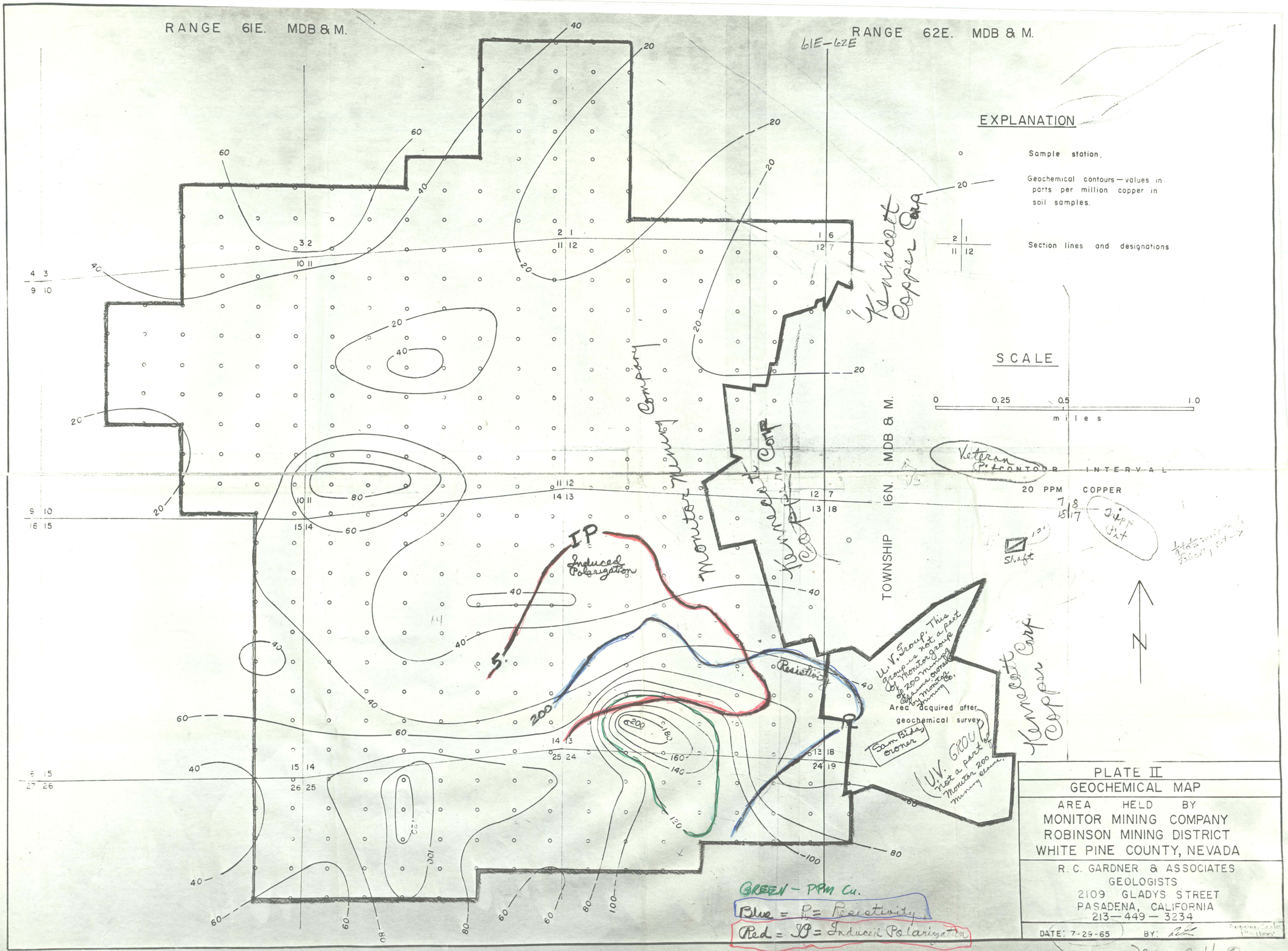
SERIAL	SAMPLE MARKED	GOLD Ozs. per ton ore	GOLD Value per ton ore *	SILVER Ozs. per ton ore	COPPER Per cent Wet Assay	LEAD Per cent Wet Assay	Zinc Per cent Wet Assay
128959	#4	0.04	$ 1.40	0.3/10	0.19	2.3/10	1.8/10
60	5	0.02	0.70	0.3/10	0.54	1.2/10	1.3/10
61	6	0.10	3.50	0.7/10	0.06	11.5/10	2.4/10
62	7	0.21	7.35	1.0/10	Trace	11.7/10	1.1/10
63	8	0.03	1.05	0.7/10	Trace	4.6/10	0.7/10

* Gold Figured $ 35.00 per oz. Troy

Charges $ 27.50 Paid

Very respectfully,

Ben P. Jacobs


RANGE 61E. MDB & M.
RANGE 62E. MDB & M.
61E–62E
EXPLANATION
Sample station.
Geochemical contours — values in parts per million copper in soil samples.
Section lines and designations
SCALE
0 0.25 0.5 1.0
miles
CONTOUR INTERVAL
20 PPM COPPER
TOWNSHIP 16N. MDB & M.
Kennecott Copper Corp
Monitor Mining Company
Veteran Pit
Shaft
IP
Induced Polarization
Resistivity
U.V. Group. This group is not a part of Monitor group of 200 mining claims owned by Monitor Co. Mining
Area acquired after geochemical survey
Sam Bida, owner
U.V. GROUP not a part of Monitor 200 mining claims
GREEN – PPM Cu.
Blue = R = Resistivity
Red = IP = Induced Polarization
PLATE II
GEOCHEMICAL MAP
AREA HELD BY
MONITOR MINING COMPANY
ROBINSON MINING DISTRICT
WHITE PINE COUNTY, NEVADA
R. C. GARDNER & ASSOCIATES
GEOLOGISTS
2109 GLADYS STREET
PASADENA, CALIFORNIA
213—449—3234
DATE: 7-29-65
BY:

224½

224½

FIGURE 3

DIAGRAMATIC DRAWING SHOWING AGE RELATIONSHIPS

OF THE

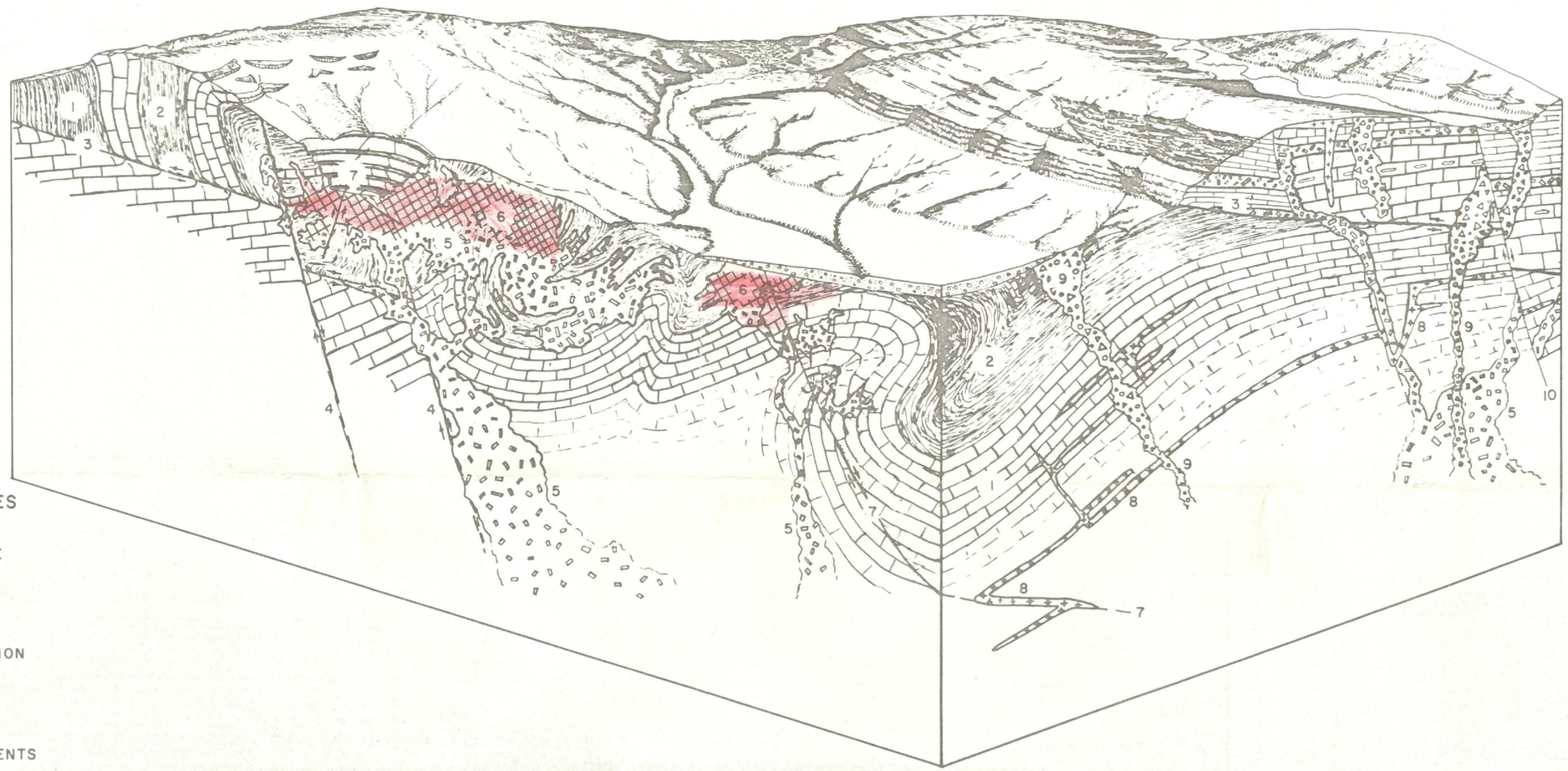
MAIN GEOLOGIC FEATURES

IN THE

ROBINSON MINING DISTRICT

EXPLANATION

- FAULTS
- GRAVELS
- EXPLOSION RUBBLE
- VOLCANICS
- MONZONITE
- SHALE
- LIMESTONE



SEQUENCE OF FEATURES

Younger

10 FAULTING
9 EXPLOSION RUBBLE
8 VOLCANICS
7 FAULTING
6 MINERALIZATION
5 IGNEOUS INTRUSION
4 STEEP FAULTS
3 THRUSTS
2 FOLDS
1 PALEOZOIC SEDIMENTS

MAY 1960
GEOLOGY DEPARTMENT
NEVADA MINES DIVISION
KENNECOTT COPPER CORP.

Resistivity

R.61 E. R.62 E.

T. 16 N.

N

LINE 1

LINE 3

Common TIE LINE

0570 0740 0610 0630 0670 500 0540 0400 0330 0415 0520 0455 0470 0300 0430 0380 0335 0330 0310 400 500 0325 0320 0340 300 0360 244 206 184 164 172 170 200 220 200

3	2	1	6
10	11	12	7
15	14	13	18
23	24	19	
26	25	30	

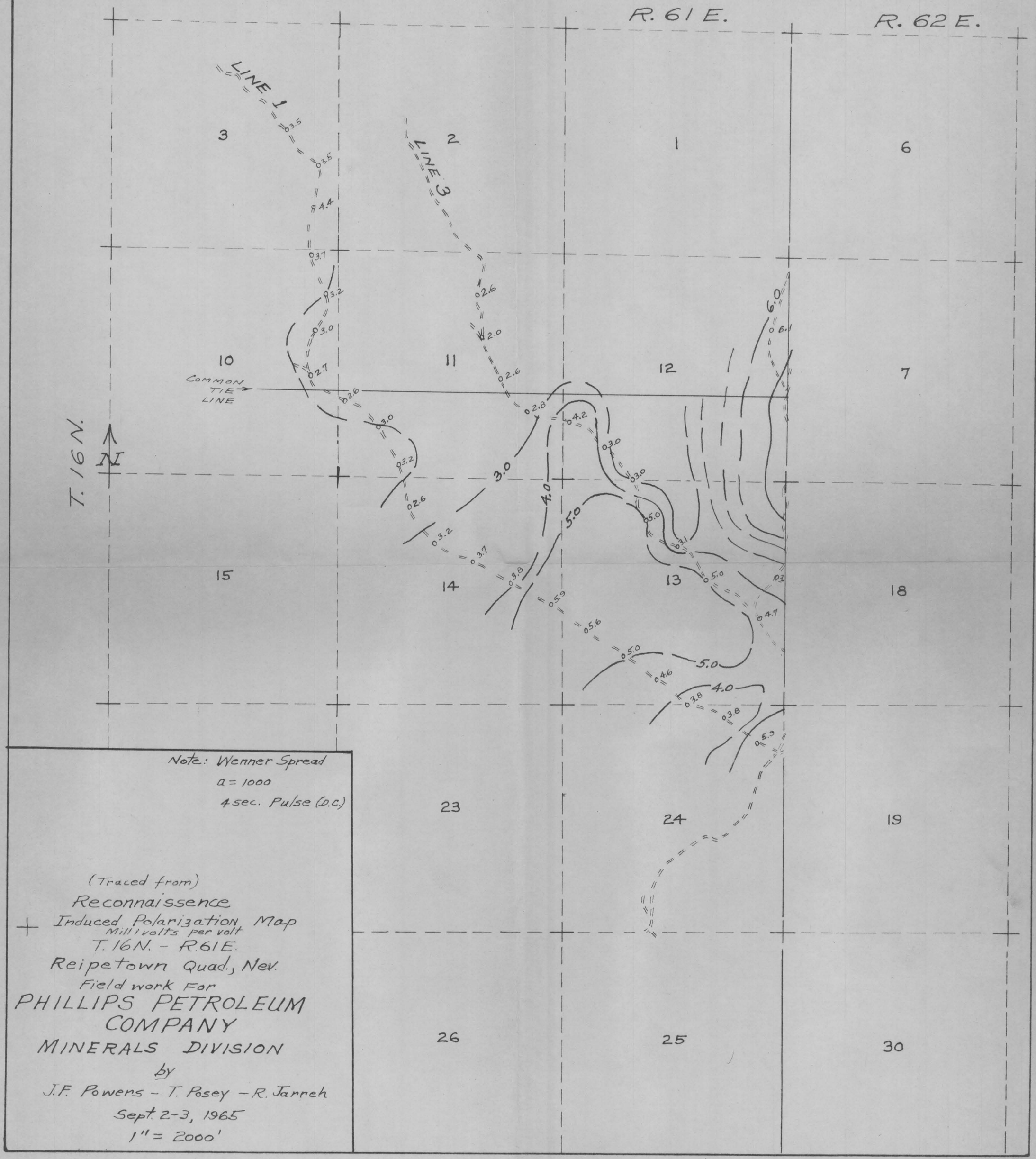
Note: Wenner Spread used where a = 1000'

4 sec Pulse DC

(Traced From)
Reconnaissance
Apparent Resistivity Map
Ohm Feet
T. 16 N. - R. 61 E.
Reipetown Quad., Nev.
Field work For
PHILLIPS PETROLEUM COMPANY
MINERALS DIVISION
by
J.F. Powers - T. Posey - R. Jarrett
Sept. 2-3, 1965
1" = 2000'

Resistivity

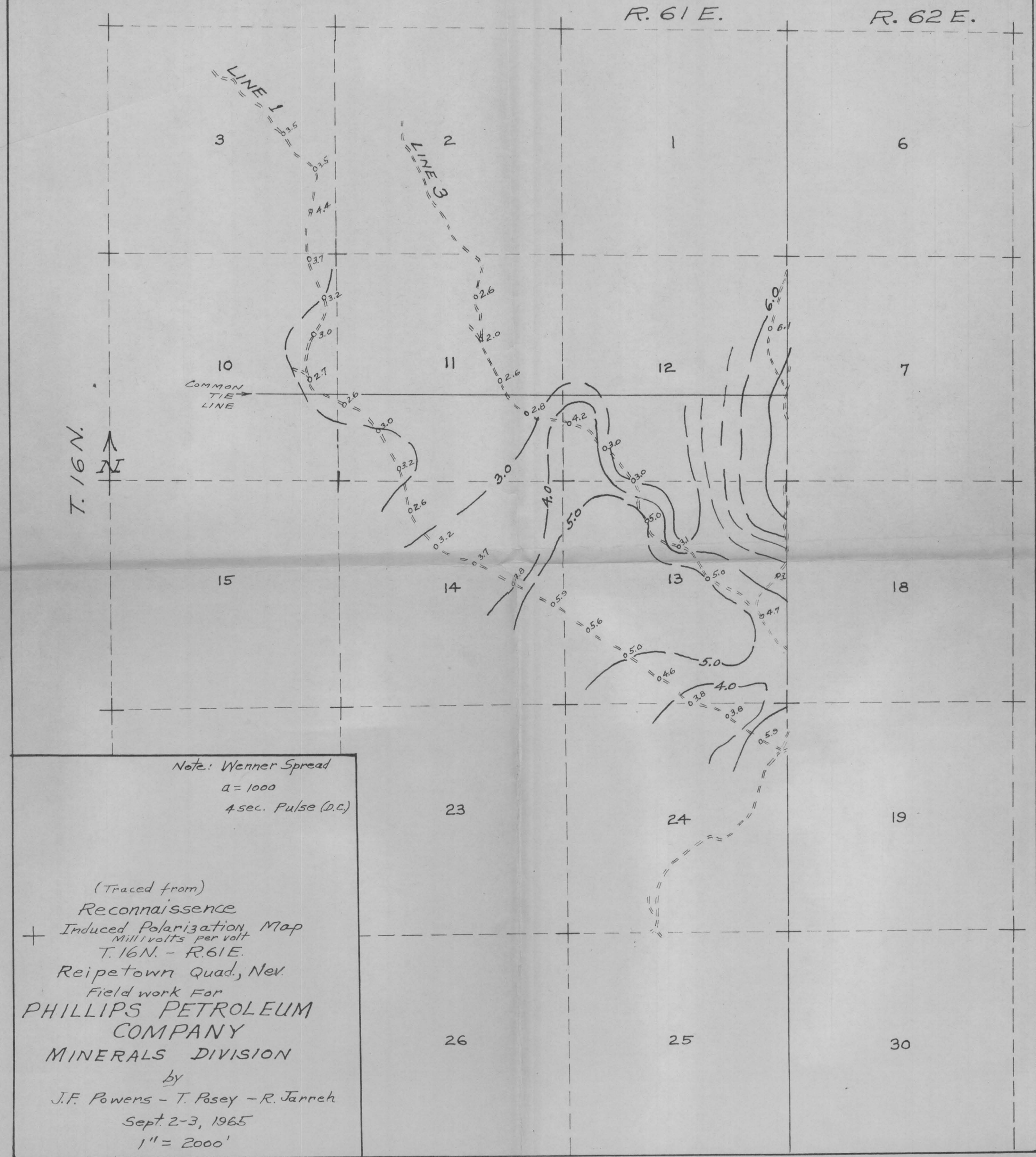
I. P.



Note: Wenner Spread
a = 1000
4 sec. Pulse (D.C.)

(Traced from)
Reconnaissence
Induced Polarization Map
Millivolts per volt
T. 16N. - R. 61E.
Reipetown Quad., Nev.
Field work For
PHILLIPS PETROLEUM COMPANY
MINERALS DIVISION
by
J.F. Powers - T. Posey - R. Jarreh
Sept. 2-3, 1965
1" = 2000'

J. P.


R. 61 E.
R. 62 E.
T. 16 N.
N
LINE 1
LINE 3
COMMON TIE LINE
3
2
1
6
10
11
12
7
15
14
13
18
23
24
19
26
25
30
3.0
4.0
5.0
6.0
Note: Wenner Spread
a = 1000
4 sec. Pulse (D.C.)
(Traced from)
Reconnaissence
Induced Polarization Map
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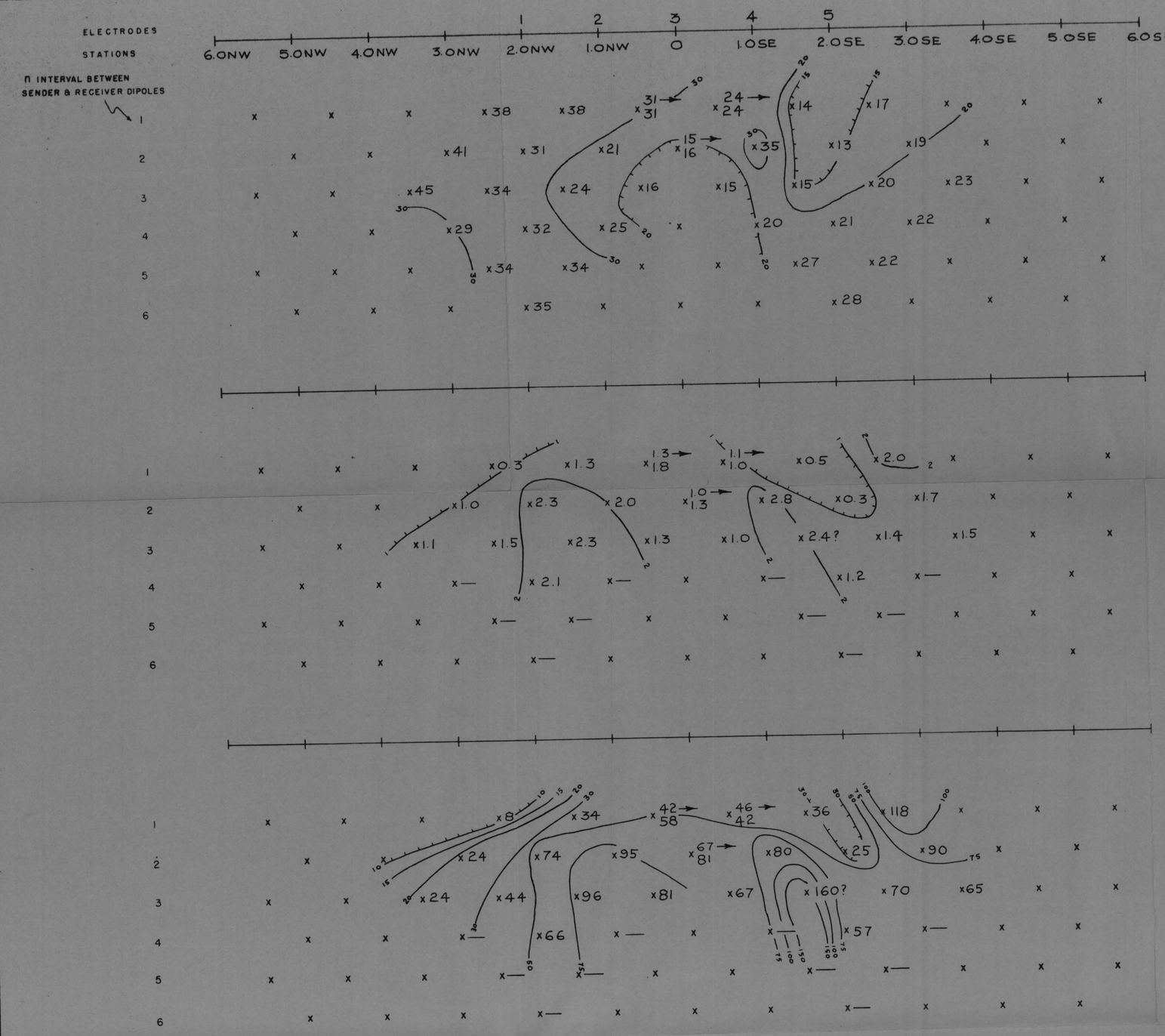


APPARENT RESISTIVITY (ρ_{DC}) IN UNITS OF OHM FEET

CONTOUR INTERVAL LOGARITHMIC
SENDER FREQUENCY: 0.05 C.P.S.

PERCENT FREQUENCY EFFECT (PFE)
CONTOUR INTERVAL CONSTANT
SENDER FREQUENCIES: 0.05 & 3.0 C.P.S.

APPARENT "METALLIC CONDUCTION" FACTOR (MCF)

$$(MCF = \frac{PFE \times 1000}{\rho_{DC}})$$

CONTOUR INTERVAL LOGARITHMIC

EXPLANATION

ELECTRODE ARRAY: 1000' — n x 1000' — 1000'
SENDER DIPOLE — RECEIVER DIPOLE

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

LOOKING N 31° E

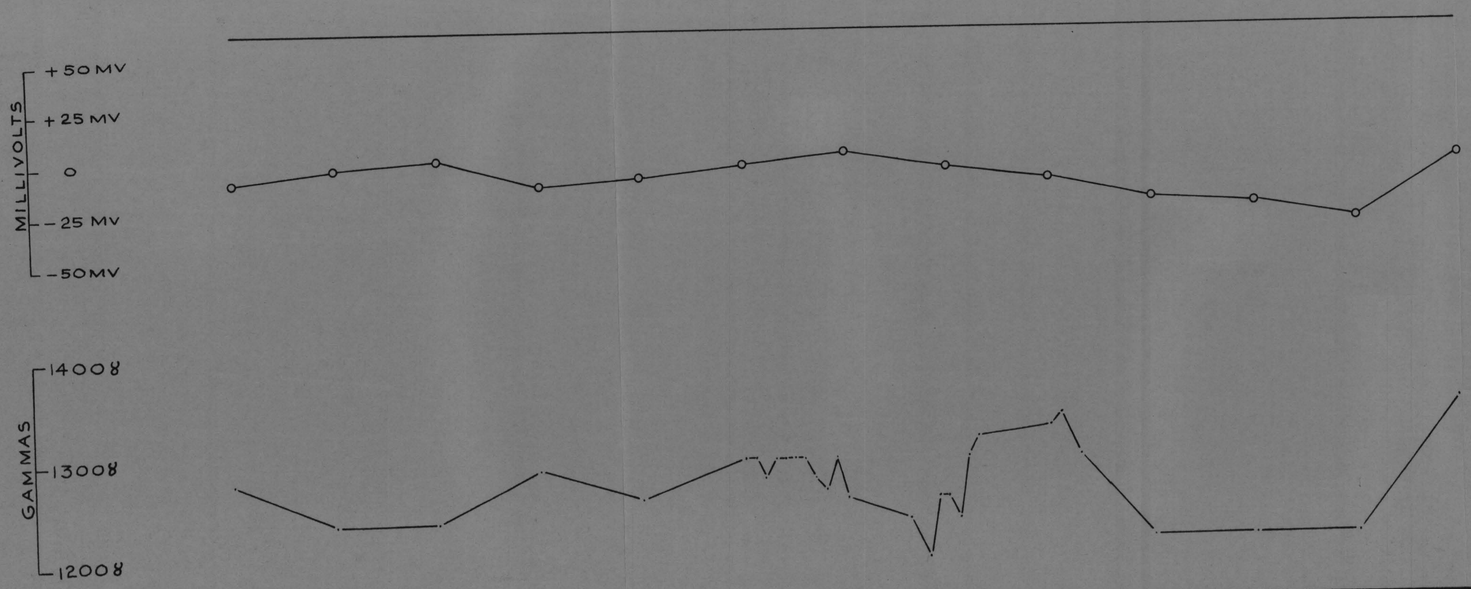
SECTIONAL DATA SHEET
LINE NO. 1
INDUCED POLARIZATION TRAVERSE

HEINRICHS GEOEXPLORATION COMPANY

SCALE: 1" = 1000' DATE: NOV. 1965

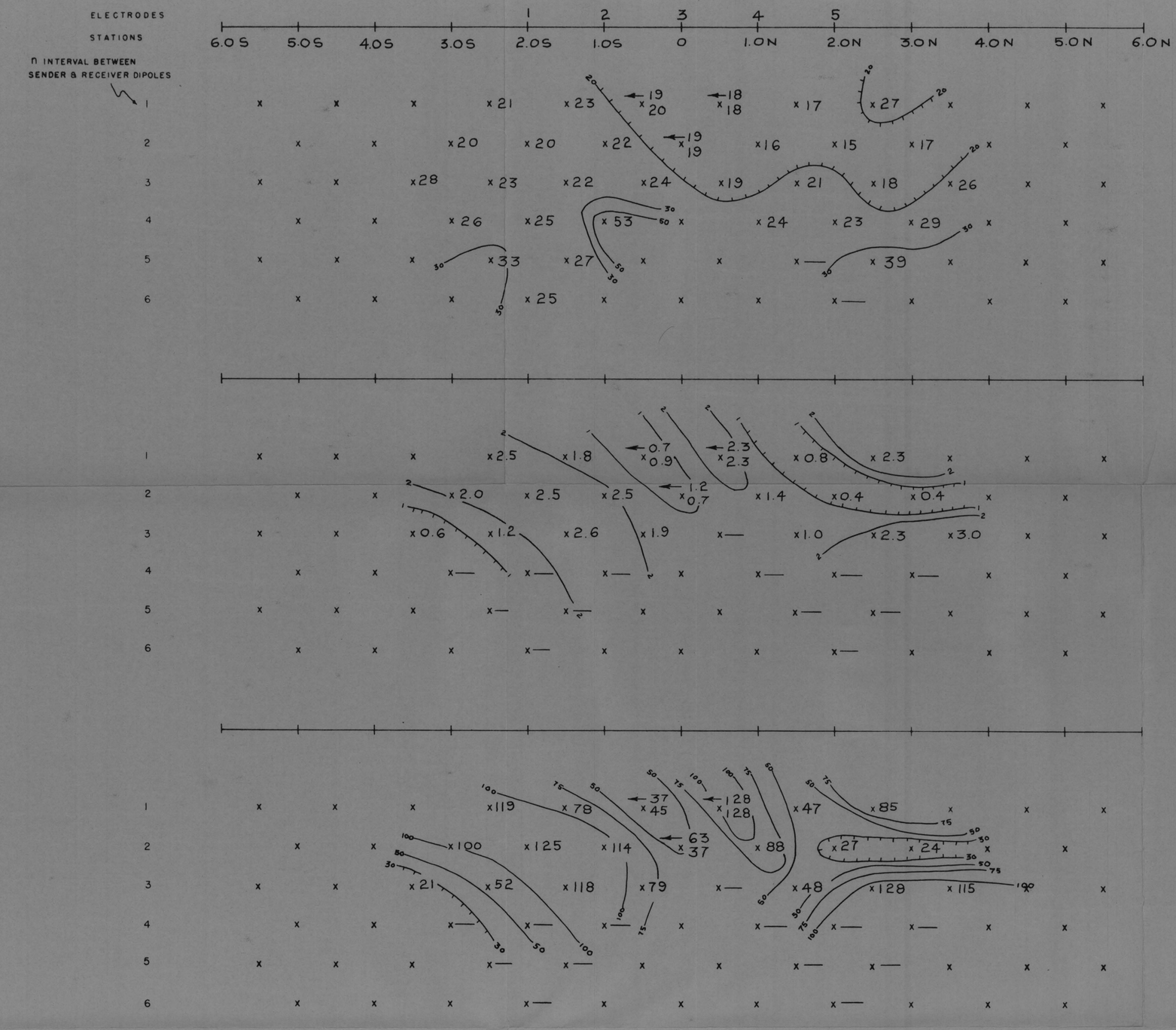
FOR

SISKON CORPORATION
WHITE PINE COUNTY, NEVADA



SELF POTENTIAL

MAGNETIC PROFILE



APPARENT RESISTIVITY (ρ_{DC}) IN UNITS OF OHM FEET 2π

CONTOUR INTERVAL LOGARITHMIC
SENDER FREQUENCY: 0.05 c.p.s.

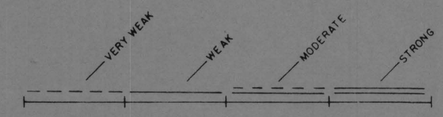
PERCENT FREQUENCY EFFECT (PFE)
CONTOUR INTERVAL CONSTANT
SENDER FREQUENCIES: 0.05 & 3.0 c.p.s

APPARENT "METALLIC CONDUCTION" FACTOR (MCF)
$\left(MCF = \frac{PFE \times 1000}{\rho_{DC}/2\pi}\right)$
CONTOUR INTERVAL LOGARITHMIC

EXPLANATION

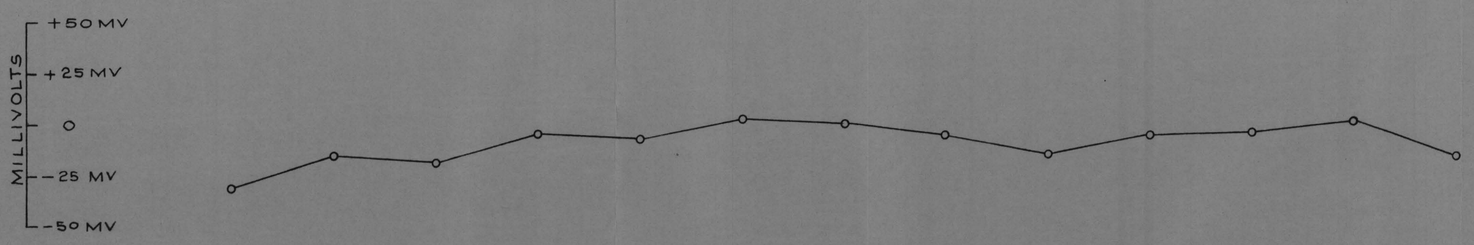
ELECTRODE ARRAY: 1000' — n x 1000' — 1000'
SENDER DIPOLE — RECEIVER DIPOLE

RELATIVE ANOMALY STRENGTH



LOOKING WEST

SELF POTENTIAL



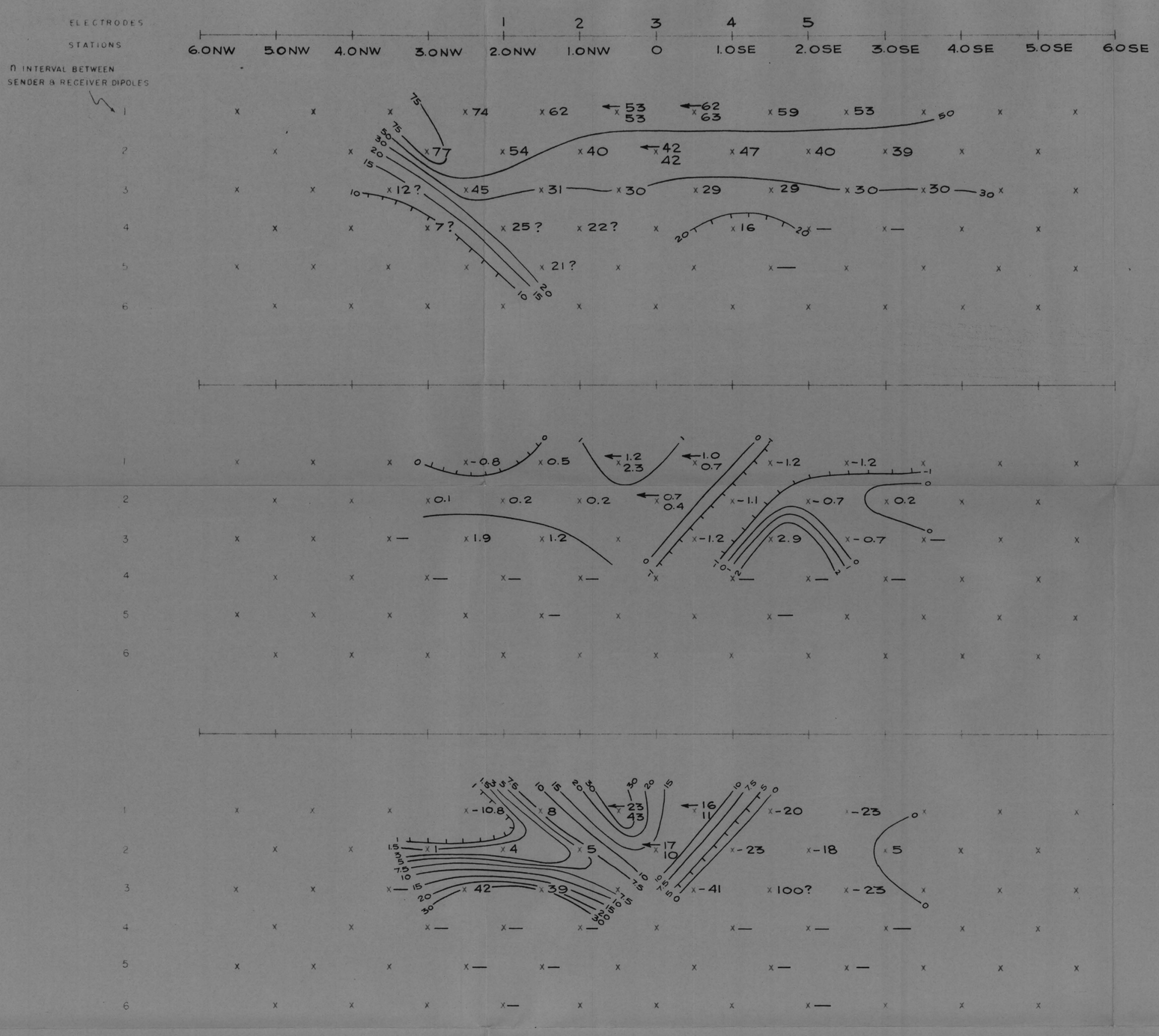
SECTIONAL DATA SHEET
LINE NO. 2
INDUCED POLARIZATION TRAVERSE

HEINRICHS GEOEXPLORATION COMPANY

SCALE: 1" = 1000' DATE: NOV. 1965

FOR

SISKON CORPORATION
WHITE PINE COUNTY, NEVADA



APPARENT RESISTIVITY (ρ_{DC}) IN UNITS OF OHM-FEET

CONTOUR INTERVAL LOGARITHMIC
SENDER FREQUENCY: 0.05 C.P.S.

EXPLANATION

ELECTRODE ARRAY: 1000' (V) — n x 1000' — 1000' (V)
SENDER DIPOLE — RECEIVER DIPOLE

RELATIVE ANOMALY STRENGTH

VERY WEAK — WEAK — MODERATE — STRONG

LOOKING N 31° E

PERCENT FREQUENCY EFFECT (PFE)
CONTOUR INTERVAL CONSTANT
SENDER FREQUENCIES: 0.05 & 3.0 CPS

APPARENT "METALLIC CONDUCTION" FACTOR (MCF)
$\left(MCF = \frac{PFE \times 1000}{\rho_{DC}}\right)$
CONTOUR INTERVAL LOGARITHMIC

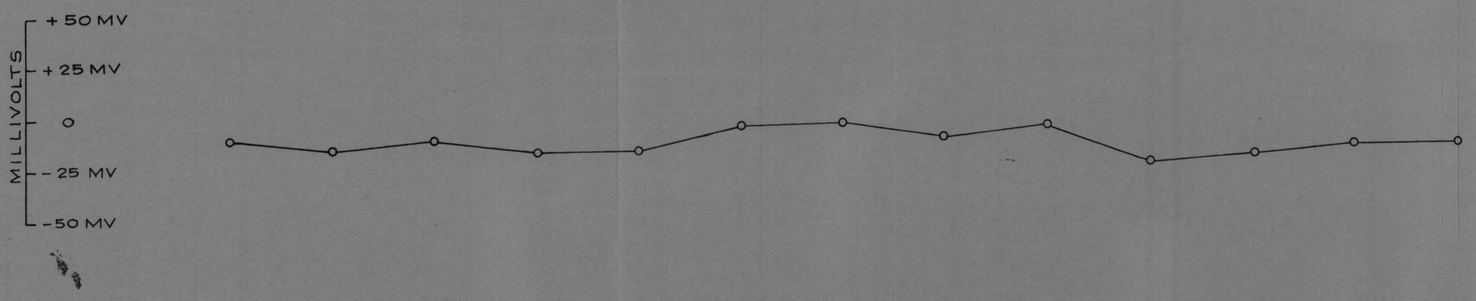
SECTIONAL DATA SHEET
LINE NO. 3
INDUCED POLARIZATION TRAVERSE

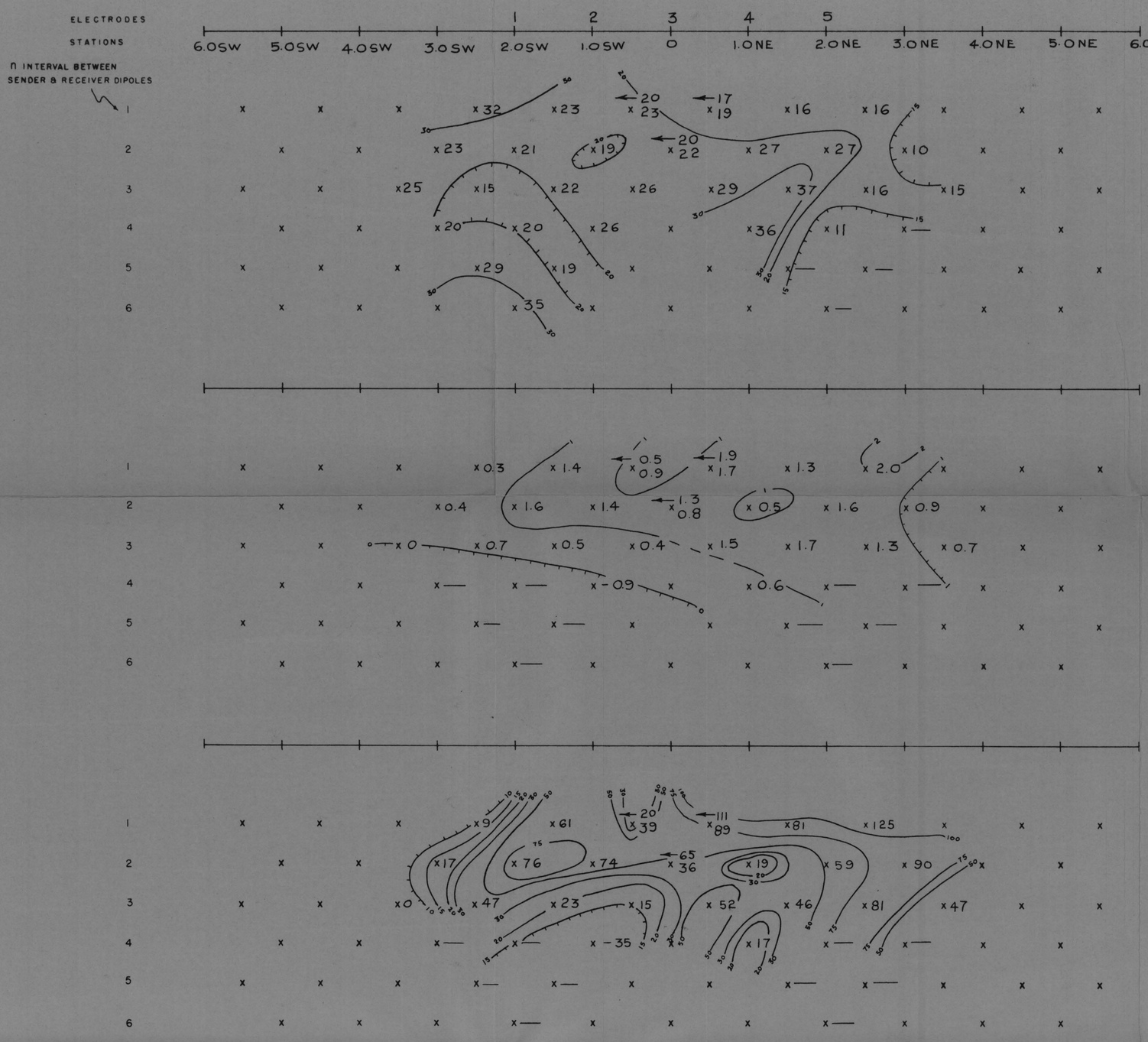
HEINRICHS GEOEXPLORATION COMPANY
SCALE: 1" = 1000' DATE: NOV. 1965

FOR

SISKON CORPORATION
WHITE PINE COUNTY, NEVADA

SELF POTENTIAL





APPARENT RESISTIVITY (ρ_{DC}) IN UNITS OF OHM FEET

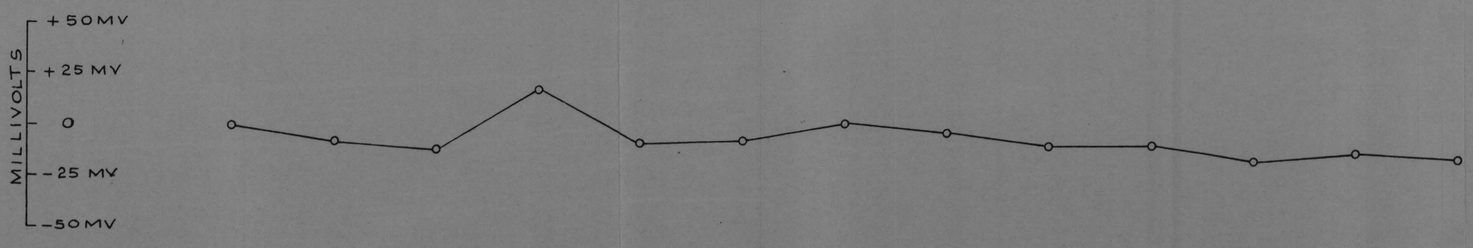
CONTOUR INTERVAL LOGARITHMIC
SENDER FREQUENCY: 0.05 c.p.s.

PERCENT FREQUENCY EFFECT (PFE)
CONTOUR INTERVAL CONSTANT
SENDER FREQUENCIES: 0.05 & 3.0 c.p.s

APPARENT "METALLIC CONDUCTION" FACTOR (MCF)

$$(MCF = \frac{PFE \times 1000}{\rho_{DC} 2\pi})$$

CONTOUR INTERVAL LOGARITHMIC

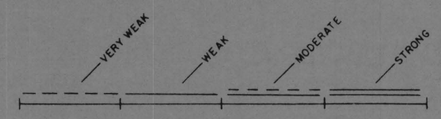


SELF POTENTIAL

EXPLANATION

ELECTRODE ARRAY: 1000' — n x 1000' — 1000'
SENDER DIPOLE — RECEIVER DIPOLE

RELATIVE ANOMALY STRENGTH



LOOKING N 59° W

SECTIONAL DATA SHEET
LINE NO. 4
INDUCED POLARIZATION TRAVERSE

HEINRICHS GEOEXPLORATION COMPANY

SCALE: 1" = 1000' DATE: NOV. 1965

FOR

SISKON CORPORATION
WHITE PINE COUNTY, NEVADA

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

ARIZONA
FLORENCE QUADRANGLE

(Ft. McDowell) 63500

111°30' 20' (Roosevelt) 10' 111°00'

33°30'

MARICOPA CO.
PINAL CO.

Goldfield

Willow Springs Cr.

Boulder Canyon

La Barge Canyon

West Boulder Canyon

East Boulder Canyon

Needle Canyon

Weavers Needle

SUPERSTITION MOUNTAINS

NATIONAL FOREST

TONTO BOUNDARY LINE

Tortilla Ranch

Tortilla Mt.

Tortilla Creek

Fish Creek

Rogers Canyon

Fraser's Ranch

Pine Creek

Campaign Creek

Beeris Cr.

B.M. 6075

Iron Mt.

Rogers Troughs

B.M. 5965

Red Tank Canyon

Randolph Canyon

Fraser Canyon

Spencer Spring Creek

West Fork

Rock Creek

Pinto Creek

Horrell Cr.

Gila Co.

Roons Ranch

Gila Creek

Boundary Line

Powers Gulch

B.M. 3300

B.M. 6445

Haunted Canyon

Wood Creek

Reeis Trail Canyon

Wood Canyon

Camp Canyon

Banks Ranch

BASE LINE

Milk Ranch Cr.

Whitlow Canyon

Mills Trail

Black Point

Whitlow Ranch

Queen Creek Reservoir Site

Hewitts Ranch

Comet Peak

Whitford Canyon

Queen Creek

Queen Creek Canyon

Apache Leap

Oak Flat

Devils Canyon

Signal Mt.

Pump Station

Whitford's Ranch

Kings Crown Peak

Silver King

B.M. 3023

B.M. 2361

B.M. 2331

B.M. 2406 Nicholas Ranch

Pinal

SUPERIOR

Picketpost Mt. B.M. 2682

Arnett Canyon

Arnett Ranch

B.M. 2953

B.M. 1965

B.M. 2361

Teapot Mt.

Walnut Spring

B.M. 2631

Copper Canyon

Granite Mt.

Mineral Mt. 2350

SILVER BELL MINE

Box Canyon

Martinez

Smithe Ranch

Walnut Canyon

The Spine

Cottonwood Canyon

Watertank

Dromedary Peak

Reynbert

B.M. 2062

B.M. 1926

B.M. 2321

B.M. 2003

B.M. 1841

B.M. 1845

B.M. 1725

B.M. 1646

B.M. 1595

B.M. 1619

B.M. 1631

B.M. 1618

B.M. 1710

B.M. 1832

B.M. 1923

B.M. 1863

B.M. 2055

B.M. 2236

B.M. 1694

Webster

T. 2 S.

T. 3 S.

T. 4 S.

T. 5 S.

(Desert Well 63500)

(Globe 63500)

(Ray 63500)

(Saxton 63500)

(Signal Peak) 63500

Posten Butte

Florence Sta.

GILA RIVER

Bradys Ranch

FLORENCE

CASA GRANDE VALLEY CANAL

ARIZONA EASTERN

Price

B.M. 1574

Battle Reservoir Site

Stone House

North Butte 2960

South Butte 2815

Cochran

GILA RIVER

Grayback 3558

B.M. 2350

Ripsey Wash

B.M. 3081

Whites Well

B.M. 2625

Donnelly Wash

Donnellys Ranch

B.M. 2280

Big Wash

B.M. 2097

B.M. 1929

B.M. 1769

B.M. 1535

B.M. 1531

B.M. 1493

B.M. 1441 Adamsville

Beasly's Ranch B.M. 1421

R. 8 E. R. 9 E. 20' R. 10 E. R. 11 E. 10'

33°00' 111°30' 33°00' 111°00'

E. M. Douglas, Geographer in charge.
Triangulation by A.H. Thompson.
Topography by T. M. Bannon and W.J. Lloyd.
Surveyed in 1900.

Bannon Lloyd Lloyd

Scale 1/125000

1 0 1 2 3 4 5 6 7 8 9 Miles

3000 1500 0 3000 6000 9000 12000 Yards

5000 0 5000 10000 15000 20000 25000 Feet

1 0 1 2 3 4 5 6 Kilometers

Contour interval 100 feet

Datum is mean sea level

Edition of Mar. 1902, reprinted 1946
Polyconic projection

RANDOLPH GROUP

FLORENCE, ARIZ.
N3300-W11100/30

5 of 5
10 of Twin Buttes Quad

THE TOPOGRAPHIC MAPS OF THE UNITED STATES

The United States Geological Survey is making a series of standard topographic maps to cover the United States. This work has been in progress since 1882, and the published maps cover more than 47 percent of the country, exclusive of outlying possessions.

The maps are published on sheets that measure about 16½ by 20 inches. Under the general plan adopted the country is divided into quadrangles bounded by parallels of latitude and meridians of longitude. These quadrangles are mapped on different scales, the scale selected for each map being that which is best adapted to general use in the development of the country, and consequently, though the standard maps are of nearly uniform size, the areas that they represent are of different sizes. On the lower margin of each map are printed graphic scales showing distances in feet, meters, miles, and kilometers. In addition, the scale of the map is shown by a fraction expressing a fixed ratio between linear measurements on the map and corresponding distances on the ground. For example, the scale $\frac{1}{62,500}$ means that 1 unit on the map (such as 1 inch, 1 foot, or 1 meter) represents 62,500 of the same units on the earth's surface.

Although some areas are surveyed and some maps are compiled and published on special scales for special purposes, the standard topographic surveys and the resulting maps have for many years been of three types, differentiated as follows:

1. Surveys of areas in which there are problems of great public importance—relating, for example, to mineral development, irrigation, or reclamation of swamp areas—are made with sufficient detail to be used in the publication of maps on a scale of $\frac{1}{31,680}$ (1 inch = one-half mile) or $\frac{1}{24,000}$ (1 inch = 2,000 feet), with a contour interval of 1 to 100 feet, according to the relief of the particular area mapped.

2. Surveys of areas in which there are problems of average public importance, such as most of the basin of the Mississippi and its tributaries, are made with sufficient detail to be used in the publication of maps on a scale of $\frac{1}{62,500}$ (1 inch = nearly 1 mile), with a contour interval of 10 to 100 feet.

3. Surveys of areas in which the problems are of minor public importance, such as much of the mountain or desert region of Arizona or New Mexico, and the high mountain area of the northwest, are made with sufficient detail to be used in the publication of maps on a scale of $\frac{1}{125,000}$ (1 inch = nearly 2 miles) or $\frac{1}{250,000}$ (1 inch = nearly 4 miles), with a contour interval of 20 to 250 feet.

The aerial camera is now being used in mapping. From the information recorded on the photographs, planimetric maps, which show only drainage and culture, have been made for some areas in the United States. By the use of stereoscopic plotting apparatus, aerial photographs are utilized also in the making of the regular topographic maps, which show relief as well as drainage and culture.

A topographic survey of Alaska has been in progress since 1898, and nearly 44 percent of its area has now been mapped. About 15 percent of the Territory has been covered by maps on a scale of $\frac{1}{500,000}$ (1 inch = nearly 8 miles). For most of the remainder of the area surveyed the maps published are on a scale of $\frac{1}{250,000}$ (1 inch = nearly 4 miles). For some areas of particular economic importance, covering about 4,300 square miles, the maps published are on a scale of $\frac{1}{62,500}$ (1 inch = nearly 1 mile) or larger. In addition to the area covered by topographic maps, about 11,300 square miles of southeastern Alaska has been covered by planimetric maps on scales of $\frac{1}{125,000}$ and $\frac{1}{250,000}$.

The Hawaiian Islands have been surveyed, and the resulting maps are published on a scale of $\frac{1}{62,500}$.

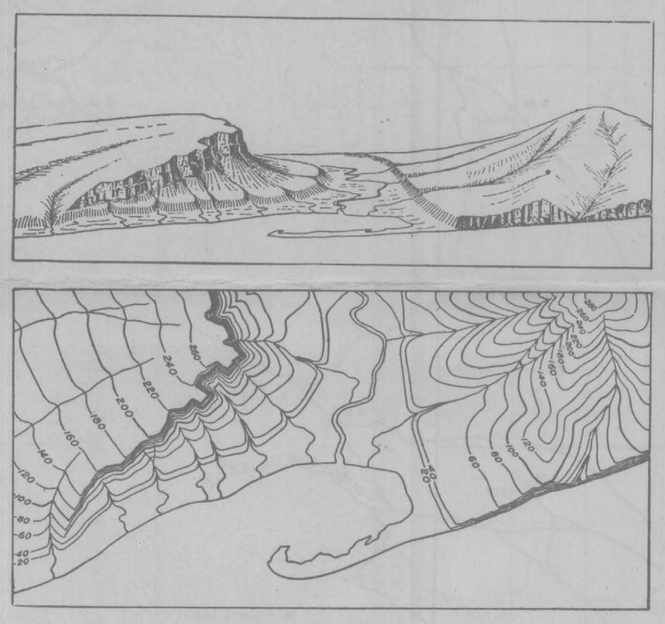
A survey of Puerto Rico is now in progress. The scale of the published maps is $\frac{1}{30,000}$.

The features shown on topographic maps may be arranged in three groups—(1) water, including seas, lakes, rivers, canals, swamps, and other bodies of water; (2) relief, including mountains, hills, valleys, and other features of the land surface; (3) culture (works of man), such as towns, cities, roads, railroads, and boundaries. The symbols used to represent these features are shown and explained below. Variations appear on some earlier maps, and additional features are represented on some special maps.

All the water features are represented in blue, the smaller streams and canals by single blue lines and the larger streams by double lines. The larger streams, lakes, and the sea are accentuated by blue water lining or blue tint. Intermittent streams—those whose beds are dry for a large part of the year—are shown by lines of blue dots and dashes.

Relief is shown by contour lines in brown, which on a few maps are supplemented by shading showing the effect of light thrown from the northwest across the area represented, for the purpose of giving the appearance of relief and thus aiding in the interpretation of the contour lines. A contour line represents an imaginary line on the ground (a contour) every part of which is at the same altitude above sea level. Such a line could be drawn at any altitude, but in practice only the contours at certain regular intervals of altitude are shown. The datum or zero of altitude of the Geological Survey maps is mean sea level. The 20-foot contour would be the shore line if the sea should rise 20 feet above mean sea level. Contour lines show the shape of the hills, mountains, and valleys, as well as their altitude. Successive contour lines that are far apart on the map indicate a gentle slope, lines that are close together indicate a steep slope, and lines that run together indicate a cliff.

The manner in which contour lines express altitude, form, and grade is shown in the figure below.



The sketch represents a river valley that lies between two hills. In the foreground is the sea, with a bay that is partly enclosed by a hooked sand bar. On each side of the valley is a terrace into which small streams have cut narrow gullies. The hill on the right has a rounded summit and gently sloping spurs separated by ravines. The spurs are truncated at their lower ends by a sea cliff. The hill at the left terminates abruptly at the valley in a steep scarp, from which it slopes gradually away and forms an inclined tableland that is traversed by a few shallow gullies. On the map each of these features is represented, directly beneath its position in the sketch, by contour lines.

The contour interval, or the vertical distance in feet between one contour and the next, is stated at the bottom of each map. This interval differs according to the topography of the area mapped: in a flat country it may be as small as 1 foot; in a mountainous region it may be as great as 250 feet. In order that the contours may be read more easily certain contour lines, every fourth or fifth, are made heavier than the others and are accompanied by figures showing altitude. The heights of many points—such as road intersections, summits, surfaces of lakes, and benchmarks—are also given on the map in figures, which show altitudes to the nearest foot only. More precise figures for the altitudes of benchmarks are given in the Geological Survey's bulletins on spirit leveling. The geodetic coordinates of triangulation and transit-traverse stations are also published in bulletins.

Lettering and the works of man are shown in black. Boundaries, such as those of a State, county, city, land grant, township, or reservation, are shown by continuous or broken lines of different kinds and weights. Public roads suitable for motor travel the greater part of the year are shown by solid double lines; poor public roads and private roads by dashed double lines; trails by dashed single lines. Additional public road classification if available is shown by red overprint.

Each quadrangle is designated by the name of a city, town, or prominent natural feature within it, and on the margins of the map are printed the names of adjoining quadrangles of which maps have been published. More than 4,100 quadrangles in the United States have been surveyed, and maps of them similar to the one on the other side of this sheet have been published.

Geologic maps of some of the areas shown on the topographic maps have been published in the form of folios. Each folio includes maps showing the topography, geology, underground structure, and mineral deposits of the area mapped, and several pages of descriptive text. The text explains the maps and describes the topographic and geologic features of the country and its mineral products. Two hundred twenty-five folios have been published.

Index maps of each State and of Alaska and Hawaii showing the areas covered by topographic maps and geologic folios published by the United States Geological Survey may be obtained free. Copies of the standard topographic maps may be obtained for 10 cents each; some special maps are sold at different prices. A discount of 40 percent is allowed on an order amounting to $5 or more at the retail price. The discount is allowed on an order for maps alone, either of one kind or in any assortment, or for maps together with geologic folios. The geologic folios are sold for 25 cents or more each, the price depending on the size of the folio. A circular describing the folios will be sent on request.

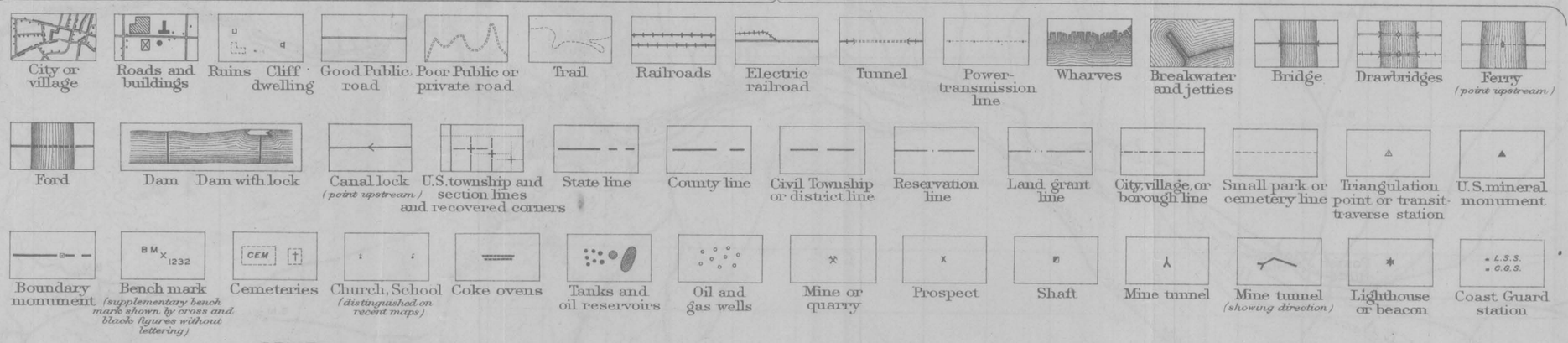
Applications for maps or folios should be accompanied by cash, draft, or money order (not postage stamps) and should be addressed to

THE DIRECTOR,
United States Geological Survey,
Washington, D. C.

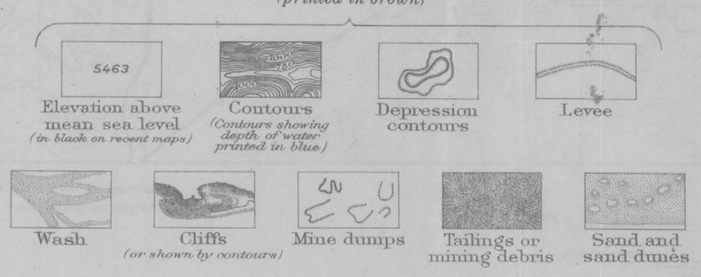
November 1937.

STANDARD SYMBOLS

CULTURE
(printed in black)

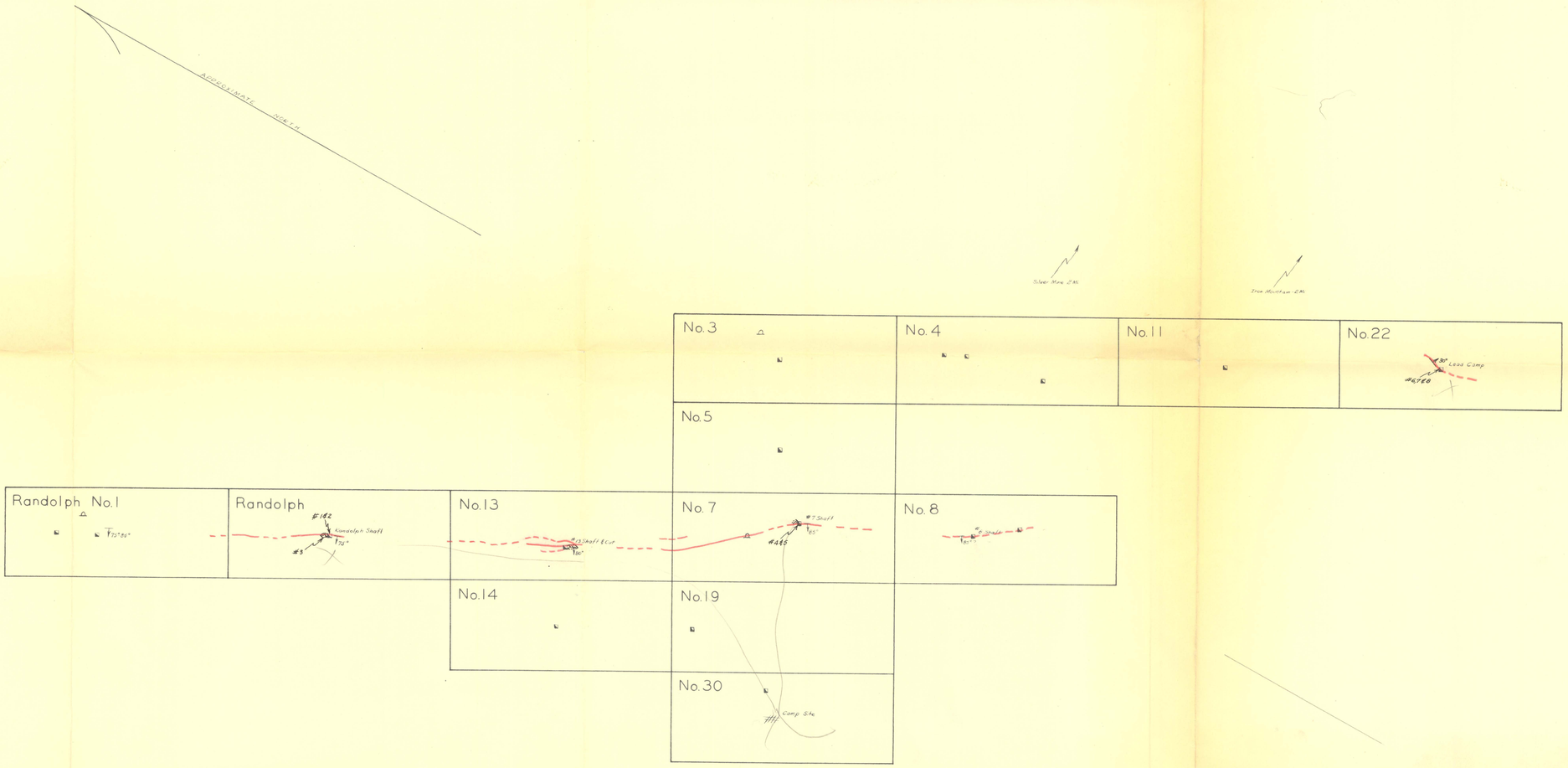


RELIEF
(printed in brown)



WATER
(printed in blue)

WOODS
(when shown, printed in green)



Description

SHAFT
TUNNEL
STRUCTURAL DIP & STRIKE
FRACTURE ZONE
MINERALIZATION
SAMPLE NUMBER

RANDOLPH CLAIMS

Cole Mining District, Pinal County, Arizona

May, 1951

Scale - 1" = 400'

(FROM SKETCH BY C.O. CARLSON)

W. E. Heinrichs Jr.

Approximate North

Silver Mine E.W.

Iron Mountain E.W.

No. 3	No. 4	No. 11	No. 22
No. 5			

Randolph No. 1	Randolph	No. 13	No. 7	No. 8
No. 14		No. 19		
		No. 30		

Camp Site

Description

SHAFT
TUNNEL
STRUCTURAL DIP & STRIKE
FRACTURE ZONE
MINERALIZATION
SAMPLE NUMBER

RANDOLPH CLAIMS

Cole Mining District, Pinal County, Arizona

May, 1951

Scale - 1" = 400'

(From Sketch By: C.O. Carlson)
W.E. Heinrichs, Jr.
Registered Engineer 1951