CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
416 W. Congress St., Suite 100
Tucson, Arizona 85701
520-770-3500
http://www.azgs.az.gov
inquiries@azgs.az.gov

TAB

Geology

DETAILED GEOLOGY OF THE RIPSEY HILL PROSPECT

by

Richard B. Loring
Continental Oil Company
June 1978

DETAILED GEOLOGY OF THE RIPSEY HILL PROSPECT

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DETAILED GEOLOGY OF THE RIPSEY HILL PROSPECT

SUMMARY

The Ripsey Hill property is a porphyry copper prospect located in the central Tortilla Mts. It lies in a zone of intense diking which occurs as part of a larger swarm regionally intruding the Precambrian granites and locally the Paleozoic sediments. The dikes in the central part of the zone are replaced by potassic alteration.

Accompanying this zone of diking is a large swarm of sulfide veins. Geochemical sampling of these veins in and around the prospect indicated a district-wide zonation centered by a Cu-Mo anomaly. Most veins, like the dikes, dip southward but do not seem to be controlled by the dikes.

Regional structure and attitudes of the local Paleozoic section indicate that the rocks underlying the prospect have been rotated in excess of 90^{0}. Within the prospect this rotation has been accompanied by sympathetic rotational or gravity slide faulting.

A porphyry copper target has been postulated on the basis of the rotation and the downward projection of altered dikes and accompanying Cu-Mo veins. The downward projection is limited by the underlying flat faults.

The first core drillhole, D.D.H. RIP-1, confirmed the downward projection of the vein-dike system by encountering well-zoned mineralization through

two structural blocks. Significant Mo values occur in the lower blocks.

An electrical survey which included an extensive downhole I.P. program, defined a large anomaly centered about 2500 feet ENE of D.D.H. RIP-1. This anomaly is well-placed in conjunction with the convergence of the vein-dike swarm and the dip of the system.

RECOMMENDATIONS

The results of D.D.H. RIP-1 and the I.P. anomaly have greatly enhanced the Ripsey Hill prospect. Certainly, further drilling is justified on the basis of the work to date. The following are two high priority recommendations:

1) A core hole needs to be drilled using the surface geology, i.e. convergence and the dip of the vein-dike zone, and the I.P. anomaly as guides. This hole would be located 2500 feet NNE of D.D.H. RIP-1 to explore the westward border zone of the I.P. anomaly where the high copper zone is most likely to exist without further structural offset.

2) The drilling of this hole will necessitate the acquisition of the West Ripsey, Aurora, and Blue Boy claims controlled by Frank Salas, even though the hole is off these claims. This acquisition should proceed with no further delay.

INTRODUCTION

The Ripsey Hill prospect was acquired in September, 1977, by the staking

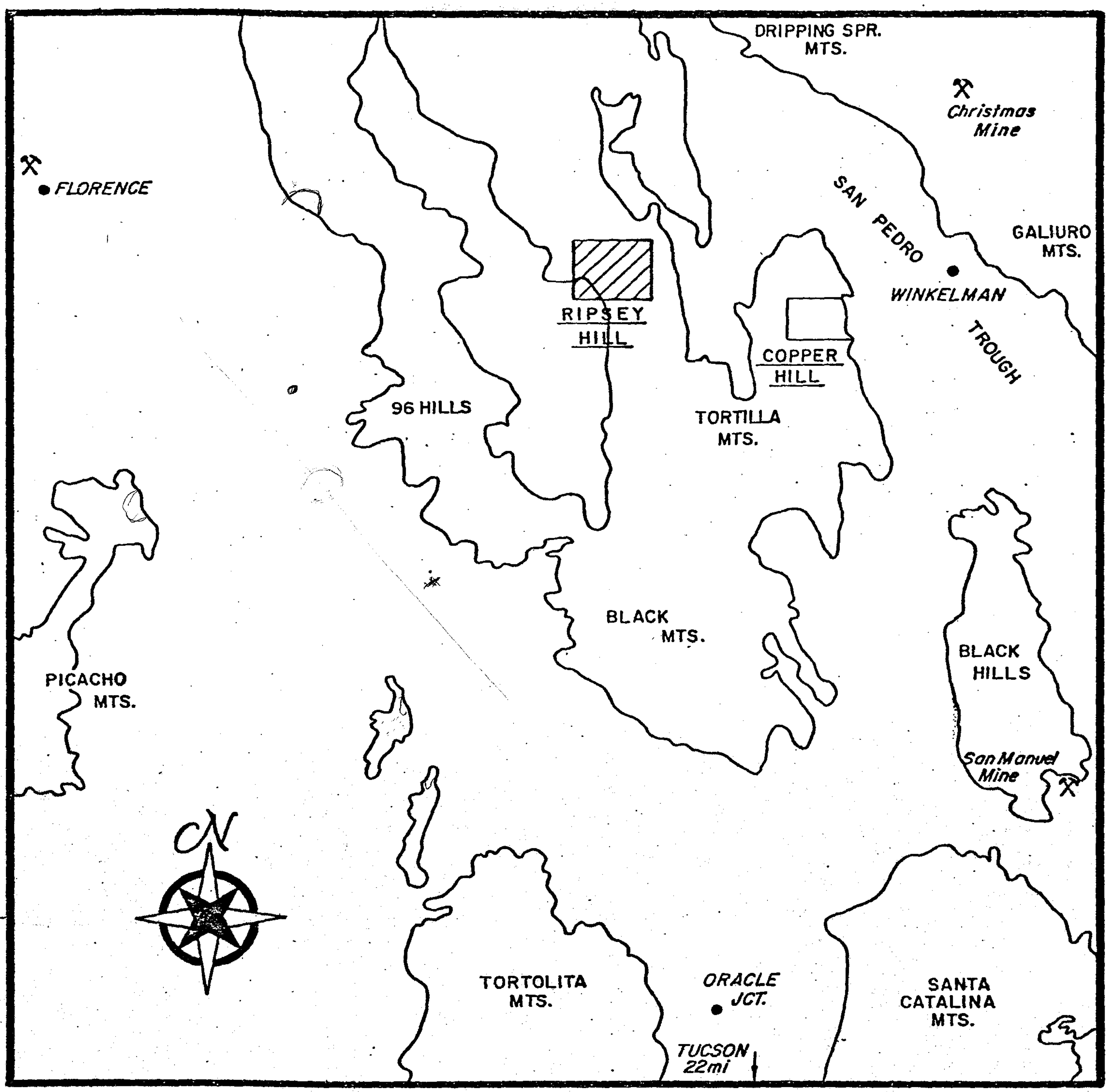
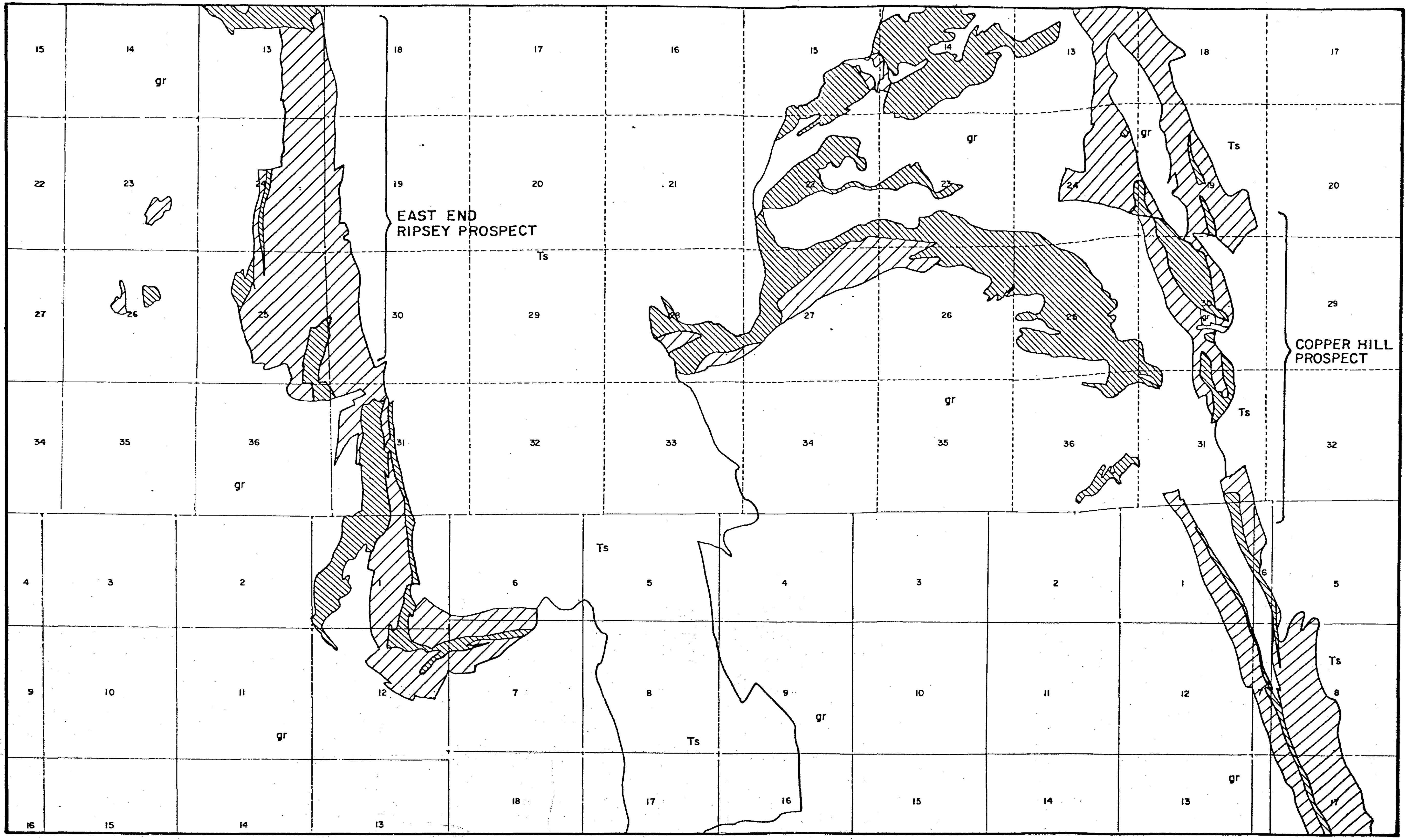


FIGURE 1

LOCATION MAP

Scale: 6 mi. per inch



EXPLANATION

Ts	Tertiary sediments.
(diagonal hatching, fine)	"Laramide" intrusions.
(diagonal hatching, coarse)	Precambrian to Cretaceous sediments and volcanics.
gr	Precambrian crystalline rock.

Taken from map no. D-033-1

CENTRAL TORTILLA MTS.
GENERALIZED
GEOLOGIC MAP

ARIZONA — PINAL — 1" = 4000'

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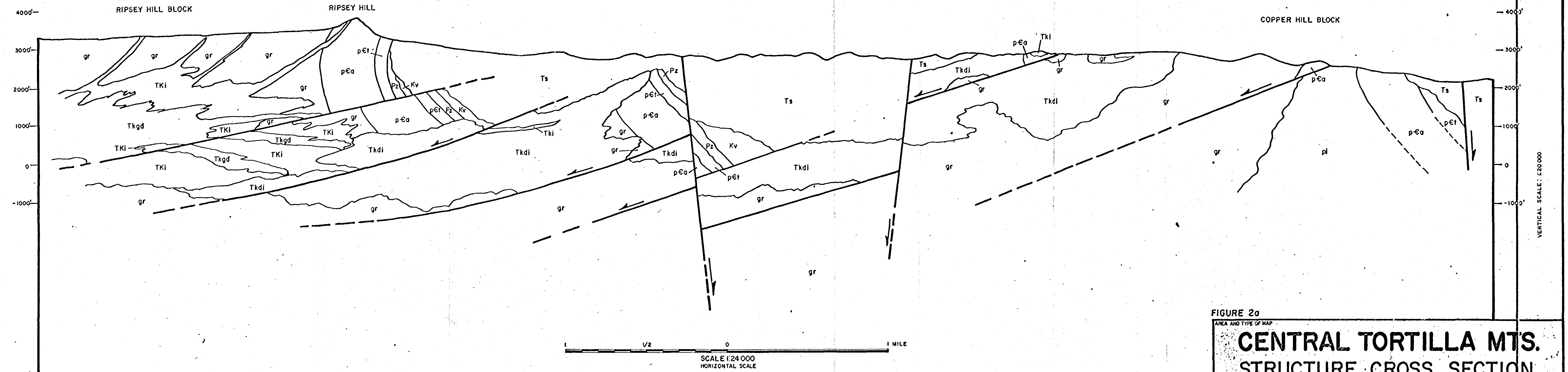
TUCSON, ARIZONA

R. LORING — 8/78

B-033-22



EXPLANATION

TERTIARY	Ts	Tertiary alluvium and other seds. upwarped and folded.	
	Tkd	Dacite	
	Tkgd	Granodiorite	
	Tkdl	Diorite	
CRETACEOUS LARAMIDE	Tki	Latite	
	Tkmr	Rhyodacite	
	Tka	Andesite/diorite	
	TKi	Various intrusive rocks	
CRETACEOUS	Kv	Volcanics	
PALEOZOIC	Pz	Sediments	
PRECAMBRIAN	p€t	Troy quartzite	
	p€a	Apache group sediments	
BASAL PRECAMBRIAN	gr	Oracle "granite"	
	pl	Pinal schist	

FIGURE 2a

AREA AND TYPE OF MAP

CENTRAL TORTILLA MTS.
STRUCTURE CROSS SECTION
RIPSEY HILL AREA

STATE	COUNTY	SCALE	CONTOUR INTERVAL
ARIZONA	PINAL		

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METALLICS DIVISION
TUCSON, ARIZONA

DATA BY	DATE	SIZE	FILE NO.
R. LORING	4/11/1977	11" x 27"	B-033-2
DRAWN BY	DATE 4/11/1977	PROJ. FILE NO.	

of 340 TORT federal mining claims. These claims cover all or parts of 10 sections near the middle of T.13S., R.5E., in Pinal County, Arizona. The property also includes three quarters of one section under a state prospecting permit. The area is located about 25 miles ESE of Florence in the central Tortilla Mts. (figure 1).

The project was initiated following favorable results obtained in a regional structural analysis and geochemical sampling program run in the winter and spring of 1977. This program included outcrop sampling of intrusives and Precambrian basement rocks and the field checking of USGS geologic map coverage (figure 2). Discovery of fracture and vein controlled gossan mineralization and alteration lead to detailed geochemical sampling of the subsequently outlined vein swarm. The resulting zonation developed during this last sampling helped define a hidden target down the dip of the vein system.

GEOLOGY OF RIPSEY HILL

Attached is a detailed geologic map of the TORT claims, the state section held by CONOCO, and adjacent claim blocks to the NE now controlled by Mr. Frank Salas (figure 3). Surrounding the 12 square miles in the center of the map are mile-wide strips covered by less detailed regional mapping done by both CONOCO and the USGS (see references).

Lithology

By far the most wide-spread map unit consists predominantly of Precambrian (1438 m.y.) Ruin granite, usually a medium to coarse-grained potassic intrusive rock with minor plagioclase and biotite content. This rock is affected by weak to moderate propylitization throughout the center of the mapped area with variable amounts of chlorite and minor epidote. A minor portion of this map unit is comprised of aplite which occurs in seemingly random dikes over much of the region. Inclusion of the aplite with this map unit is due to dispersal of aplitic float over the granite.

Unconformably above the granitic basement rocks are various units of the late Precambrian sediments of the Apache group. This unit is comprised mostly of Dripping Springs quartzite with minor amounts of Pioneer shale at the base and Mescal limestone at the top. Just E of the prospect the Apache group is widely dilated by sills of diabase; therefore, unit thicknesses are highly variable. On the prospect various Apache group units occur as isolated, remnant, usually tilted blocks.

East of the prospect the Apache group is overlain by later Precambrian to possibly(?) Cambrian Troy quartzite and Devonian to Mississippian carbonates. These units are in structural continuity with the Apache group and, like it, dip steeply W overturned eastward.

Late Precambrian diabases form large sills in the older sedimentary units and steeply dipping sheets up to 100 feet thick in the Ruin granite. Some of these intrusives can be traced up to three miles N-S along strike and serve as convenient structural marker units in the more uniform granites, even where locally discontinuous.

Laramide Intrusive Activity

The Ripsey Hill prospect is situated in a portion of a regional dike swarm which extends, with only fault interruption, from the Christmas porphyry skarn copper deposit westward or southwestward for 25 miles. The swarm is over six miles wide, and intrusions within it have been dated radiometrically by the USGS as late Cretaceous (84 m.y.) to early Tertiary (65 m.y.). Individual dikes locally serve as feeders to volcanics deposited on the Paleozoic sediments and as feeders to small stocks, sills, and laccoliths. Several large diorite to granodiorite stocks occur within the same intrusive belt, and at least two are known to have related sulfide systems besides Christmas.

In the vicinity of the prospect, dikes are the dominant form of intrusion and cross-cut all older rock types. Where anisotropy has been provided by originally horizontal breaks in the Precambrian crystalline rocks, intrusive sheets occupy basement structures in zones up to 2 miles long and on occasion several hundred feet wide. As with the overlying sedimentary section and its included sills and laccoliths these sheets now dip steeply W.

The dikes range in composition from andesite to rhyodacite. Texturally, the dikes vary from weakly porphyritic, fine grained subvolcanic facies to granitic (granodiorite) porphyries more obviously hypabyssal in nature. The dikes are branching, discontinuous, and anastomosing with dacites and latites cross-cutting andesitic rocks. Andesitic dikes in several localities can be traced into granodiorite porphyries through slowly gradational transitions. There is a crude convergence westward on the prospect.

Granodiorite porphyries in the center and northern portions of the prospect area are flooded by potassic alteration with most plagioclase converted to "salmon pink" orthoclase. The alteration is so intense these dikes were originally mapped as syenites. Patchy zones of weaker potassic replacement occur elsewhere and locally extend into the country rocks.

Post-Mineral Cover

Late Tertiary to Quaternary cover onlaps the prospect area from the WSW and occurs in isolated remnants on many areas of the property. Separated into three units, all are alluvial or colluvial in origin. The oldest is an arkose and arkosic conglomerate with only granitic and aplitic fragments. This unit is often tilted and cut by late faults. Younger units are flat lying and consist of, first, a widespread and now-eroding alluvial-colluvial, quartzite-pebble gravel and, second, stream-channel alluvium.

Mineralization and Alteration

As noted above, pervasive alteration is identifiable as potassic flooding in the dikes on part of the prospect and as propylitization in the Precambrian granites. The potassic flooding affects the intrusive rocks in an area of less than one square mile around the NE corner of section 21 and slightly further to the NE. Only rare spotty occurrences can be found in dikes elsewhere. The propylitic alteration is much more widely dispersed and may be related to the wide distribution of the dike swarm.

Phyllic alteration is much more limited and only occurs with vein and fracture-controlled sulfide mineralization. At the surface much of the sericitization may be supergene and augmented by argillization, but sericite also coincides with high sulfide, high metal intervals even in the drillhole results. Most affected are the wallrocks of veins and veinlets but some alteration is associated with mineralized dike contact zones. Sericitic alteration decreases eastward as the quartz-sulfide ratio in veins also decreases. Pervasive sericite or argillic alteration occupies only a small portion of the W½ of section 21 where weak stockwork mineralization is prevalent around minor dikes. Veins and stringers are the dominant mode of sulfide occurrence almost everywhere on the surface. Few stockwork zones occur except near some dike contacts. The vein pattern is roughly triangular and elongate E-W. As with the dikes, the veins radiate from a locus somewhat SW of the NE corner of section 21. This point is an intersection between an ESE set of veins originating here and an ENE set which curves to the SW through this point. Almost all veins dip moderately southward.

Veins are increasingly sulfide-rich toward the point of convergence and are oxidized deeply. Goethite and jarosite on the east side of the prospect give way to hematite after chalcocite toward the center of the map area. Hematitic limonites and copper oxides occur in at least a two-square-mile area centered somewhat east of the locus of vein convergence. Abrupt changes from hematitic oxidation to goethic-jarositic types westward beyond the center of section 21, and on the east side of the prospect, are fault controlled.

Vein gossan geochemistry forms a zonation which conforms well with the observable mineralogy. Assaying of 110 samples from gossan and dump locations shows a transition from high Pb-Zn veins east of the prospect through Cu to a Cu-Mo anomaly westward near the center of the vein swarm at Horse Ranch (figure 4). Beyond the locus of radiation, westward, veins again are only high copper; anomalous copper terminates at the westward transition from hematite to goethitic gossan, and veins become geochemically barren.

Structure

An important aspect of target development on the prospect has been the affect of regional tectonics on the local rocks.

The Tortilla Mts. are fault block mountains lying just W of the San Pedro trough. This trough is a structural zone separating gently dipping stratified units in the Galiuro Mts. (figure 1) from highly rotated units in the Tortillas. The San Pedro trough is interpretted to be a grossly asymmetric graben bounded by steep and shallow, rotated normal faults. The intense rotation of fault blocks and their bounding structures is typical of the various segments of the Tortilla uplifts and the surrounding region as far W as Poston Butte, where the Florence discovery is known to be rotated and cut off by post-ore structures; and as far SSE as San Manuel where the Kalamazoo discovery is offset from the mutually rotated San Manuel mine block. The region represents a broad zone of crustal extension.

The Tortilla Mts. consist of two major blocks which have been separated into an eastern Copper Hill block and a western Ripsey Hill block (figure 2). Precambrian to Paleozoic sediments on the E side of the Copper Hill block dip 50 to 70^{O}E while those in the Ripsey Hill block 7 miles west dip 50 to 75^{O}W, overturned, with top still to the E. The valley between the two blocks is filled by Tertiary sediments which dip vertically adjacent to the Ripsey block and gradually become shallow and gently reverse dip up section as the Copper Hill block is approached. The presence of gravity slides and shallowing dips in bedding in the higher stratigraphy indicate superatenuous folding. The sediments are fault-bounded against the Copper Hill block while in steep depositional contact against the Ripsey block.

The steeply overturned Paleozoic sediments indicate rotation equal to or in excess of 90^{O} for the rocks beneath the Ripsey prospect (figures 2A,5,7).

The rock patterns on the Ripsey prospect are highly disrupted by structures striking NNE to NNW in general agreement with the regional grain. These structures are mappable where the sediments or E-W dikes are interrupted, terminated, or deflected from their usual shape and trend. Infrequent breccia zones and quartz or calcite veins with slickensides show these structures as shallow and steep faults having dip- or oblique-slip motion down to the W. Rare faults have shallow eastward dips. That this deformation continued into late Tertiary or even Quaternary time is shown by moderate rotation of highly unconformable sediments on the prospect. These faults and fault traces allow division of the rocks into several structural units and subunits which are bounded by moderately steep to shallow zones of dislocation. These units consist of stacked, imbricate plates with succeedingly higher ones having moved farther W (figures 4 and 5).

The relative displacement of each plate is quite accurately measured by matching rock patterns from one to the next. Of special usefulness are the Precambrian sediments and the sheeted intrusions of diabase and Laramide porphyritic andesite. Where these structural markers are absent, repeated patterns of the Laramide dike swarm are almost as good. As much as 4000 feet of displacement can be demonstrated from one plate to the next, and a total of almost four miles of extension can be measured across the entire stack of plates east of the on-lapping late-Tertiary sediments.

TARGET DEFINITION

Once the affects of faulting are understood, the abrupt changes in lithology and vein geochemistry can be combined with ore controls in order to define the porphyry copper target.

Implicit in the interpretation is the regional block rotation, which has oriented the Ripsey block on its side with a major rotational fault boundary somewhere well beneath economic depths (figure 7). This orientation requires that the original vertical axis of the hydrothermal system now be roughly horizontal and the upward flow direction now be easterly. The westward convergence of the vein system supports the concept and also provides a crude point source for ore solutions in the area of the NE corner section 21.

The anomalous Mo within the high Cu portion of the vein swarm further isolates the target. The southerly dip of the veins restricts exploration to

CROSS-SECTION A-A'

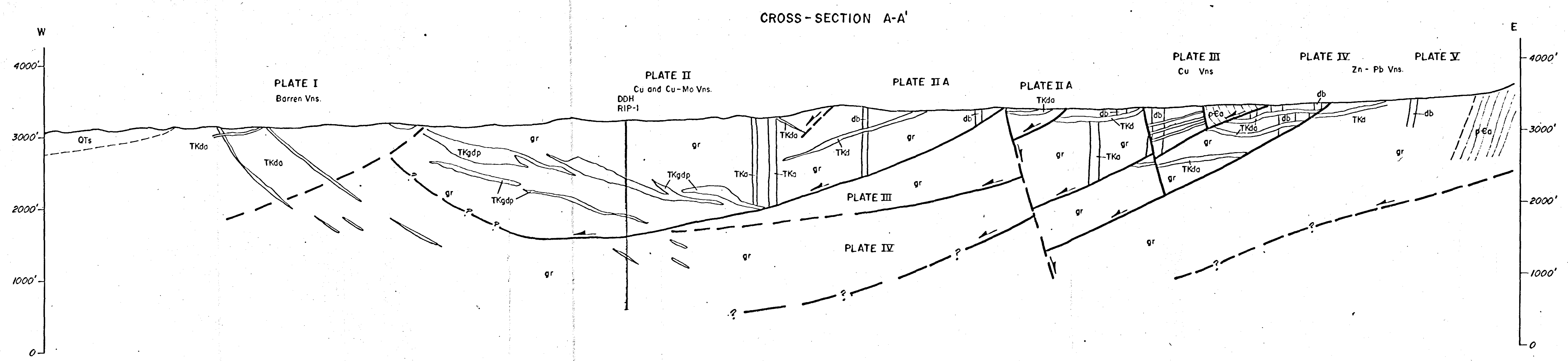


FIGURE 5

SEE MAP EXPLANATION FOR ROCK TYPES.	RIPSEY HILL PROJECT E-W CROSS-SECTION A-A' THROUGH D.D.H. RIP I
	STATE ARIZONA · COUNTY PINAL · SCALE 1:12000
	CONOCO — CONTINENTAL OIL COMPANY, MINERALS DEPARTMENT, METALLICS DIVISION, TUCSON, ARIZONA
	R. LORING · 1-11-78 · FILE NO. B-033-17

areas S of their outcrop (figure 6), and the assumed fluid flow direction places the target somewhat W of an exact downdip projection on the Mo-Cu bearing vein swarm. Thus, all drilling should be done in the NE quarter, section 21, and NW quarter of section 22. The maximum depth of drilling is limited by the underlying faults bounding the blocks with Cu-anomalous veins.

The specific drill target is the body which served as the "source" for the observed mineralization and alteration at the surface. This body may take the form of a porphyry system centered on a hidden stock or the roots of a hydrothermal column at the confluence of the dikes and veins. Size and grade of such a hidden target is not easily predicted, but geologic constraints dictate that as much as a half square mile may be underlain by the target body.

A moderately dipping fault through the target area separates the vein swarm into Cu and Cu-Mo portions at the surface. The total effect is unknown, but separation of the target into two parts is very likely. The offset portion would be located in the NE quarter section 21.

GEOPHYSICS

A downhole induced polarization survey was run in January and February of 1978 using D.D.H. RIP-1 for the downhole electrodes. The results indicate an anomaly about one-half mile in diameter centered in the NE quarter, section 22. A surface survey over the anomaly confirmed it and placed its depth at about 2000 feet, sloping NE.

Assuming the anomalous material to be a pyritic hood over the original hydrothermal center, the drill target should be centered west of the anomaly. This interpretation conforms with the geologic data and locates a favorable target in NW quarter section 22.

RESULTS OF D.D.H. RIP-1

A report of March 2, 1978, summarized the results of the first diamond core drillhole at Ripsey Hill. While this hole was located a half mile too far S the mineral zoning, geochemical zoning and structure encountered tend to confirm the concepts described above.

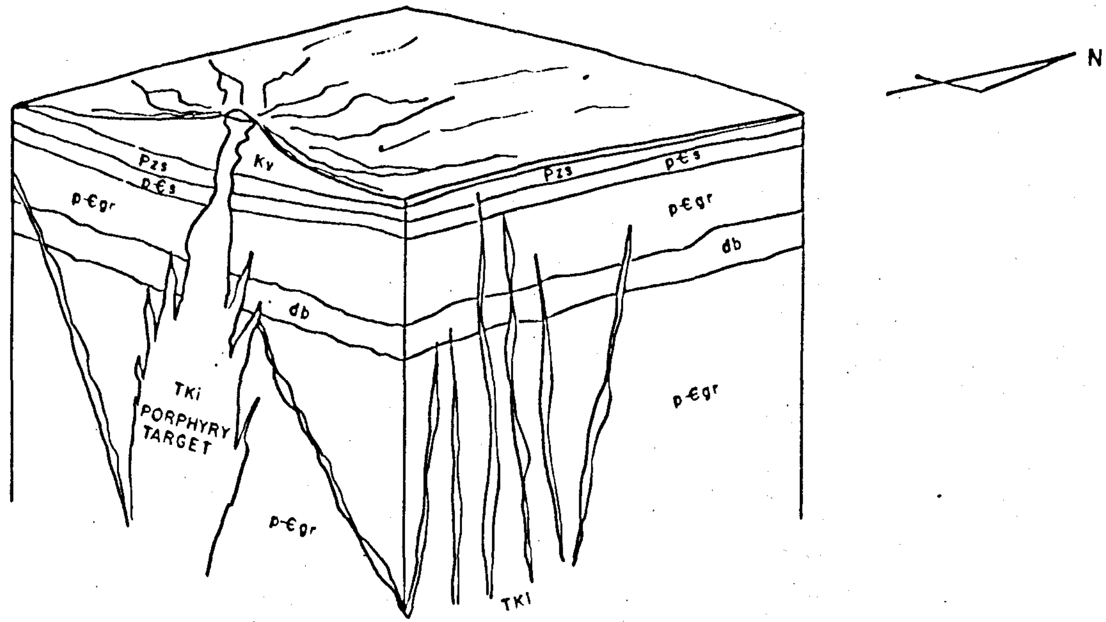
The drillhole is located in NWSW section 22, and total depth is 2600 feet. The general geology of the hole is summarized in the attached strip log (figure 8).

Of special note in the log are the geochemical zonation from high Zn at the top through Cu to high Mo in the bottom third of the hole, and the transition at about 1600 feet from shallow dipping faults above to steeply dipping faults below. These features are interpretted as two structural blocks, the one above sliding over the one below, with unique vein-dike geochemistry and sulfide mineralization in each. With the transition from one block to the other at 1600 feet, the zinc to copper zoning occurs in the upper block and the high molybdenum occurs in the lower. Regional structure and district geochemical zoning concur in placing the original location of the upper block somewhat E of its present position. Structural marker units (andesite porphyry) indicate westward displacement of the upper block a minimum of 4000 feet.

This interpretation confirms the integral nature of sulfidization, geochemistry, and structure. The fact that good, well-zoned disseminated mineralization is encountered enhances the prospect and confirms the need for drilling in the target area. Of particular note is the high Mo content of the lower plate.

A

INTRUSION AND MINERALIZATION INTO CRYSTALLINE BASEMENT, PALEOZOIC AND PRECAMBRIAN SEDIMENTS, AND CRETACEOUS VOLCANICS.



B

SAME SYSTEM AFTER TERTIARY EROSION AND SEDIMENTATION FOLLOWED BY ROTATIONAL BLOCK FAULTING.

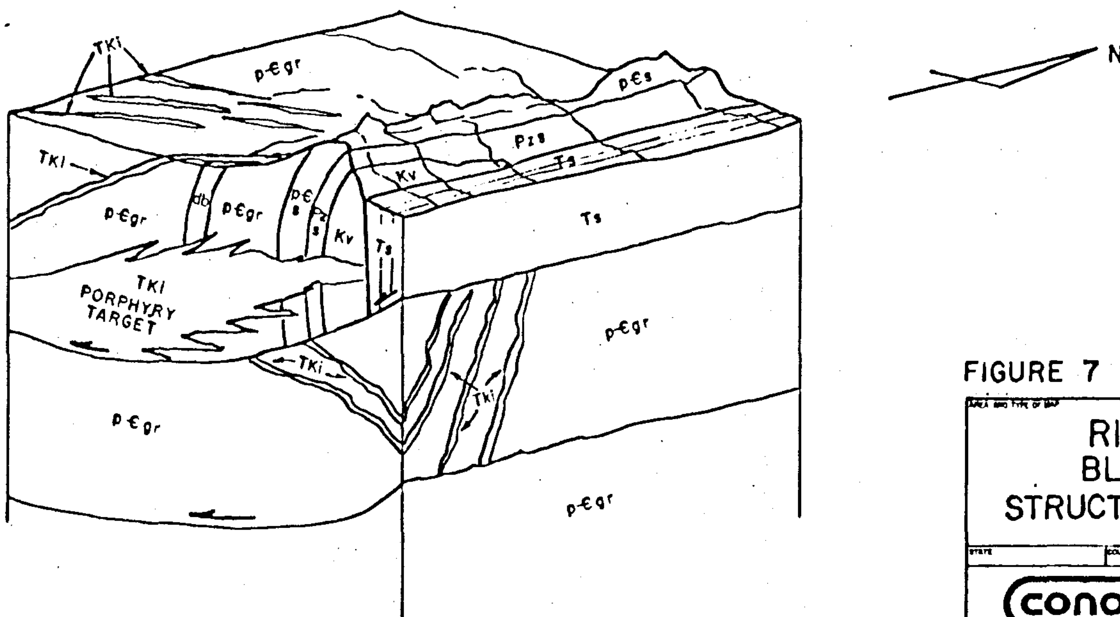


FIGURE 7

RIPSEY DISTRICT
BLOCK DIAGRAMS
STRUCTURAL INTERPRETATION

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TUCSON, ARIZONA

A-033-8

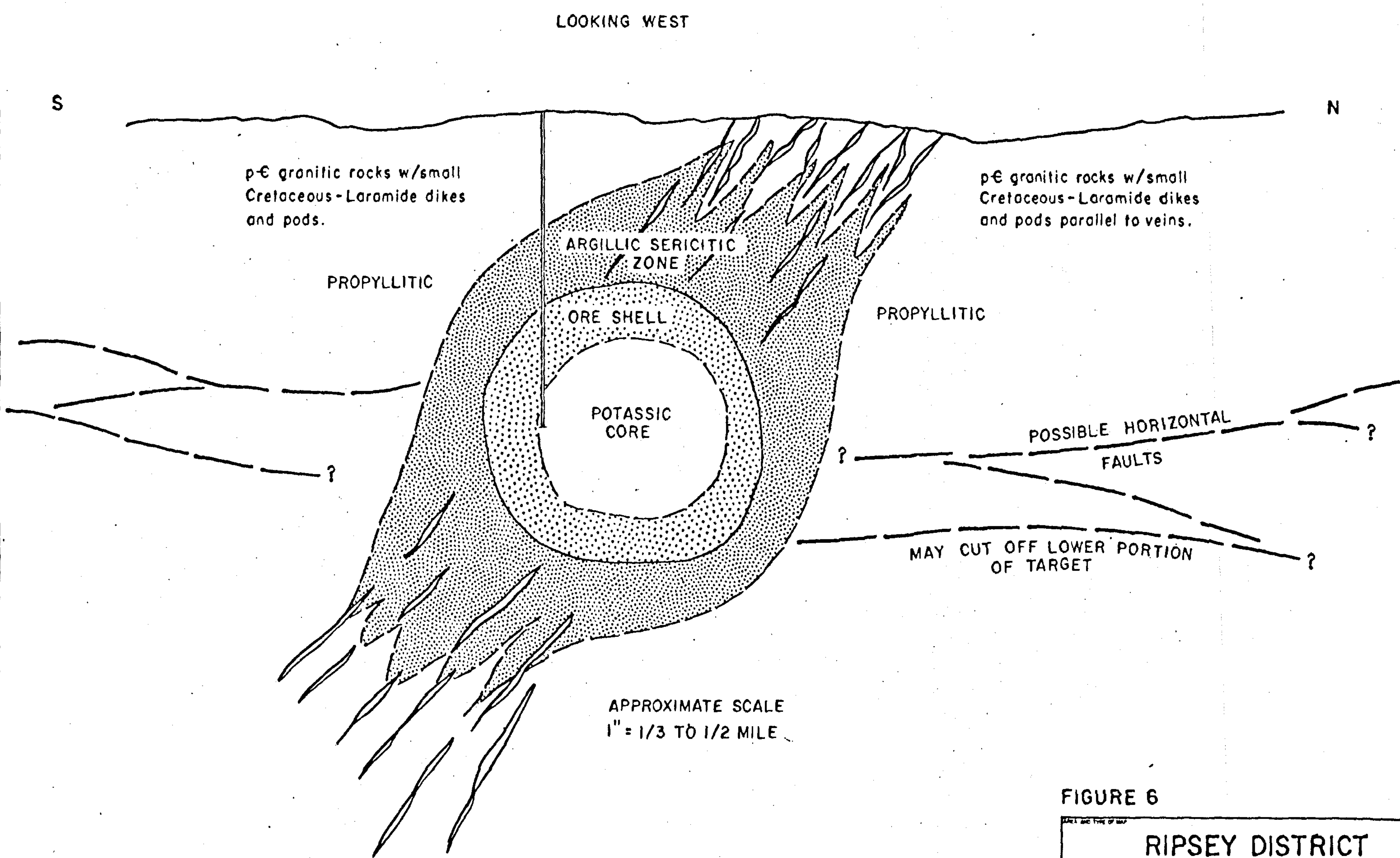

FIGURE 6

RIPSEY DISTRICT
DIAGRAMATIC CROSS-SECTION
TARGET CONCEPT

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TUCSON, ARIZONA

A-033-9

FIGURE 8


RIPSEY HILL PROJECT
D.D.H. RIP-1
COLLAR ELEVATION: 3200 FT.
LOCATION: NW SW SEC. 22
DRILL HOLE STRIP LOG
FINAL DEPTH: 2600 FT.
COMPLETION DATE: 12-16-77
EXPLANATION
Large veins
Shear zones
Faults (General dip)
Laramide granodiorite porphyry (GDP)
Laramide andesite (AND)
Precambrian granite
DEPTH
ROCK TYPE
FAULTS
EST. % SULFIDE
ASSAYS (PPM)
Cu x 1000
Zn x 1000
Mo x 100
HEM
AND
GDP
0.45% Zn
0.23% Cu
1.1% Zn
0.88% Zn
0.95% Zn
1.55% Zn
1.35%
4.00% Zn
3.10%
0.66% Zn
0.12% Cu
250 PPM Mo
Py, Mo
994 PPM Mo
330 PPM Mo
250 PPM Mo
410 PPM Mo
T.D. 2600 FT.
RIPSEY HILL PROJECT
DRILL HOLE STRIP LOG
D.D.H. RIP-1
ARIZ.
CONOCO
CONTINENTAL OIL COMPANY
MINERALS DEPARTMENT
METALLICS DIVISION
TUCSON, ARIZONA
R. LORING
B-033-21

References

Cornwall, H. R., and Krieger, M. H., 1974, Geologic map of the Kearny quadrangle, Pinal Co., Az.; U.S.G.S. Quad map GQ-1188.

________, 1975, Geologic map of the Grayback quadrangle, Pinal Co., Az.; U.S.G.S. Quad map GQ-1206.

Krieger, M. H., 1974, Geologic map of the Winkelman quadrangle, Pinal and Gila Cos., Az.; U.S.G.S. Quad map GQ-1106.

________, 1974, Geologic map of the Crozier Peak quadrangle, Pinal Co., Az.; U.S.G.S. Quad map GQ-1107.

TAB

D.D.H

RIP-1

CONOCO

Interoffice Communication

To: J. N. Lukanuski

From: R. B. Loring

Date: March 2, 1978

Subject: Ripsey Hill Project - Contributions of D.D.H. RIP-1

Attached is a drill hole summary of D.D.H. RIP-1 accompanied by assays, assay graphs, and strip log for the hole. Included also are three interpretive cross sections for the prospect.

Drillhole Purpose and Location

The drillhole is located roughly in the center of NW¼ SW¼ section 22, T5S, R13E. This site is somewhat south of the original choice because of an incipient but eventually insignificant land problem. However, despite moving the site, the drillhole still was assumed dependable in providing necessary answers.

The major purpose of the hole was the confirmation of the existence of a large, possibly copper-bearing hydrothermal (i.e. porphyry copper) system which had been deduced from regional and detailed geologic and geochemical operations. A secondary but important question was the depth of the system. Other questions involved the character and control of mineralization within the system. The solution to these latter problems would be useful in future drilling.

Results

Specific results are tabulated in the drillhole summary, strip log, and assay graphs.

Essentially what these data and interpretation demonstrate is a confirmation of the postulated porphyry copper system somewhere in the area of the prospect. The position of the copper-bearing system relative to the drillhole is now deduced from surface data and IP (Bob Whitman's IP report in preparation) to be somewhat north or northeast.

The peripheral nature of the RIP-1 location is shown by the well zoned, high-grade, structurally-controlled mineralization surrounded by generally weakly sulfidized propylitic wallrocks. The fact that metal zoning occurs over the entire drillhole supports the presence of a large system.

Future Work

If the newly found IP anomaly is a high pyrite zone in the dike swarm, a fence of drillholes north of RIP-1 drilled west of the anomaly would ascertain the presence of the high copper zone. The first hole would be drilled about a half mile N or NNE from DDH RIP-1. Success of this hole would necessitate step out drilling of 1000 ft spacing or more starting with a more northerly site probably on Salas' West Ripsey claims.

Purchase of the Bear Creek drillhole results is recommended pending any drilling beyond the next hole.

Rich Loring

R. B. Loring

ska
Attachments

DRILL HOLE SUMMARY

Date: 2-16-78

Drill Hole: RIP-1 Project: Ripsey Hill

Location: NWSW sec. 22

Collar Elevation: 3200 ft.

Depth to Bedrock: 2 ft.

Oxide-Sulfide Interface: 400 ft.

Total Depth: 2600 ft.

Rotary Starting Date: Completion: Footage:

Core Starting Date: 11-3-77 Completion: 12-16-77 Footage: 2600

Inclination: vertical

Assay Data: see attached sheets for assay intervals and graphs

Composite Data:

Interval	Zn	Cu	Mo
665-740 ft. (75 ft)	635 ppm	145 ppm	--
*740-840 (100)	3164	196	--
*840-930 (90)	7648	338	--
1410-1510 (100)	--	505	<10 ppm
1510-1630 (120)	--	<100	58
2510-2600 T.D.	--	<100	104
*740-930 ft. (190 ft)	.53%		

Rock Types:

0-27 ft.	:	weathered aplite (Precambrian)
27-499	:	coarse grained granite (Precambrian) (oxidized vein breccia 393-397)
499-501	:	andesite dike (Laramide)
501-557	:	granite
557-565	:	porphyritic andesite dike (Laramide)
565-620	:	granite
620-670	:	granodiorite porphyry dike (Laramide)
670-677	:	granite
677-745	:	granodiorite porphyry dike
745-1440	:	granite
1440-1545	:	granodiorite porphyry dike
1545-1880	:	granite
1880-1885	:	granodiorite porphyry dike
1885-2600 T.D.	:	granite (molybdenite-pyrite vein: 2197-2200)

Alteration:

Changes in secondary silicate mineralization occur throughout the drillhole and are indicative of a weak or peripheral alteration system.

The top 400 feet of the hole are characterized by a supergene argillization which is superimposed on a weakly pyritic almost fresh Precambrian granite. Below oxidation the dominant alteration is propylitic comprised of weak argillization and moderate chlorite-calcite-epidote. Adjacent to Laramide dikes and mineralized structures related to them, the propylitized granitic wall-rocks are overprinted by a sericite-clay-quartz-pyrite phase.

Below 600 feet a weak sericitization dominates alteration as an overprint or augmentation of an intermittently chloritized granite, and except for strongly intensified phyllic phases or potassic flooding adjacent to dikes and veins this weak sericitization and propylitization remains consistent to about 1550 ft.

At 1550 downward to 1750 a sporadic phyllic alteration occurs where quartz-sericite-clay-pyrite has been controlled by considerable fracturing and veining.

Below 1750 despite the lack of intrusive rocks the Precambrian granites are augmented by a weak, fairly consistent orthoclase introduction (staining of feldspars). This potassic alteration accompanies a moderate propylitization characteristic of the entire hole and continues to about 2050 where sericitic overprinting increases again. A small increase in K-spar augmentation occurs below 2450 concomitantly with a dissemination of sericite, but conditions reverse again below 2550 with a weak sericitization superimposed on propylitic phases to 2600.

Mineralization:

Sulfide zoning occurs throughout the drillhole and corresponds to the observed alteration rather than the location of intrusive rocks. General sulfide concentrations do not occur as veinlets until below 500 feet, usually as pyrite with rare sphalerite and galena.

Pervasive sulfidization begins at the intersection of the first major dike at around 700 ft and continues in various metallic proportions to about 1000 ft as pyrite-sphalerite and infrequent chalcopyrite veinlets.

Only sporadic sulfide occurs to 1400. At this level pervasive pyritization intensifies locally to as much as 3% with accompanying, irregular chalcopyrite veinlets to about 1500. From here downward ore mineralization becomes dominated by sporadic molybdenite and weak chalcopyrite to about 1900.

Except for one thick molybdenite-pyrite vein at 2197-2200 mineralization is only pyritic (less than ½%) with rare molybdenite-chalcopyrite to 2500. From here to the 2600 T.D. molybdenite increases a moderate amount to produce local by-product molybdenum grades.

Structure:

The entire core is cut by closely spaced post-mineral fracturing, brecciation, and shearing. The upper portion of the hole is characterized by several zones of considerable horizontal structures while below 1600 feet structures are steeply dipping. The change reflects the probable allochthonous nature of the block above 1400 feet (interpreted to be a rotated normal fault block or gravity slide).

Comment:

The fact that sulfide mineral and geochemical zonation is developed over the entire length of the drillhole and not around individual dikes indicates we have intersected an outer portion of a large sulfide system. Since actual sulfide content increases in and adjacent to Laramide intrusives exploration should be directed toward finding larger intrusive bodies within the copper-molybdenum bearing portion of the hydrothermal system. This portion of the system is now thought to exist ½ to 1 mile north and northeast of this drillhole in the subsurface.

SKYLINE LABS, INC.
Hawley & Hawley, Assayers and Chemists Division
1700 W. Grant Rd., P.O. Box 50106, Tucson, Arizona 85703
(602) 622-4836

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

DDH - RIP - 1

RIPSEY HILL

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	DEPTH INTERVAL	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm
1	40401	110-120	<0.02	<0.2	5	10	105	2
2	40402	210-220	<0.02	<0.2	5	5	50	< 2
3	40403	310-320	<0.02	<0.2	10	15	50	< 2
4	40404	410-420	<0.02	<0.2	25	10	330	< 2
5	40405	510-520	<0.02	<0.2	25	50	195	2
6	40406	555-557	<0.02	0.8	790	35	4900	2
7	40407	-566	<0.02	<0.2	90	10	235	< 2
8	40408	-569	<0.02	3.4	2300	160	4500	2
9	40409	569-573	<0.02	<0.2	10	50	135	2
10	40410	610-620	<0.02	<0.2	15	55	100	2
11	40411	665-670	<0.02	0.6	105	2000	3300	< 2
12	40412	670-677	<0.02	<0.2	55	105	500	2

TO:
CONOCO MINERALS CORPORATION
2020 North Forbes Blvd., Suite 105
Tucson, Arizona 85705
Attn.: Richard B. Loring

REMARKS: Trace analysis

CERTIFIED BY:

Page 1 of 2 pages

DATE REC'D:	DATE COMPL.:	JOB NUMBER:
11/29/77	1/13/78	772755

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Hawley & Hawley, Assayers and Chemists Division
1700 W. Grant Rd., P.O. Box 50106, Tucson, Arizona 85703
(602) 622-4836

Charles E. Thompson
Arizona Registered Assayer No. 9427
William L. Lehmbeck
Arizona Registered Assayer No. 9425
James A. Martin
Arizona Registered Assayer No. 11122

DDH. RIP-1

RIPSEY HILL

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm		
	DEPTH INT.								
1	40413 677-685	<0.02	0.6	110	365	1150	< 2		
2	40414 -690	<0.02	1.8	970	150	630	< 2		
3	40415 -700	<0.02	0.8	245	190	950	< 2		
4	40416 -710	<0.02	<0.2	110	5	150	< 2		
5	40417 -720	<0.02	<0.2	20	5	220	< 2		
6	40418 -730	<0.02	<0.2	30	5	140	6		
7	40419 -740	<0.02	<0.2	15	5	70	< 2		
8	40420 -745	<0.02	0.2	315	5	2900	< 2		
9	40421 -750	0.05	2.8	630	60	11000	< 2		
10	40422 -760	0.03	0.6	355	15	510	< 2		
11	40423 -770	<0.02	0.4	70	35	2000	< 2		
12	40424 -775	<0.02	0.4	50	15	1400	< 2		
13	40425 -780	<0.02	1.6	165	30	8800	< 2		
14	40426 -785	0.04	2.8	205	90	5100	< 2		
15	40427 -790	<0.02	0.2	60	45	385	2		
16	40428 -795	<0.02	1.6	155	50	3500	2		
17	40429 795-800	<0.02	1.0	460	280	9500	2		

ITEM NO.	SAMPLE IDENTIFICATION	SiO_2 %	Al_2O_3 %	MgO %	CaO %	Na_2O %	K_2O %	Fe_2O_3 %	F %
5	40417 710-720	62.90	15.5	1.2	4.8	3.6	2.9	3.9	0.075

ITEM NO.	SAMPLE IDENTIFICATION	TiO_2 %	P_2O_5 %	MnO %
5	40417 710-720	0.40	0.26	0.17

TO:
CONOCO MINERALS CORPORATION
2020 North Forbes Blvd., Suite 105
Tucson, Arizona 85705
Attn.: R.B.Loring

REMARKS:
Trace analysis and single analysis

CERTIFIED BY: [signature]

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK DATE SIGNED Arizona U.S.A.

DATE REC'D: 11/30/77

DATE COMPL.: 1/4/78

JOB NUMBER: 772760-Part I

SKYLINE LABS, INC.
Hawley & Hawley, Assayers and Chemists Division
1700 W. Grant Rd., P.O. Box 50106, Tucson, Arizona 85703
(602) 622-4836

Charles E. Thompson
Arizona Registered Assayer No. 9427
William L. Lehmbeck
Arizona Registered Assayer No. 9425
James A. Martin
Arizona Registered Assayer No. 11122

DDH RIP-1

RIPSEY HILL

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	DEPTH INTERVAL	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm
1	40430	800-805	<0.02	0.2	275	205	4000	< 2
2	40431	-810	<0.02	0.4	190	95	2800	< 2
3	40432	-815	<0.02	0.2	35	155	455	2
4	40433	-820	<0.02	<0.2	55	20	1200	< 2
5	40434	820-825	<0.02	0.6	245	90	3600	< 2
6	40435	825-830	<0.02	0.6	50	135	870	< 2
7	40436	-835	<0.02	0.8	120	320	2100	2
8	40437	-840	<0.02	0.2	55	115	640	< 2
9	40438	-845	<0.02	0.6	85	200	3400	< 2
10	40439	845-850	0.03	0.6	155	95	2100	< 2
11	40440	850-855	<0.02	2.8	150	275	2600	4
12	40441	-860	<0.02	<0.2	5	5	65	< 2
13	40442	-865	<0.02	<0.2	30	35	1350	< 2
14	40443	-870	<0.02	0.2	25	65	265	< 2
15	40444	870-875	<0.02	3.8	375	190	15500	< 2
16	40445	875-880	0.05	4.2	215	110	7600	2
17	40446	-885	0.09	4.6	990	105	13500	2
18	40447	-890	0.03	4.0	1350	110	40000	2
19	40448	-895	0.02	4.6	1300	70	31000	2
20	40449	895-900	<0.02	0.4	260	40	2500	< 2
21	40450	900-905	<0.02	0.6	420	35	4800	< 2
22	40451	-910	<0.02	0.6	340	45	4100	< 2
23	40452	-915	<0.02	<0.2	65	15	1500	< 2
24	40453	-920	<0.02	0.2	65	105	790	< 2
25	40454	920-925	<0.02	0.8	160	105	3400	< 2
26	40455	925-930	<0.02	1.6	105	1700	3200	< 2
27	40456	-935	<0.02	<0.2	25	200	430	< 2
28	40457	-940	<0.02	<0.2	15	75	335	< 2
29	40458	-945	<0.02	0.2	100	100	670	< 2
30	40459	945-950	<0.02	0.2	290	45	4600	< 2

TO:
CONOCO MINERALS CORPORATION
2020 North Forbes Blvd., Suite 105
Tucson, Arizona 85705
Attn.: Richard B. Loring

REMARKS: Trace analysis

Page 1 of 3 pages

CERTIFIED BY:

DATE REC'D: 12/1/77

DATE COMPL.: 1/13/78

JOB NUMBER: 772771

SKYLINE LABS, INC.
Hawley & Hawley, Assayers and Chemists Division
1700 W. Grant Rd., P.O. Box 50106, Tucson, Arizona 85703
(602) 622-4836

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

DDH RIP-1

RIPSEY HILL

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION (DEPTH INTERVAL)	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm
31	40460 950-960	<0.02	0.2	105	85	790	< 2
32	40461 -970	<0.02	<0.2	25	30	490	< 2
33	40462 -980	<0.02	<0.2	5	5	50	< 2
34	40463 -990	<0.02	<0.2	5	5	165	< 2
35	40464 990-1000	<0.02	<0.2	5	5	50	< 2
36	40465 1000-1010	<0.02	<0.2	5	5	45	< 2
37	40466 1010-1020	<0.02	<0.2	5	5	50	< 2
38	40467 1110-1120	<0.02	<0.2	10	5	295	< 2
39	40468 1210-1220	<0.02	<0.2	5	5	110	< 2

TO:

REMARKS: Trace analysis

CERTIFIED BY:

DATE REC'D: 12/1/77

DATE COMPL.: 1/13/78

JOB NUMBER: 772771

SKYLINE LABS, INC.

Hawley & Hawley, Assayers and Chemists Division
1700 W. Grant Rd., P.O. Box 50106, Tucson, Arizona 85703
(602) 622-4836

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

DDH. RIP-1
RIPSEY HILL

CERTIFICATE OF ANALYSIS

DDH. RIP-1
RIPSEY HILL

ITEM NO.	SAMPLE IDENTIFICATION	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm		DEPTH INTERVAL
1	40469	<0.02	<0.2	5	5	50	< 2		1310-20
2	40470	<0.02	0.4	185	90	760	2		1410-20
3	40471	<0.02	0.2	120	40	710	2		1420-30
4	40472	0.02	0.8	60	75	840	< 2		1430-40
5	40473	<0.02	<0.2	200	5	120	2		1440-50
6	40474	<0.02	0.2	670	5	45	14		1450-60
7	40475	<0.02	0.4	1250	5	35	2		1460-70
8	40476	<0.02	0.2	590	5	25	2		1470-80
9	40477	<0.02	0.6	395	65	110	6		1480-90
10	40478	<0.02	0.2	290	15	60	22		1490-1500
11	40479	<0.02	<0.2	150	5	30	4		1500-10

TO:
CONOCO MINERALS CORPORATION
2020 North Forbes Blvd., Suite 105
Tucson, Arizona 85705
Attn.: Richard B. Loring

REMARKS: Trace analysis

CERTIFIED BY: [signature]

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK

DATE REC'D:	DATE COMPL.:	JOB NUMBER:
12/2/77	12/12/77	772781

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Hawley & Hawley, Assayers and Chemists Division
1700 W. Grant Rd., P.O. Box 50106, Tucson, Arizona 85703
(602) 622-4836

Charles E. Thompson
Arizona Registered Assayer No. 9427
William L. Lehmbeck
Arizona Registered Assayer No. 9425
James A. Martin
Arizona Registered Assayer No. 11122

RIPSEY HILL

CERTIFICATE OF ANALYSIS

DDH RIP-1

ITEM NO.	SAMPLE IDENTIFICATION	FOOTAGE INTERVAL	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm
1	40480	1510-1520	<0.02	0.2	195	5	70	< 2
2	40481	-1530	<0.02	<0.2	45	5	70	< 2
3	40482	-1540	<0.02	<0.2	25	5	90	< 2
4	40483	-1547	<0.02	<0.2	40	5	65	< 2
5	40484	-1557	<0.02	<0.2	45	5	15	105
6	40485	1557-1567	<0.02	<0.2	60	5	210	50
7	40486	-1575	<0.02	<0.2	20	5	20	100
8	40487	-1585	<0.02	0.2	40	5	15	12
9	40488	-1595	<0.02	<0.2	120	5	15	85
10	40489	-1600	<0.02	<0.2	60	5	20	26
11	40490	1600-1610	<0.02	<0.2	30	5	20	30
12	40491	-1620	<0.02	<0.2	60	5	15	65
13	40492	-1630	<0.02	<0.2	135	5	30	250
14	40493	-1640	<0.02	<0.2	45	5	20	2
15	40494	-1650	<0.02	<0.2	20	5	25	2
16	40495	1650-1660	<0.02	<0.2	45	5	25	80
17	40496	1710-1720	<0.02	<0.2	15	5	30	4
18	40497	1760-1770	<0.02	<0.2	70	5	25	16
19	40498	-1780	<0.02	<0.2	95	5	30	2
20	40499	-1790	<0.02	<0.2	215	5	30	4
21	40500	1790-1800	<0.02	<0.2	270	5	35	2

TO:
CONOCO MINERALS CORPORATION
2020 North Forbes Blvd., Suite 105
Tucson, Arizona 85705
Attn.: Richard B. Loring

REMARKS: Trace analysis

CERTIFIED BY:

Page 1 of 2 pages

DATE REC'D: 12/21/77
DATE COMPL.: 1/27/78
JOB NUMBER: 772939

SKYLINE LABS, INC.
Hawley & Hawley, Assayers and Chemists Division
1700 W. Grant Rd., P.O. Box 50106, Tucson, Arizona 85703
(602) 622-4836

Charles E. Thompson
Arizona Registered Assayer No. 9427
William L. Lehmbeck
Arizona Registered Assayer No. 9425
James A. Martin
Arizona Registered Assayer No. 11122

RIPSEY HILL
DDH RIP-1

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION (FOOTAGE INTERVAL)	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm
1	40501 1800-1810	<0.02	<0.2	240	5	30	50
2	40502 -1820	<0.02	<0.2	295	5	40	38
3	40503 -1830	<0.02	<0.2	45	5	20	4
4	40504 -1840	<0.02	<0.2	40	20	70	42
5	40505 1840-1850	<0.02	<0.2	30	5	55	12
6	40506 1850-1860	<0.02	<0.2	35	5	30	12
7	40507 -1870	<0.02	<0.2	145	5	30	28
8	40508 -1880	<0.02	0.2	510	15	40	22
9	40509 -1885	<0.02	0.2	375	5	50	40
10	40510 1885-1895	<0.02	<0.2	215	5	25	40
11	40511 1895-1900	<0.02	<0.2	80	5	30	20
12	40512 -1910	<0.02	<0.2	80	5	25	70
13	40513 1910-1920	<0.02	<0.2	30	5	35	4

ITEM NO.	SAMPLE IDENTIFICATION	SiO_2* %	Al_2O_3 %	MgO %	CaO %	Na_2O %	K_2O %
2	40502	70.16	13.8	0.58	3.6	2.6	4.7
13	40513	72.16	13.0	0.53	2.2	2.8	4.7

ITEM NO.	SAMPLE IDENTIFICATION	Fe_2O_3 %	TiO_2 %	P_2O_5 %	MnO %	F %	CO_2 %
2	40502	2.7	0.50	0.14	0.10	0.13	2.3
13	40513	2.4	0.57	0.13	0.07	0.16	1.2

TO: CONOCO MINERALS CORPORATION
2020 North Forbes Blvd., Suite 105
Tucson, Arizona 85705
Attn.: Richard B. Loring

REMARKS: Trace analysis and single analysis
*Verified analysis

CERTIFIED BY: [signature]

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK Arizona U.S.A.

DATE REC'D: 12/23/77

DATE COMPL.: 1/30/78

JOB NUMBER: 772961

SKYLINE LABS, INC.

Hawley & Hawley, Assayers and Chemists Division
1700 W. Grant Rd., P.O. Box 50106, Tucson, Arizona 85703
(602) 622-4836

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

RIPSEY HILL
DDH RIP-1

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION (FOOTAGE INTERVAL)	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm
1	40514 2010-2020	<0.02	<0.2	35	5	35	65
2	40515 2110-2120	<0.02	<0.2	45	5	25	80
3	40516 2210-2220	<0.02	<0.2	15	5	60	55
4	40517 2310-2320	<0.02	<0.2	80	20	80	250
5	40518 2410-2420	<0.02	<0.2	40	25	35	60
6	40519 2510-2520	<0.02	<0.2	80	5	25	42
7	40520 2520-2530	<0.02	<0.2	50	10	30	65
8	40521 -2540	<0.02	0.2	165	10	50	150
9	40522 -2550	<0.02	<0.2	60	20	60	55
10	40523 -2560	<0.02	<0.2	60	30	90	410
11	40524 -2570	<0.02	<0.2	25	5	30	2
12	40525 -2580	<0.02	<0.2	40	10	35	155
13	40526 -2590	<0.02	<0.2	35	5	30	10
14	40527 2590-2600	<0.02	<0.2	35	10	20	50

T.D.

TO:
CONOCO MINERALS CORPORATION
2020 North Forbes Blvd., Suite 105
Tucson, Arizona 85705
Attn.: Richard B. Loring

REMARKS: Trace analysis

CERTIFIED BY:

Page 1 of 2 pages

DATE REC'D:	DATE COMPL.:	JOB NUMBER.
12/28/77	1/30/78	772979

FIGURE 8

RIPSEY HILL PROJECT D.D.H. RIP-1

DRILL HOLE STRIP LOG

COLLAR ELEVATION: 3200 FT.
LOCATION: NW SW SEC. 22

FINAL DEPTH: 2600 FT.
COMPLETION DATE: 12-16-77

EXPLANATION

- Large veins
- Shear zones
- Faults (General dip)
- Laramide granodiorite porphyry (GDP)
- Laramide andesite (AND)
- Precambrian granite

RIPSEY HILL PROJECT
DRILL HOLE STRIP LOG
D.D.H. RIP-1

ARIZ.

CONOCO

CONTINENTAL OIL COMPANY
MINERALS DEPARTMENT
METALLICS DIVISION
TUCSON, ARIZONA

R. LORING

2-78

B-033-21

CROSS-SECTION B-B'

SEE MAP EXPLANATION FOR ROCK TYPES.

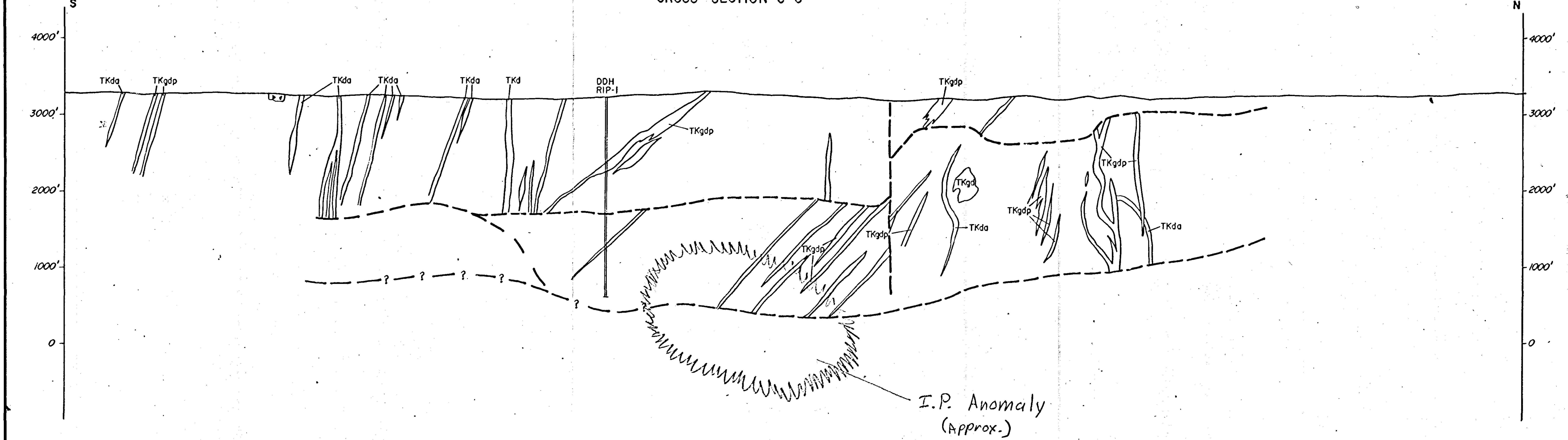
RIPSEY HILL PROJECT
E-W CROSS-SECTION B-B'

ARIZONA	PINAL	1:12000	

CONTINENTAL OIL COMPANY
MINERALS DEPARTMENT
METALLICS DIVISION
TUCSON, ARIZONA

R. LORING — Fn-78 — B-033-18

CROSS-SECTION C-C'



SEE MAP EXPLANATION FOR ROCK TYPES.

RIPSEY HILL PROJECT
N-S CROSS-SECTION C-C'
THROUGH D.D.H. RIP1

STATE	COUNTY	SCALE	CONTOUR INTERVAL
ARIZONA	PINAL	1:12000	

CONOCO

CONTINENTAL OIL COMPANY
MINERALS DEPARTMENT
METALLICS DIVISION
TUCSON, ARIZONA

DATA BY	DATE	SIZE	FILE NO
R. LORING	2-28-78		B-033-20

TAB

RIP-2,3

(CONOCO)

Interoffice Communication

To: J. N. Lukanuski

From: R. B. Loring

Date: November 13, 1979

Subject: Ripsey Hill Project - Interpretation of 1979 Drilling Results

Drilling on the Ripsey Hill prospect during 1979 consisted of one diamond drillhole, RIP-2 (-2 R), and one rotary drillhole, RIP-3. Data summaries, strip logs, and assays for these holes are attached. This communication discusses my interpretation in context of the known surface geology, geochemistry, geophysics, and previous drilling (D.D.H. RIP-1).

TARGET CRITERIA

Both these drillholes were located to test various aspects of the dike-vein system that sweeps across the property. The dikes and especially the veins strike variously northeast, east northeast, and east southeast away from an apparent point of convergence located somewhat southwest of the northwest corner of section 22. There is an apparent base metal and molybdenum zoning which places a favorable target down the southward dip of the veins in the northwest quarter of section 22; this target is tested by DDH RIP-2 and 2R. Rotary hole RIP-3 is located to provide assessment work on the state section 16 and tests the near surface aspects of the localizing structures near a major, southward-dipping quartz syenite dike.

INTERPRETATION OF RESULTS

The results of both D.D.H. RIP-2 and R.D.H. RIP-3 confirm and enhance several aspects of the surface geology. The swarm of dikes cutting Precambrian granite at the surface dip to the south, continue to depth, and actually increase in number in the subsurface. The presence of shallow westward dipping faults is now thought to be absolute, and the movement along these dislocations is upper plate westward. Mineralization and alteration are controlled along structures roughly parallel to those that locallized dikes and small intrusives, but the mineralization is shown to be somewhat different from that at the surface.

Structures in the zoned base metal anomalies at the surface contain extremely high copper values largely due to enrichment to chalcocite which was subsequently oxidized. The origin of the copper is not discernable from boxwork or other leach capping features. The results of both new drillholes confirm the copper to be concentrated from the weathering and multiple supergene episodes affecting cupiferous pyrite. Chalcopyrite is very limited in either drillhole despite anomalous copper in many broad but isolated zones. With lead and zinc anomalies scattered throughout the surface copper anomaly and the continuation of anomalous zinc southward with depth, the broad swath of anomalous copper at the surface takes on the appearance of a zinc-lead anomaly with highly cupiferous pyrite as a major constituent and with a minor molybdenum component near the center.

Metal zoning in the subsurface between drillholes is gradual but consistent. Structural control is obvious in the geologic log as well as in the erratic nature of assays. Veins, shear zones, and intrusive contacts are the dominant control in the two core holes, RIP-1 and RIP-2; the assay data from R.D.H. RIP-3 imply the same phenomena. The general gradation of erratic lead and zinc values in RDH RIP-3, the northern most hole; to anomalous zinc and copper with rare lead anomalies in D.D.H. RIP-2; to very high subeconomic zinc and increasing copper in D.D.H. RIP-1, the southernmost hole, implies a southward vector to the increasing mineralization gradient.

This gradient occurs in conjunction with a decrease by half in the number of significant dikes, but an increase by about five times in the size of dikes, southward from RIP-2 to RIP-1. The increase in size indicates a possible coalescence of dikes into a large buried stock somewhere south of D.D.H. RIP-1. A gradation from mafic intermediate to silicious intermediate composition dikes southward is supported by comparing drill-length totals of andesitic or tonalitic dikes and granodioritic dikes in RIP-1 and RIP-2. The presence of a buried stock may be demonstrated by sills and laccoliths to the southeast beyond the limits of the property.

While the southward gradient in intrusive and mineralization features is strongly supportive of a target in that direction, at some point the affect of regional rotation and flat faulting must refine and modify this vector. Regional geology as well as detailed mapping here indicates that higher structural plates moved farther west over lower plates. The sharp fault controlled zonation in D.D.H. RIP-1 between high but subeconomic zinc (-copper-lead) and by-product grade molybdenum implies a transition from shallow peripheral but good mineralization in an upper plate to a deep mineral assemblage in the lower plate. This transition indicates that the portion of the lower plate encountered is the root zone of a porphyry system and that the copper-bearing part of the hydrothermal cell is much farther east still in lower plates.

THE NEW TARGET

Using the above criteria a new target is defineable south and east of D.D.H. RIP-1. The target is established on the now well-substantiated southward dip of the vein-dike system, the improvement of mineralization southward along the structure, and the enlargement of dikes in the same direction, all of which implies the existence of a large buried intrusion in the area as the ultimate hydrothermal source and copper-rich system. The listric faulting and zoning in DDH RIP-1 place the target east of existing drilling.

The exact location of the target can be found fairly well by existing data. Criteria consist of the large intrusives in sections beyond property limits and an apparent change in dip of dikes south of D.D.H. RIP-1 by which a weak radial pattern can be inferred to define a deep locus, presumably the stock or hydrothermal center.

The initial test of this hypothesis should occur in the north half of section 26 where complex faulting and post-mineral cover serve to conceal much of the targeted lower plate.

RECOMMENDATIONS

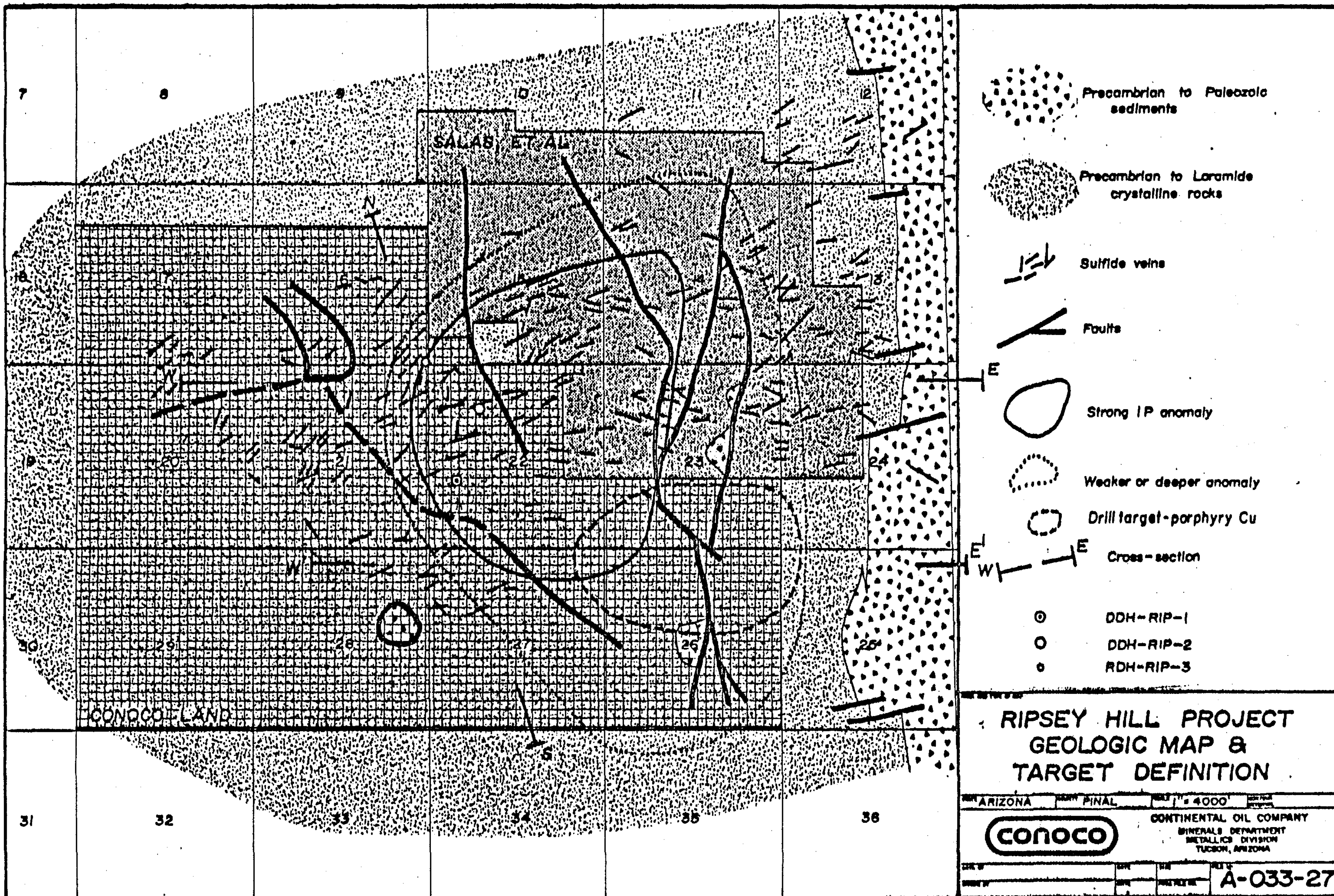
The southward shift in the porphyry target has placed it within a short distance of our south and east property boundaries (see land/geology map included). I urgently recommend the acquisition of the several sections to the south and east as protection if not prospectable ground. The presence of respectably large sills and laccoliths, and known regional structure indicate a possible structural target offset from the Copper Hill prospect 6 miles east despite an apparent lack of outcropping mineralization. Of high interest are sections 24,25, 34,35, 36 of T. 13 S., R. 5 E.

The drilling of the new target in the north half of section 26 should be drilled as DDH RIP-4. This drill hole is an integral step in the evaluation of the Ripsey Hill prospect and should be regarded as part of a step-in drilling program following lithologic, alteration, and geochemical criteria into the porphyry copper target.

Rich Loring

R. B. Loring

RBL:mm



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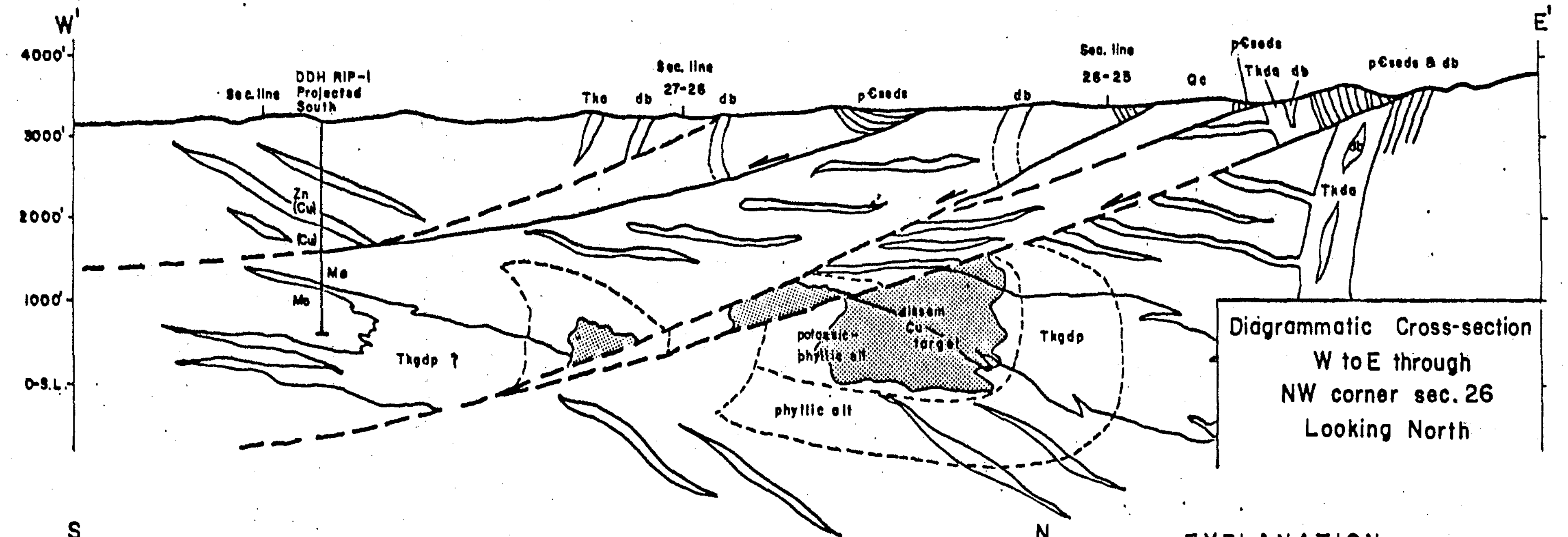
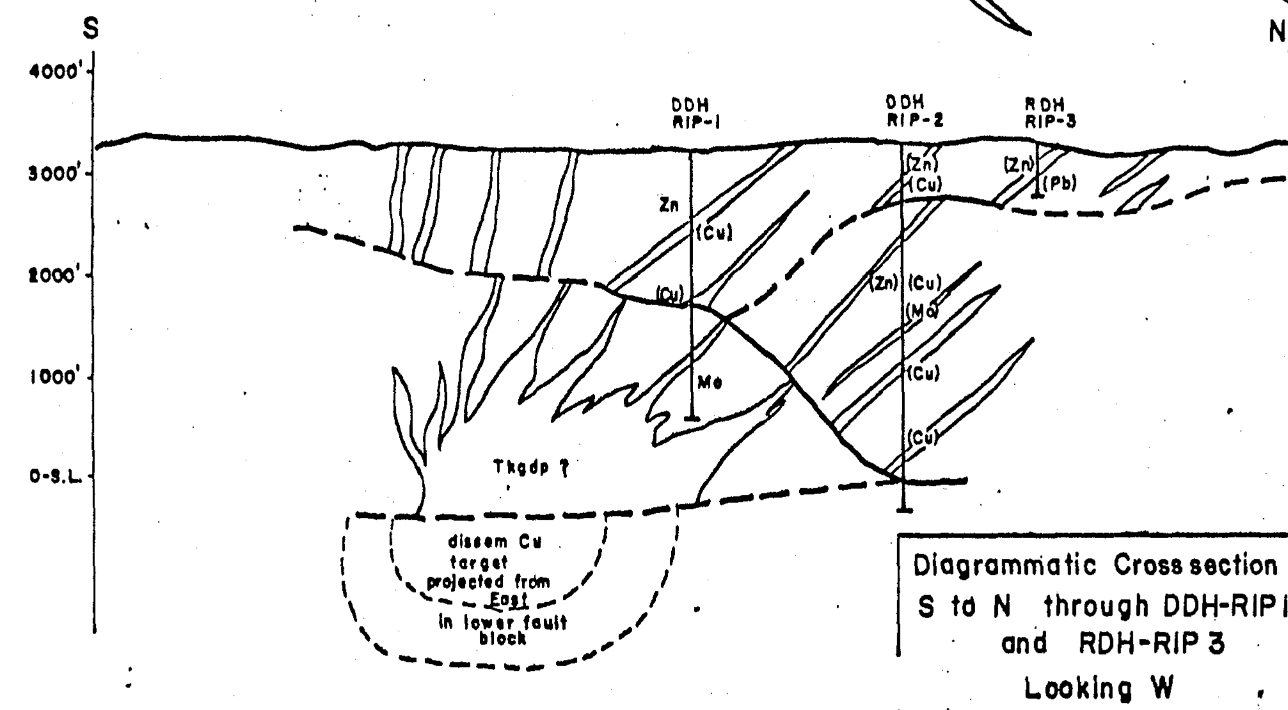
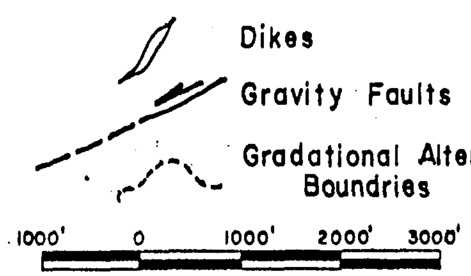
Precambrian to Paleozoic sediments
Precambrian to Laramide crystalline rocks
Sulfide veins
Faults
Strong IP anomaly
Weaker or deeper anomaly
Drill target-porphyry Cu
E' W E Cross-section
DDH-RIP-1
DDH-RIP-2
RDH-RIP-3
RIPSEY HILL PROJECT
GEOLOGIC MAP &
TARGET DEFINITION
ARIZONA
PINAL
1" = 4000'
CONOCO
CONTINENTAL OIL COMPANY
MINERALS DEPARTMENT
METALLICS DIVISION
TUCSON, ARIZONA
A-033-27





EXPLANATION



RIPSEY HILL PROSPECT
STRUCTURE CROSS SECTIONS

ARIZONA	PINAL	1" = 2000'

Conoco Inc.
Minerals Department
Metallics Exploration
Tucson, Arizona

R.B.LORING	11/79	A-033-28
S.B.GAUL	11/79	

DRILL HOLE SUMMARY

Date: 9-5-79

Drill Hole: D.D.H. RIP-2 and 2R   Project: Ripsey Hill

Location: NWNWSENW Section 22

Collar Elevation: 3245 ft.

Depth to Bedrock: 7 ft.

Oxide-Sulfide Interface: 735 ft.

Total Depth: 3518 ft.

Rotary Starting Date: 4-18-79   Completion Date: 4-19-79   Footage: 420 ft.

Coring Starting Date: 4-25-79   Completion Date: 8-15-79   Footage: 3108 ft.

Inclination: vertical, D.D.H. RIP-2 to 1179, RIP-2R: 1169 to 3518

Assay Data: see attached assay sheets and strip log

Composite Data:

Interval	Zn	Cu	Mo
630-700 ft. (70 ft.)	267 ppm	440 ppm	--
770-1160 ft. (390 ft.)	—	125	8 ppm
1240-1360 ft. (120 ft.)	--	68	51
1530-1750 ft. (220 ft.)	234*	128	20
1880-1970 ft. (90 ft.)	130	132	47
2220-2320 ft. (100 ft.)	—	264a	3
2800-3100 ft. (300 ft.)	—	161x	—

* Includes 20 ft. of 2150 ppm Zn
x Includes 10 ft. of 1500 ppm Cu
a Includes 10 ft. of 1300 ppm Cu

Rock Types:

0-1820 ft.: Various granitic and aplitic phases of Precambrian Ruin granite, cut by:
- 240-260 ft.: Laramide andesite dike
- 820-910 ft.: Zone of andesite porphyry dikes
- 1805-1820 ft.: Andesite dikes

1820-2572 ft.: Medium grained Ruin granite, cut by:
- 2050-2055 ft.: Andesite dike
- 2080-2100 ft.: Andesite and tonalite to granodiorite porphyry
- 2264-2286 ft.: Andesite dike
- 2530-2572 ft.: Granodiorite or tonalite porphyry

2572-3000 ft.: Ruin granite with local aplitic phases

3000-3095 ft.: Dacite, dacite porphyry and andesite dikes

3095-3518 ft.: Ruin granite, medium grained, cut by:
- 3205-3245 ft.: Silicified fault gouge and cataclasites
- 3320-3333 ft.: Andesite dike
- 3445-3450 ft.: Andesite dike

Alteration:

Secondary silication is highly variable throughout the drillhole. Type of replacement or introduction is quite dependent on rock types, fracture intensity, and proximity to the various intrusive units. General indications are that a weak to moderate, somewhat disorganized hydrothermal alteration halo was intersected below 450 feet and was completely crossed, except for outlying veins, at about 3450 feet.

Alteration is nonexistent to about 450 feet, possibly due to the impregnability of the tight aphitic phases of the granite. Below 450, moderate propylitic phases with erratic chlorite, clay (fine grained sericite?), calcite, and epidote affect both Precambrian wall rocks and small intrusive bodies. Small zones of phyllic alteration, sericite with minor clay and rare quartz, overprint the propylitic zone adjacent to veins and veinlets in zones up to 20 and 30 feet wide.

At 810 feet these narrow phyllic zones begin to intensify with a more consistent, though weak, introduction of quartz along with the sericite adjacent to dikes. The dominant alteration, though, remains propylitic to about 1400 feet.

At 1400 feet, sericite completely replaces all plagioclase and most mafics. Quartz is erratic and highly dependent on veining. Very weak secondary potash feldspar and local anhydrite occur in this zone down to about 1550, but none of this alteration can be described as highly pervasive. Veining is weak overall.

Chlorite and trace epidote zones alternate with sericitic zones (not true phyllic alteration) down to about 2200 feet with introduction of quartz and pervasive sericite occurring only adjacent to veinlets. Andesite dikes are characteristically altered to chlorite-sericite and trace epidote throughout this interval.

Between 2200 and 2600 feet, wallrocks are affected by weak sericite and inconsistent chloritization. Primary biotite is often relict. Dikes are propylitized and weakly sericitized. Chloritic veining increases in the wallrocks adjacent to dikes.

Below 2600, sericite and quartz gradually increase at the expense of chlorite, and sugary white, pervasive sericitization appears for the first time in conjunction with strong sulfide and quartz veins. Stockwork quartz veining and moderate to strongly pervasive sericite persist until about 3050. Below this depth, veining becomes more erratic, less intense, and biotite reappears as a relict mineral. Dikes are sericitized and propylitized.

At 3210, intense silica flooding affects highly brecciated and fragmented granite for about 30 feet. (At the surface several silicified breccia zones were mapped and shown to be related to horizontal or low angle faults.) Cataclasis continues in the granite below the intense silicification, and a dramatic change to weak and erratic sericite-chlorite alteration below 3275 feet indicates the initial intercept of a deeper structural unit, probably separated from the overlying block by a zone of intense low angle faulting.

Alteration in this lower block consists of diminishing and erratic sericite with increasing propylitization to the total depth at 3518 feet. Fewer zones of quartz veining and less pervasive alteration occur in this interval than in most of the drillhole below about 800 feet.

The apparent symmetry of the alteration throughout the drillhole, taking faulting into account, indicates that most of the alteration halo was traversed by the drilling. The nature of the alteration changes from fresh to propylitic, then sericitic (argillic?), to phyllic, and then back to propylitic-argillic. The inconsistency of alteration even within these broad categories is due to structural controls characteristic of a peripheral or distal environment relative to the hydrothermal center.

Mineralization:

This drillhole is typified by the lack of a large, well zoned sulfide system. Instead, several small weakly developed systems appear to overlap within the extent of the hole and may be related to several concentrations of dikes and/or stockwork veins.

Overall, the drillhole is low total sulfide, and sulfides consist primarily of pyrite averaging 1/2-1% (visual estimate; sulfur assays show total sulfide about 1% higher) with scattered occurrences of molybdenite, chalcopyrite, sphalerite, and galena. Significant increases in pyrite content above 1% occur in the intervals 830-980, 1180-1360, 1820-1940, 2040-2090, and 2770-3030 feet. All but the last interval average 1-2% total sulfide; the last interval contains 2-3%. Other intervals contain 1/2% or less with thin isolated spikes (caused by veins) of up to 5% sulfides. Total sulfide is lower with more spikes at the bottom of the hole. In the top 700 feet evidence of this characteristic is veiled by oxidation, but the overall lack of significant alteration indicates an absence of mineralized structures until about 600 feet.

The most distinct zonation of sulfide occurs from 500 feet to about 2100 feet and is characterized by high copper-zinc (to 1100 ppm) at 630 to 700 feet; copper with some molybdenum at 800 to 1200 feet; high molybdenum from 1200 to 1350. Below this latter interval zonation becomes less distinct due to possible mixing of adjacent possibly overwhelmed systems. The copper with minor molybdenum zone expected here also contains spikes of high zinc and rare instances of galena to 2100 feet.

Trace amounts of galena dominate the non-pyrite sulfides to 2500 except for sharply increased chalcopyrite in a group of andesite dikes at 2260 to 2280. Total sulfide is extremely low from 2100 to 2500 feet.

The high pyrite (2-3%) from 2770-3030 feet may define a second moderately well defined sulfide system. This center also contains the most intense phyllic alteration and visible but scattered chalcopyrite and molybdenite. However, assays are unimpressive for copper and little more than background for molybdenum except for one spike at 3020 which also contains zinc.

Scattered occurrences of chalcopyrite and molybdenite continue to about 3400 feet, but from there downward galena dominates over other non-pyrite sulfides, including sphalerite. Sharply reduced sulfidization coincides with lackluster alteration to total depth at 3518.

Assays compared with chalcopyrite content indicate that most copper is probably contained in cupiferous pyrite. The structural control to most sulfides as veins, veinlets and weak stockworks is common throughout the hole. The low assays and weak zoning together with these other features are typical of peripheral or distal environments.

Structure:

Two major faults separate the drilled section into three discrete, probably rotated, fault blocks. One fault zone occurs between 535 and 570; the other in and below the silicified zone between 3205 and 3245. The upper fault zone is mapped 200 yards east of the drillhole; the lower zone is inferred to surface 3/4 to 1-1/2 miles to the east. Otherwise, the entire core is riddled with shallow and moderately dipping faults of probably small displacements.

Comment:

The weak and disorganized mineralization, erratic alteration, and small intrusions of D.D.H. RIP-2 contrast strongly with the highly zoned, well mineralized intervals related to larger intrusions of D.D.H. RIP-1. Vectors developed between these two drillholes indicate best target location now exists south and probably east of D.D.H. RIP-1 for a potential porphyry copper system. The same criteria establish that the surface geochemical copper anomalies north of D.D.H. RIP-2 are due to enrichment of copper from primary cupiferous pyrite.

Drilling problems, including casing failures due to erosion and vibration, caused slow drilling and delays. Loss of D.D.H RIP-2 by caving and lost circulation necessitated drilling D.D.H. RIP-2R about 35 feet east of RIP-2. D.D.H. RIP-2 was lost at 1179; D.D.H. RIP-2 resumed core drilling at 1169, hence 10 feet overlap in drilling intervals.

RIPSEY HILL PROJECT

D.D.H. RIP-2,2R

COLLAR ELEVATION: 3245ft.
LOCATION: NWNWSENW SEC 22

DRILL HOLE STRIP LOG

FINAL DEPTH: 3518ft.
COMPLETION DATE: 8-15-79

EXPLANATION

- Large Veins
- Shear Zones
- Faults (general dip)
- Silicified Fault Breccia (SBX)
- Laramide Granodiorite Porphyry (GDP)
- Laramide Andesite (AND)
- Precambrian Granite and Aplite

RIPSEY HILL PROJECT
DRILL HOLE STRIP LOG
D.D.H. RIP-2,2R

STATE ARIZONA	COUNTY	SCALE	C.I.

Conoco Inc.
Minerals Department
Metallics Exploration
Tucson, Arizona

DATA BY R. LORING	DATE 8-15-79	FILE NO.
DRAWN BY S.B GAUL	DATE 8-23-79	

DRILL HOLE SUMMARY

Date: 9-6-79

Drill Hole: R.D.H. RIP-3 Project: Ripsey Hill

Location: SE corner Section 16

Collar Elevation: 3205 ft.

Depth to Bedrock: approx. 10 ft.

Oxide-Sulfide Interface: approx. 220 ft.

Total Depth: 540 ft.

Rotary Starting Date: 4-11-79 Completion Date: 4-18-79 Footage: 540 ft.

Inclination: vertical

Assay Data: see attached assay sheets and strip log

Composite Data: none justified, see strip log

Rock Types:

	0-160 ft.:	Precambrian Ruin granite and aplite
	160-220 ft.:	Laramide quartz syenite dike
	220-540 ft.:	Ruin granite

Alteration:

The Precambrian granite and aplite are only weakly altered to sericite and clay largely due to supergene activity down to about 340 feet. Chlorite is visible in cuttings from 120 feet downward to total depth. Sericite is weak to total depth except adjacent to quartz veining from 280 to 320 feet and 380 to 400 feet. Epidote occurs in several intervals.

The quartz syenite is propylitically altered with biotite changed to chlorite and leucoxene.

Mineralization:

Sulfidization is generally weak throughout the hole below oxidation except in a zone of quartz veining at 380-400 feet. Cuttings in this interval indicated up to 1% pyrite. Trace galena (originally logged as molybdenite) occurs in several separate intervals. Other sulfides could not be logged due to contamination from above, but assays indicate a considerable sphalerite content in the same interval as quartz veining.

Structure:

The dike intercept beginning at 160 feet is the same dike mapped about 160 to 170 feet from the drillhole. The 45 degree dip to the SE defined by this geometry is an approximation of the dip to the entire mineralized system, possibly a maximum dip.

Comment:

The lead and zinc values intercepted in this hole belie the anomalous copper values obtained from outcropping veins in this structural plate. High copper assays probably are derived from enriched copper of weathered cupiferous pyrite.

RIPSEY HILL PROJECT

R.D.H. RIP-3

DRILL HOLE STRIP LOG

COLLAR ELEVATION: 3205ft

LOCATION: SE Corner Sec. 16

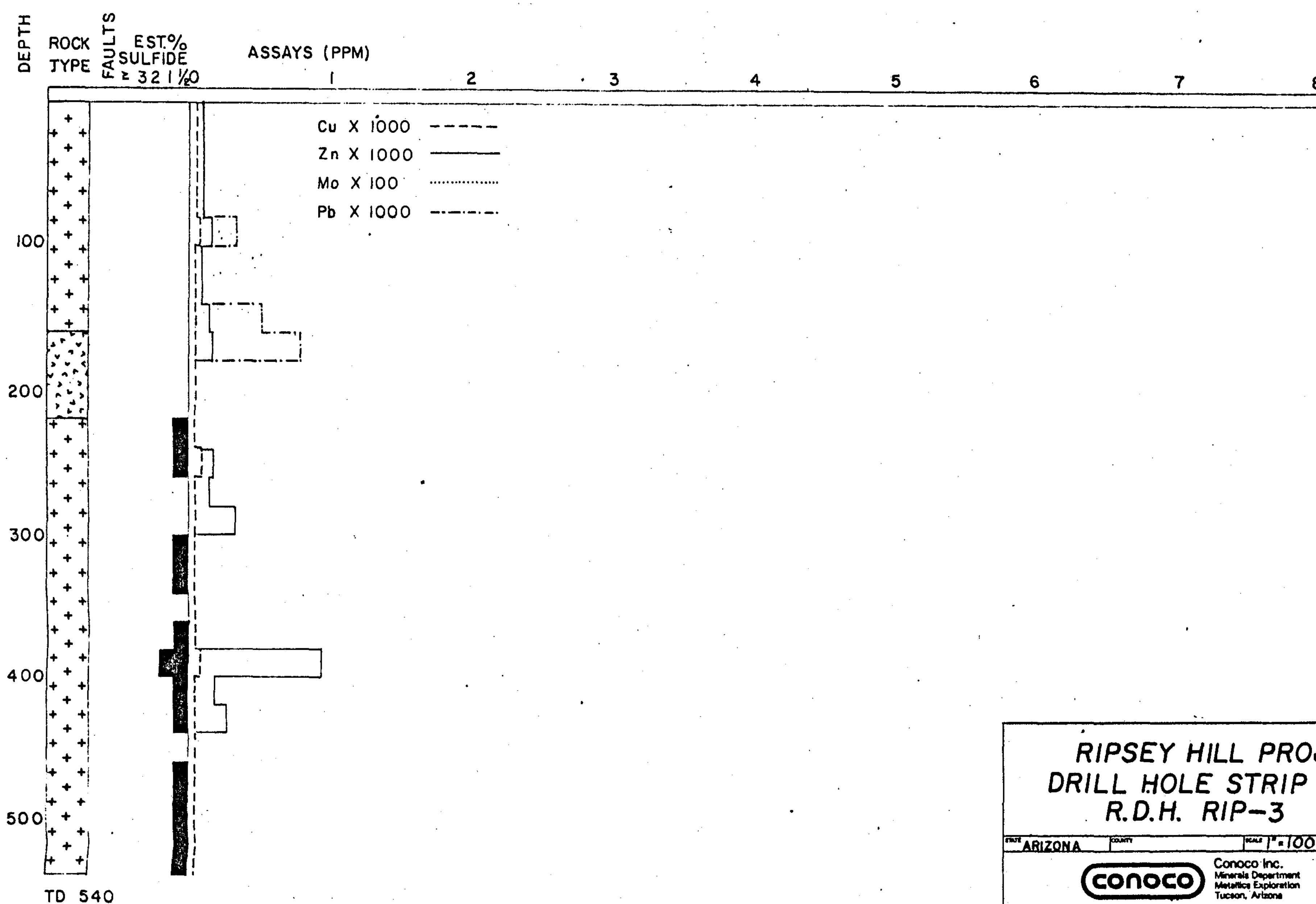
FINAL DEPTH: 540ft

COMPLETION DATE: 4-18-79

EXPLANATION

LARAMIDE QUARTZ SYENITE

PRECAMBRIAN GRANITE & APLITE



RIPSEY HILL PROJECT
DRILL HOLE STRIP LOG
R.D.H. RIP-3

STATE ARIZONA	COUNTY	SCALE 1" = 100'	C.I.

Conoco Inc.
Minerals Department
Metallics Exploration
Tucson, Arizona

DATA BY R. LORING	DATE	FILE NO. A-033-D3
DRAWN BY S.B. GAUL	DATE 9-10-79	

EFCO

EFCO LABORATORIES
North Freeway at Ruthrauf Road P. O. Box 5526
TUCSON, ARIZONA 85703
Phone (602) 887-4241

Laboratory Analysis Report

Continental Oil Co.
2020 N. Forbes Blvd. Suite 105
Tucson, Arizona 85705

Rich Loring

REPORT NO. 796727
DATE SUBMITTED 4/18/79
DATE REPORTED 4/23/79

Sample Number	DEPTH	PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
41401	0-20 FT	10	<1	36	95
41402	40	13	<1	73	86
41403	60	9	<1	56	50
41404	80	15	<1	117	43
41405	100	57	<1	320	154
41406	120	12	<1	64	66
41407	140	12	<1	77	75
41408	160	25	<1	509	144
41409	160-180	26	<1	790	159

8182-6101739-42
RIP-3

W. W. Turner D.2.
Signed

EFCO

EFCO LABORATORIES

North Freeway at Ruthrauf Road P. O. Box 5526
TUCSON, ARIZONA 85703
Phone (602) 887-4241

Laboratory Analysis Report

Continental Oil Co.
2020 N. Forbes Blvd. Suite 105
Tucson, Arizona 85705

Rich Loring

REPORT NO. 796728
DATE SUBMITTED 5/2/79
DATE REPORTED 5/4/79

Sample Number	DEPTH		PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
41410	0-20	RDH RIP-2	10	<1	16	53
11	40		9	<1	18	43
12	60		12	<1	48	58
13	80		8	<1	76	36
14	100		11	<1	20	32
15	120		7	<1	18	27
16	140		9	<1	37	64
17	160		9	<1	40	47
18	180		9	<1	30	35
19	200		11	<1	22	39
20	220		10	<1	14	49
21	240		10	<1	24	47
22	260		7	<1	16	37
23	280		15	<1	31	83
24	300		9	<1	36	64
25	320		6	<1	22	18
26	340		6	<1	19	22
27	360		7	<1	19	25
28	380		9	<1	23	48
29	400		9	<1	35	29
30	400-420		8	<1	45	41
31	180-200	RDH RIP-3	21	<1	16	83
32	220		20	<1	18	56
33	240		15	<1	22	43
34	260		8	<1	18	31
35	280		87	<1	33	183
36	300		20	<1	22	170
37	320		22	<1	47	317
38	340		36	<1	22	63
39	360		20	<1	23	52
40	360-380		13	<1	16	68

Margin notes: RDH RIP-2 (samples 41410–41430); RIP-3 (samples 41431–41440)

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Signed

R.D.H.
RIP-3

Sample Number		PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
41441	380-400	78	<1	34	945
42	420	16	<1	24	195
43	440	20	<1	94	286
44	460	9	<1	22	32
45	480	22	<1	46	126
46	500	10	<1	34	57
47	520	20	<1	44	97
48	520-540	10	<1	28	28

[signature]
Signed

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North Freeway at Ruthrauf Road P. O. Box 5526
TUCSON, ARIZONA 85703
Phone (602) 887-4241

Laboratory Analysis Report

Continental Oil Co.
2020 N. Forbes Blvd. Suite 105
Tucson, Arizona 85705

Rich Loring

REPORT NO. 796742

DATE SUBMITTED 5/29/79

DATE REPORTED 6/4/79

D.D.H.
RIP-2

Sample Number		PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
41449	420-430	30	<1	27	37
50	440	12	<1	25	40
51	450	16	<1	40	43
52	460	14	<1	24	40
53	470	14	<1	6	42
54	480	22	<1	19	60
55	490	21	<1	13	57
56	500	17	<1	9	64
57	500 - 510	21	<1	13	62
58	520	14	<1	10	43
59	530	13	<1	12	61
60	540	90	6	24	240
61	550	13	<1	9	86
62	560	13	<1	8	68
63	570	13	5	8	94
64	580	48	7	9	172
65	590	85	<1	15	74
66	600	64	<1	17	67
67	600- 610	156	<1	13	76
68	620	60	<1	24	96
69	630	35	<1	14	77
70	640	+1000	<1	41	184
71	650	165	<1	18	155
72	660	25	<1	14	108
73	670	345	<1	14	230
74	680	291	<1	10	177
75	690	825	<1	14	720
76	700	324	<1	17	300
77	710	40	<1	9	86
78	710 -720	67	<1	11	78

A Division of Arizona Feeds

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Signed

Sample Number		PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
41479	720-730	60	7	14	137
80	740	53	<1	13	50
81	750	78	<1	6	35
82	760	63	<1	11	34

GEOCHEMICAL ASSAY

Sample Number	% Copper
41470	0.11

Signed

Sample Number		PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
41490	830 - 840	74	<1	8	21
91	850	94	<1	20	26
92	860	115	<1	15	41
93	870	206	40	9	56
94	880	157	1	15	30
95	890	141	<1	13	140
96	890 - 900	143	<1	10	200
97	910	266	<1	16	146
98	920	74	<1	7	27
99	930	153	3	20	34
500	940	48	<1	10	26

Signed

EFCO LABORATORIES
North Freeway at Ruthrauf Road P. O. Box 5526
TUCSON, ARIZONA 85703
Phone (602) 887-4241

EFCO

Laboratory Analysis Report

RIP-2

Continental Oil Co.
2020 N. Forbes Blvd. Suite 105
Tucson, Arizona 85705

Rich Loring

REPORT NO. 796805
DATE SUBMITTED 6/6/79
DATE REPORTED 6/14/79

DDH.
RIP-2

Sample Number		PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
41601	940-950	93	<1	11	38
2	960	211	7	10	14
3	970	135	14	15	29
4	980	152	5	9	12
5	990	138	10	6	12
6	990-1000	129	5	5	12
7	1010	135	15	17	21
8	1020	144	<1	12	17
9	1030	207	21	9	16
10	1040	118	38	17	38
11	1050	130	2	16	21
12	1060	101	3	15	10
13	1070	95	34	15	9
14	1080	82	28	10	10
15	1090	138	<1	13	17
16	1090-1100	68	3	14	18
17	1110	83	2	10	13
18	1120	84	3	16	20
19	1130	168	<1	13	20
20	1140	151	6	11	13
21	1150	78	27	11	14
RIP-2 22	1160	228	2	15	12
23	1170	42	6	17	44
24	1170-1179	114	<1	9	10
41483	760-770	55	2	9	24
84	780	79	<1	19	23
85	790	109	<1	18	124
86	800	75	<1	11	43
87	810	89	<1	9	34
88	820	116	<1	15	26
89	820-830	96	<1	9	8

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
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Phone (602) 887-4241

Laboratory Analysis Report

Conoco, Inc.
2020 N. Forbes Blvd. Suiite 105
Tucson, Arizona 85705

Rich Loring

REPORT NO. 796813
DATE SUBMITTED 6/22/79
DATE REPORTED 6/28/79

PIP-2R

Sample Number		PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
41625	1169-1180	73	13	19	44
26	1190	83	3	23	20
27	1200	70	21	5	11
28	10	68	33	21	33
29	20	83	9	18	23
30	30	96	57	13	20
31	40	58	14	9	11
32	1250	72	79	15	17
33	60	100	11	14	10
34	70	48	145	28	81
35	80	64	7	12	23
36	90	36	16	11	11
37	1300	52	36	11	11
38	10	67	82	6	10
39	20	113	28	12	16
40	30	46	21	19	20
41	40	57	17	11	12
42	1350	47	136	26	57
43	60	117	37	20	16
44	70	104	15	24	16
45	80	50	15	13	13
46	90	68	11	19	16
47	1400	110	26	29	14
48	10	130	2	19	17
49	20	47	< 1	20	18
50	30	61	2	28	18
51	1430-1440	78	< 1	21	24
1020-1040		120	< 1	28	650
1040-1060		150	< 1	30	465
1060-1080		99	< 1	11	540
1080-1100		88	< 1	29	+1000

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Tucson, Arizona 85705

Rich Loring

DDH. - RIP-2R

REPORT NO. 796818
DATE SUBMITTED 7/6/79
DATE REPORTED 7/10/79

Sample Number		PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc	PPM Gold
41652	1440-1450	65	1	10	22	<0.10
53	60	48	6	14	13	0.14
54	70	58	1	14	14	0.14
55	80	64	2	10	16	0.20
56	90	77	3	14	21	0.20
57	1500	62	19	7	17	0.20
58	10	85	6	9	20	0.27
59	20	78	2	7	14	0.20
60	30	86	<1	7	15	0.14
61	40	143	98	6	18	0.14
62	50	91	62	10	8	0.27
63	60	100	21	9	9	0.14
64	70	156	6	11	7	0.14
65	80	106	<1	116	540	0.14
66	90	53	29	14	20	<0.10
67	1600	61	17	15	23	0.27
68	10	102	<1	12	19	0.20
69	20	152	<1	11	24	0.20
70	30	139	9	11	18	0.14
71	40	85	40	10	9	<0.10
72	50	135	11	9	16	<0.10
73	60	169	16	10	14	<0.10
74	70	159	12	8	12	<0.10
75	80	101	8	9	11	0.14
76	90	61	8	12	9	<0.10
77	1700	61	11	10	9	0.34
78	10	91	31	11	11	0.27
79	20	240	6	395	+1000	0.27
80	30	230	21	162	+1000	0.34
81	40	145	20	27	46	<0.10
82	1740-1750	245	3	40	19	<0.10

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Sample Number		PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc	PPM Gold
41683	1750-60	76	49	9	16	<0.10
84	70	85	18	9	13	<0.10
85	80	90	10	8	11	<0.10
86	90	80	17	8	11	<0.10
87	1800	62	12	10	31	<0.10
88	10	50	6	10	20	<0.10
89	20	73	7	6	24	<0.10
90	30	150	2	15	22	<0.10
91	40	67	20	11	10	<0.10
92	50	92	1	9	8	<0.10
93	60	81	21	15	11	0.14
94	1860-1870	105	1	6	26	<0.10

GEOCHEMICAL ASSAY

Sample Number	% Zinc
41679	0.21
41680	0.22

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Tucson, Arizona 85705

Rich Loring

RIP-2R

REPORT NO. 796822
DATE SUBMITTED 7/16/79
DATE REPORTED 7/18/79

Sample Number	FOOTAGE	PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
41695	1870-1880	92	3	8	9
96	90	442	170	84	885
97	1900	68	84	19	104
98	10	52	1	10	9
99	20	59	37	10	7
41700	30	152	16	12	14
41901	1930-1940	150	50	12	70
02	50	86	12	9	13
03	60	63	45	8	11
04	70	119	4	20	60
05	80	59	5	8	13
06	90	51	5	8	11
07	1990-2000	76	5	9	12
08	10	31	7	9	12
09	20	50	3	9	16
10	30	38	14	9	10
11	40	44	1	10	13
12	50	49	<1	10	23
13	60	121	16	25	148
14	2060-2070	70	8	20	32

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Laboratory Analysis Report

RIP-2R

Conoco, Inc.
2020 N. Forbes Blvd. Suite 105
Tucson, Arizona 85705

Rich Loring

REPORT NO. 796823

DATE SUBMITTED 7/18/79

DATE REPORTED 7/20/78

Sample Number	FOOTAGE	PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
41915	2070-2080	94	<1	22	14
16	90	221	<1	16	47
17	2100	138	<1	18	51
18	10	40	1	15	20
19	20	47	28	18	25
20	30	70	59	16	21
21	40	75	43	18	21
22	50	68	<1	20	20
23	60	38	<1	19	23
24	70	39	<1	20	28
25	80	85	<1	25	22
26	90	61	<1	17	21
27	2200	55	10	39	29
28	10	43	24	44	60
29	20	72	<1	25	39
30	30	175	<1	27	43
31	40	202	7	54	118
32	50	153	<1	27	27
33	60	33	<1	17	22
34	2260-2270	+1000	<1	41	121

GEOCHEMICAL ASSAY

Sample Number	% Copper
41934	0.13

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RIP-2R

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Tucson, Arizona 85705

Rich Loring

REPORT NO. 796828

DATE SUBMITTED 7/23/79

DATE REPORTED 7/26/79

Sample Number		PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
41935	2270-2280	357	<1	32	106
36	90	209	<1	13	33
37	2300	66	2	16	12
38	10	41	<1	8	8
39	20	103	20	10	9
40	30	52	45	12	10
41	40	40	38	14	9
42	50	42	2	15	8
43	60	38	27	14	9
44	70	55	5	14	14
45	80	68	<1	21	26
46	90	42	<1	14	52
47	2400	38	<1	14	15
48	10	41	5	14	18
49	20	52	<1	14	13
50	2420-2430	43	<1	21	14
51	2440-2450	23	<1	16	12
53	2450-2460	34	<1	18	12
54	2460-2470	27	<1	17	18
55	2430-2440	23	<1	13	17
56	2470-2480	59	<1	18	18
57	2490	28	<1	450	15
58	2500	19	3	22	20
59	10	52	<1	20	15
60	20	186	<1	35	20
61	30	36	<1	22	37
62	40	40	<1	28	45
63	2540-2550	45	<1	16	25

Sample Number 41952 is missing.

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Rich Loring

Rip-2R

REPORT NO. 796829

DATE SUBMITTED 7/27/79

DATE REPORTED 7/30/79

Sample Number		PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
41964	2550-2560	44	<1	18	23
65	70	44	<1	12	25
66	80	20	5	10	16
67	90	22	<1	10	9
68	2600	55	9	47	145
69	10	34	2	18	13
70	20	26	<1	14	17
71	30	36	2	12	13
72	40	38	<1	19	18
73	50	69	15	40	99
74	60	57	<1	23	15
75	70	27	<1	18	23
76	80	29	<1	17	14
77	90	20	<1	20	13
78	2700	32	<1	24	14
79	10	60	<1	30	12
80	20	69	<1	17	11
81	2720-2730	43	<1	20	20

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Tucson, Arizona 85705

Rich Loring

RIP-2R

REPORT NO. Rechecks
DATE SUBMITTED 8/9/79
DATE REPORTED 8/9/79

Sample Number		PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
40801	2920-2930	167	<1	43	38
02	40	104	<1	21	16
03	2950	41	4	14	14
82	2730-2740	30	3	20	12
83	50	52	<1	17	9
84	60	50	<1	18	11
85	70	56	<1	10	9
86	80	31	13	37	71
87	90	93	<1	36	23
88	2800	42	5	23	18
89	10	171	<1	27	13
90	20	91	<1	17	9
91	30	71	<1	22	10
92	40	54	<1	21	12
93	50	104	<1	15	11
94	60	95	<1	17	10
95	70	45	6	41	43
96	80	196	18	31	45
97	90	59	<1	18	12
98	2900	213	<1	21	28
99	10	94	<1	20	17
42000	2910-2920	105	<1	24	16

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Tucson, Arizona 85705

Rich Loring

REPORT NO. 796835
DATE SUBMITTED 8/7/79
DATE REPORTED 8/9/79

Sample Number		PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
40804	2950-60	52	<1	16	14
05	70	57	<1	9	10
06	80	214	<1	17	19
07	90	65	<1	16	14
08	3000	40	<1	12	11
09	10	+1000	5	30	59
10	20	139	45	92	665
11	30	101	1	21	12
12	40	63	1	15	15
13	50	247	<1	19	60
14	60	190	10	43	68
15	70	130	<1	15	18
16	80	65	<1	30	14
17	90	254	<1	24	124
18	3090-3100	104	<1	14	40

GEOCHEMICAL ASSAY

Sample Number	% Copper
40809	0.15

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Rich Loring

RIP. 2R

REPORT NO. 796836

DATE SUBMITTED 8/9/79

DATE REPORTED 8/10/79

Sample Number		PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
40819	3100-3110	28	<1	12	10
20	20	34	<1	5	17
21	30	58	<1	17	9
22	40	59	<1	13	14
23	50	62	2	11	9
24	60	39	<1	5	13
25	70	49	<1	5	11
26	80	38	<1	5	10
27	90	50	<1	9	12
28	3190-3200	62	<1	10	28
29	10	129	5	12	82
30	20	28	2	6	60
31	3220-3230	37	<1	12	69

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Rich Loring

DDH. RIP-2R

REPORT NO. 796904
DATE SUBMITTED 8/13/79
DATE REPORTED 8/16/79

Sample Number		PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
40832	3230-3240	29	2	20	52
33	50	122	7	42	57
34	60	94	2	48	36
35	70	37	<1	27	12
36	80	60	8	39	11
37	90	69	6	39	580
38	3300	310	<1	47	58
39	10	132	<1	20	33
40	20	55	<1	23	15
41	30	133	<1	25	39
42	40	121	7	21	14
43	50	38	2	28	11
44	60	28	<1	28	13
45	70	34	45	25	17
46	80	45	41	25	15
47	3380-3390	76	2	34	41

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DDH RIP 2R

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Rich Loring

REPORT NO. 796909
DATE SUBMITTED 8/16/79
DATE REPORTED 8/23/79

Sample Number		PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
40848	3390-3400	103	<1	11	8
49	10	72	<1	12	11
50	20	64	9	18	12
51	30	36	<1	11	13
52	40	33	<1	14	18
53	50	155	8	24	72
54	60	56	<1	18	12
55	70	80	<1	11	9
56	80	81	<1	13	17
57	90	81	<1	16	29
58	3490-3500	114	6	24	26
59	10	98	<1	14	11
60	3510-3518	84	<1	25	46

Signed

TAB

I. P.

Interoffice Communication

To: R. B. Loring

From: R. D. Whitman

Date: May 31, 1978

Subject: RIPSEY I.P. SURVEY

INTRODUCTION

Under the supervision of Al Smith, the Conoco I.P. Crew ran 13.4 miles of drill hole radial array, 3.2 miles of 2000' dipole-dipole and 1.7 miles of 1000' dipole-dipole, for a total of 18.3 miles of I.P.-Resistivity data. The survey was started January 17, 1978 and finished February 8, 1978; this time breaks down into 15 production days, 2 bad weather days, 2 travel days and 4 days off. The data was moderately noisy, requiring as many as 80 readings for some of the larger electrode separations.

The radial drill hole survey was run first with the two dipole-dipole lines as follow-up. This work was done in an attempt to find the main bulk of a mineralized "porphyry system" that was intersected by D.D.H. RIP-1.

DISCUSSION OF THE DATA

Strong peaks (52-68 milliseconds of apparent I.P. response) on lines 45° and 90° of the drill hole survey indicate a responsive zone northeast and east of the drill hole, but close to the drill hole (less than 2000' away). On these two lines there is a suggestion, in the shape of the profiles, that there is a deeper responsive zone immediately to the northeast of the strong response mentioned above. This shows up much better in the 2000' dipole-dipole data.

The resistivity data from the drill hole survey indicates that the high I.P. response is associated with lower resistivity material (100 to 200 ohm-meters of apparent resistivity). Higher resistivity material (greater than 300 ohm-meters apparent resistivity) lies to the west and below the responsive zone.

The dipole-dipole data shows that the response is from a buried source that lies just above the high resistivity material and plunging to the northeast. The 2000' data indicates that the I.P. response anomaly blossoms into a larger zone at a depth of 1500' or more. This deep zone lies northeast of the drill hole, below stations 20NE to 40NE.

The upper portion of the anomaly correlates with a zone of strong sulfide mineralization in D.D.H. RIP-1. The higher resistivity material correlates with a lower fault block of less fractured material, seen in D.D.H. RIP-1.

CONCLUSIONS

This increasing response at depth, northeast of the drill hole, and the data in general, fit very well with the geological model you have constructed and support the idea of positioning the next drill hole northeast D.D.H. RIP-1.

DATA ACQUISITION PROCEDURES

The I.P.-Resistivity measurements were made using Elliot Geophysical Company time domain equipment. This system of measurements uses a time cycle of 2.0 seconds "on" and 2.0 seconds "off", 2.0 seconds "on" and 2.0 seconds "off" with the polarity reversed during the second "on" pulse. A model R20A receiver was used. In this instrument, the commencement of the measurement of the secondary voltage is delayed by 0.50 seconds to avoid transient effects. Integration is performed during the period from 0.50 seconds to 1.70 seconds, after the end of the "on" pulse. To conform to a standard presentation used in the early years of I.P., the integral time constant is adjusted to give I.P. readings equivalent to those obtained with 3.0 seconds "on" and "off" period, with integration of the secondary voltage during the first second of the "off" period.

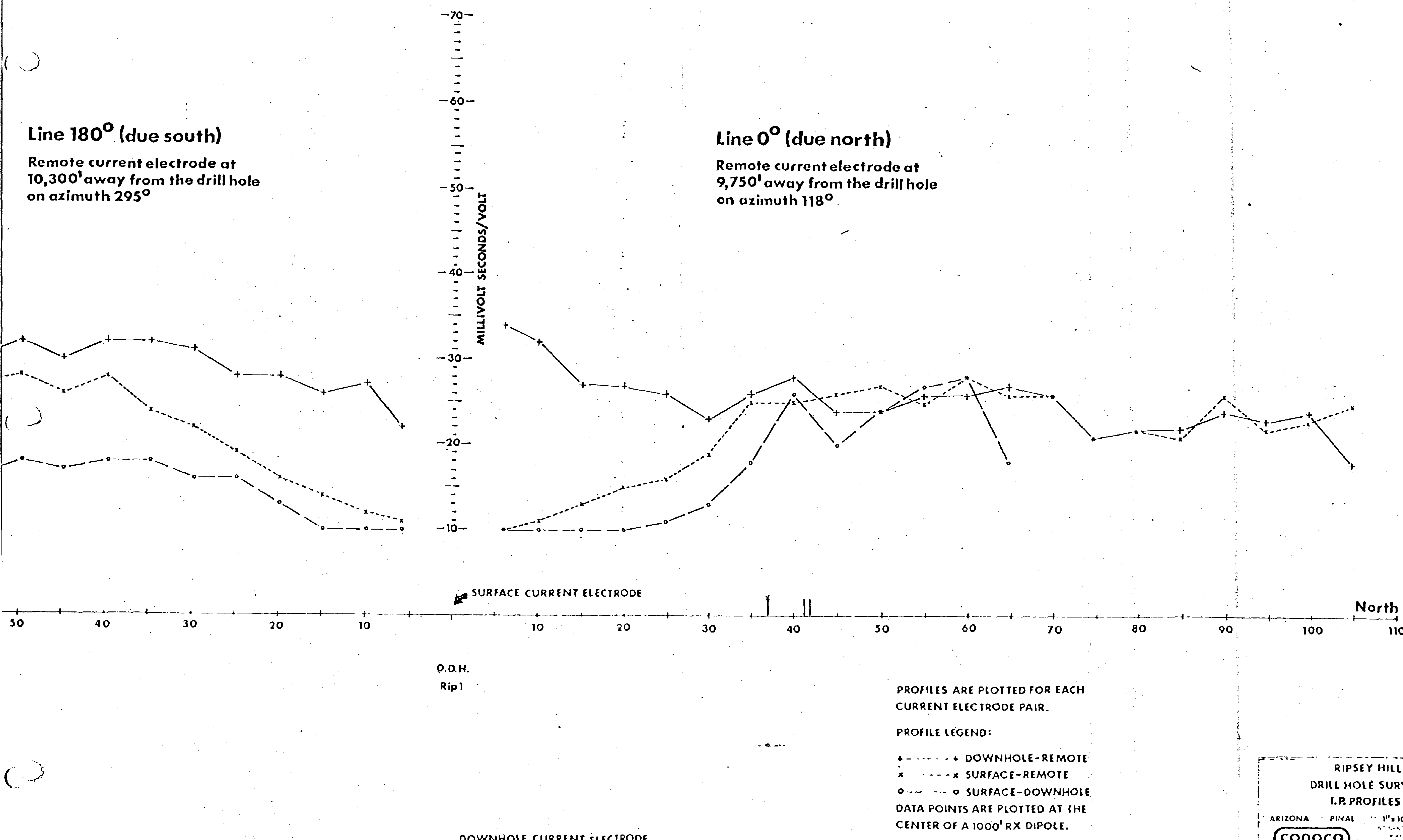
A series of consecutive apparent induced polarization readings are obtained and entered in the field of notes. Usually if 3 to 5 consecutive readings are of the same value, the average reading is considered acceptable. In areas where signal levels are not sufficient to override telluric noise, the readings will have considerable scatter. When this occurs, each reading is entered in the data sheet and also in a histogram form with a class interval of 5 units. Consecutive readings are acquired until the density of readings about a particular value results in a "bell"-shaped display. This indicates to the operator that a sufficient number of readings have been taken to produce a reasonably accurate average value.

These data were gathered using two different arrays. First, the drill hole radial array was used with four current electrodes; one at the bottom of the drill hole (2600'), one at the surface next to the drill hole, and two remote electrodes approximately 10,000' from the drill hole. Readings were taken with a 1000' receiver dipole along eight lines radiating out from the drill hole. Measurements were made for three different current electrode pairs, using the remote electrode farthest from the reading line. The apparent polarization response in units of millivolt-seconds/volt and apparent resistivity in ohm-meters are plotted in profiles with a profile for each current electrode pair used, i.e. downhole-remote, surface-remote (same as pole-dipole array) and surface-downhole.

A line running N45^{o}E across the drill hole was run with conventional in-line dipole-dipole array using 1000' and 2000' dipoles. Measurements were made for dipole separation factors, "n" of 1 through 6. The potential electrodes occupied positions on both sides of the current electrode spread. For the standard seven electrode array this provides a line coverage of nine times the dipole length. Apparent polarization response in units of millivolt-seconds/volt and apparent resistivity in ohm-meters are plotted in pseudo-sections to facilitate presentation of the data at all spacings used.

R. D. Whitman

ska



PROFILES ARE PLOTTED FOR EACH CURRENT ELECTRODE PAIR.

PROFILE LEGEND:

+——+ DOWNHOLE-REMOTE
x----x SURFACE-REMOTE
o— —o SURFACE-DOWNHOLE

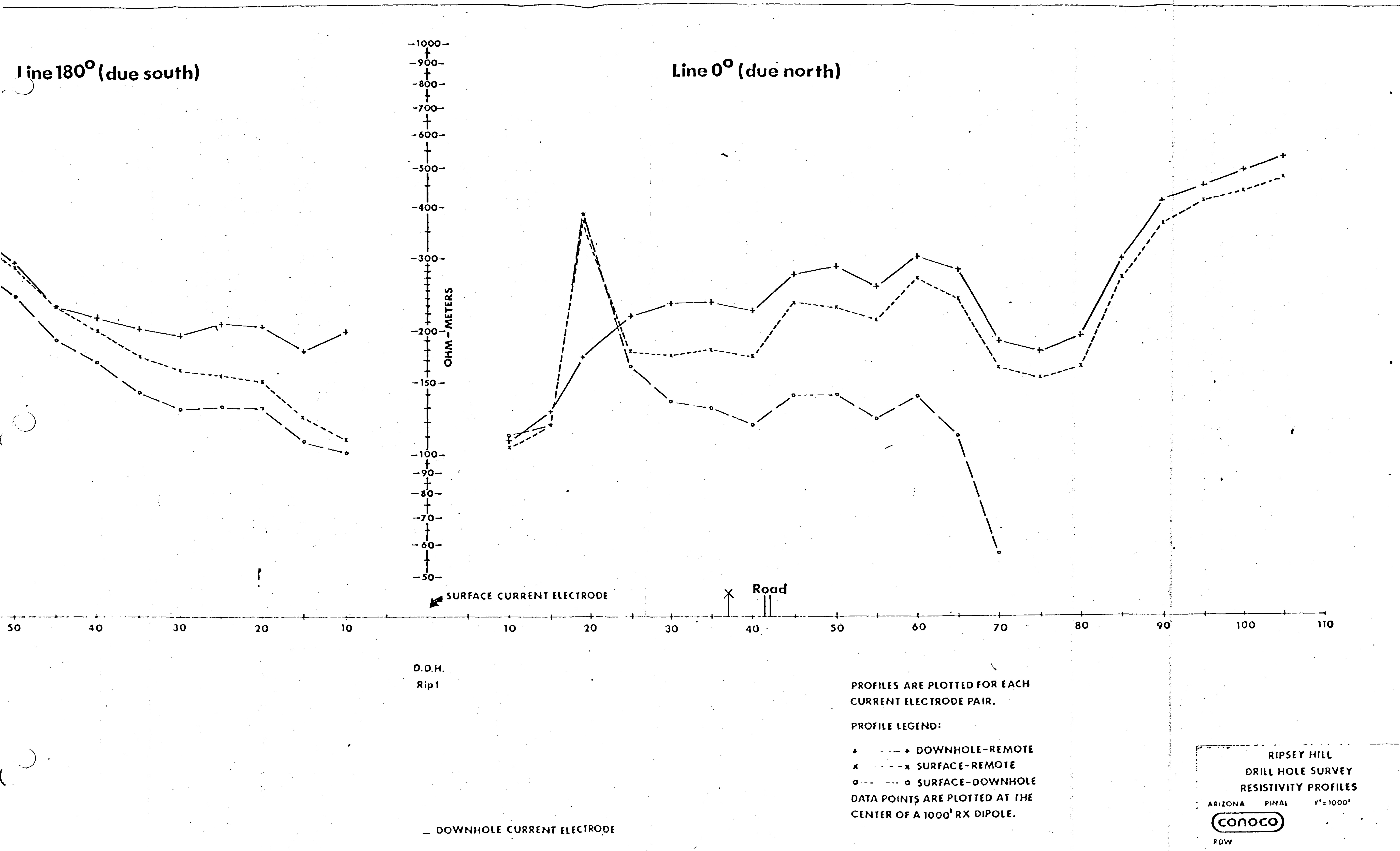
DATA POINTS ARE PLOTTED AT THE CENTER OF A 1000' RX DIPOLE.

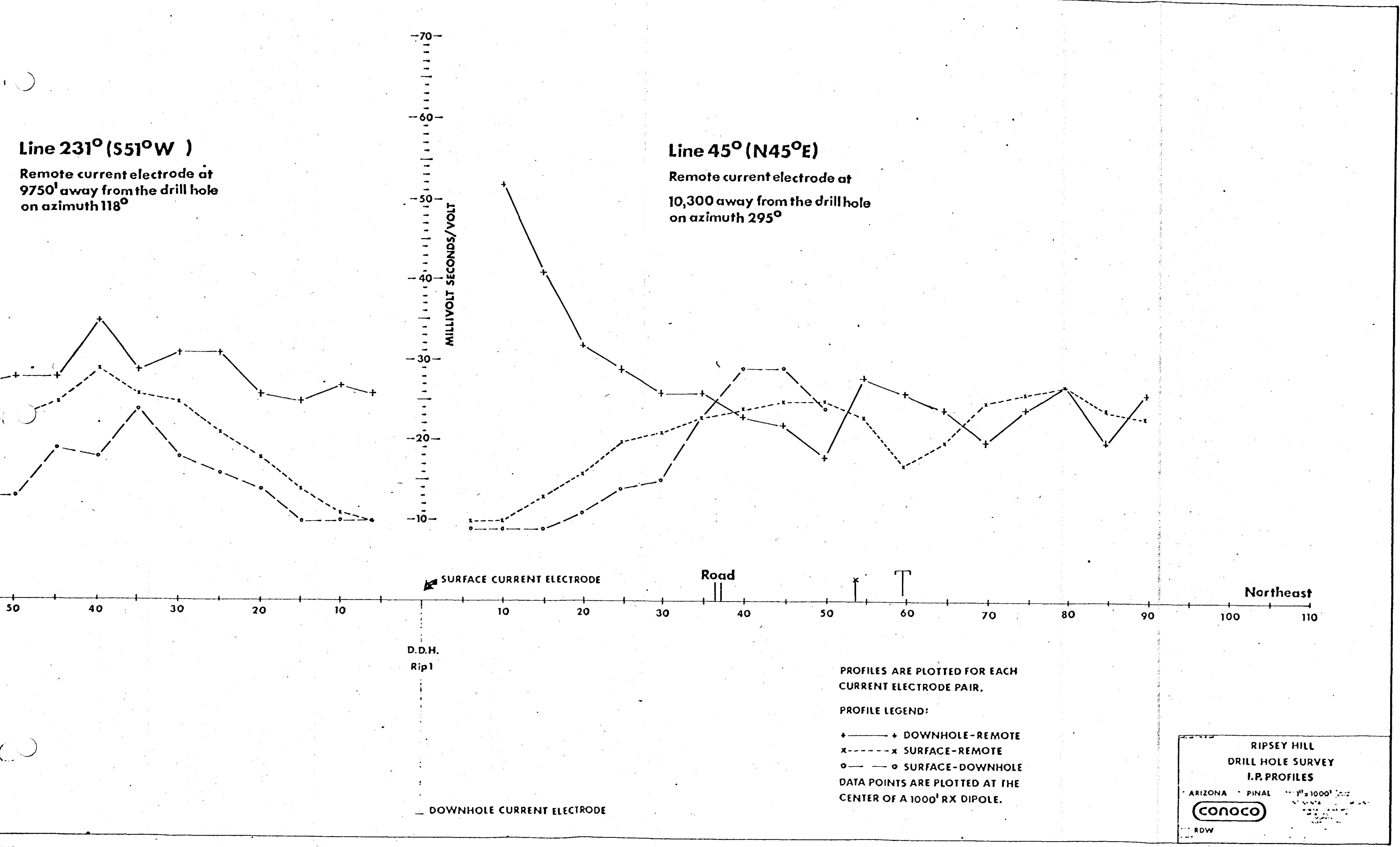
RIPSEY HILL
DRILL HOLE SURVEY
I.P. PROFILES

ARIZONA PINAL 1" = 1000'

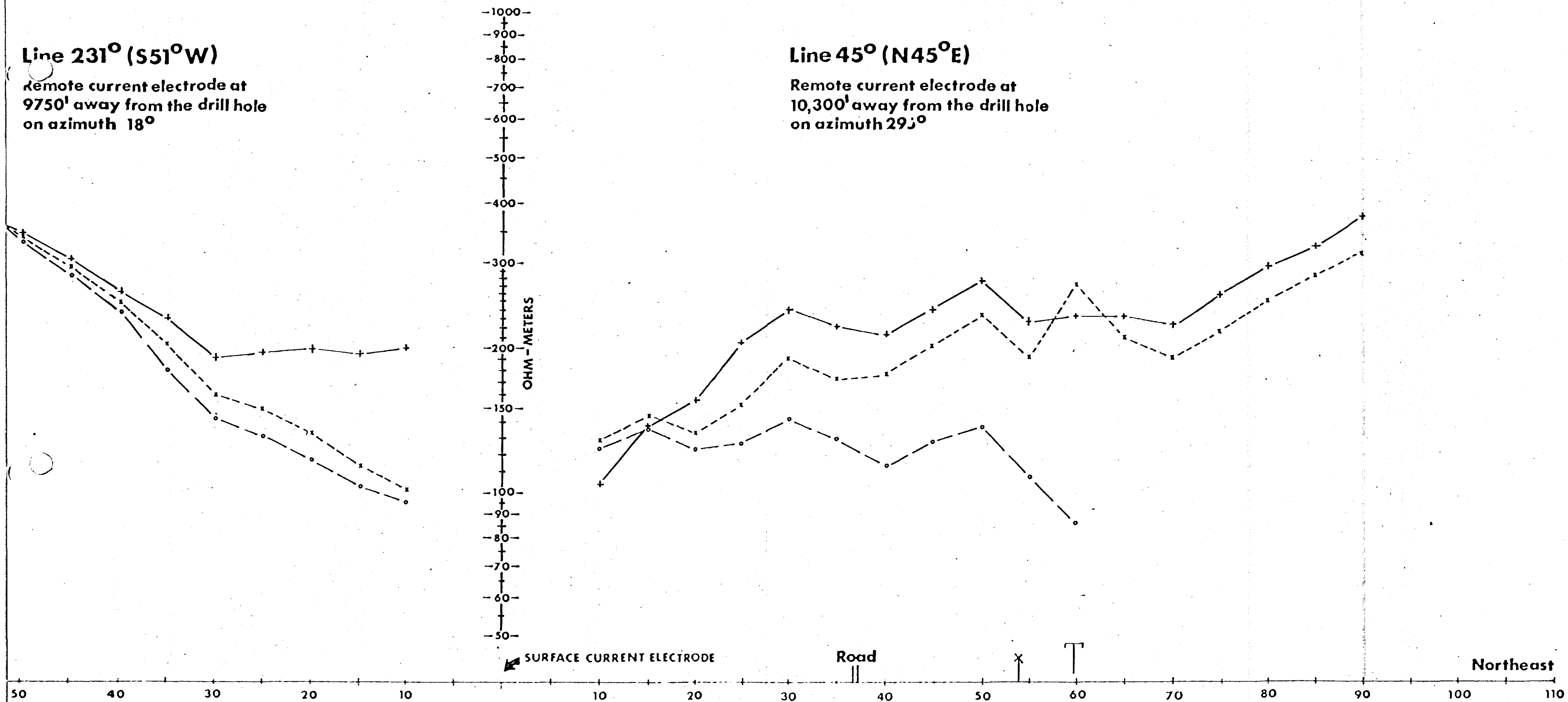
CONOCO

RDW


Line 180° (due south)
Line 0° (due north)
OHM-METERS
-1000- -900- -800- -700- -600- -500- -400- -300- -200- -150- -100- -90- -80- -70- -60- -50-
SURFACE CURRENT ELECTRODE
Road
50 40 30 20 10
10 20 30 40 50 60 70 80 90 100 110
D.D.H.
Rip 1
DOWNHOLE CURRENT ELECTRODE
PROFILES ARE PLOTTED FOR EACH CURRENT ELECTRODE PAIR.
PROFILE LEGEND:
+ — + DOWNHOLE-REMOTE
x - - - x SURFACE-REMOTE
o — — o SURFACE-DOWNHOLE
DATA POINTS ARE PLOTTED AT THE CENTER OF A 1000' RX DIPOLE.
RIPSEY HILL
DRILL HOLE SURVEY
RESISTIVITY PROFILES
ARIZONA PINAL 1" = 1000'
CONOCO
RDW



Line 231° (S51°W)
Remote current electrode at 9750' away from the drill hole on azimuth 118°
Line 45° (N45°E)
Remote current electrode at 10,300 away from the drill hole on azimuth 295°
MILLIVOLT SECONDS/VOLT
70
60
50
40
30
20
10
SURFACE CURRENT ELECTRODE
Road
Northeast
50
40
30
20
10
10
20
30
40
50
60
70
80
90
100
110
D.D.H.
Rip 1
DOWNHOLE CURRENT ELECTRODE
PROFILES ARE PLOTTED FOR EACH CURRENT ELECTRODE PAIR.
PROFILE LEGEND:
+——+ DOWNHOLE-REMOTE
x------x SURFACE-REMOTE
o— —o SURFACE-DOWNHOLE
DATA POINTS ARE PLOTTED AT THE CENTER OF A 1000' RX DIPOLE.
RIPSEY HILL
DRILL HOLE SURVEY
I.P. PROFILES
ARIZONA
PINAL
1" = 1000'
conoco
RDW



D.D.H.
Rip 1

PROFILES ARE PLOTTED FOR EACH CURRENT ELECTRODE PAIR.

PROFILE LEGEND:

+———+ DOWNHOLE-REMOTE
x - - - - x SURFACE-REMOTE
o— — —o SURFACE-DOWNHOLE

DATA POINTS ARE PLOTTED AT THE CENTER OF A 1000' RX DIPOLE.

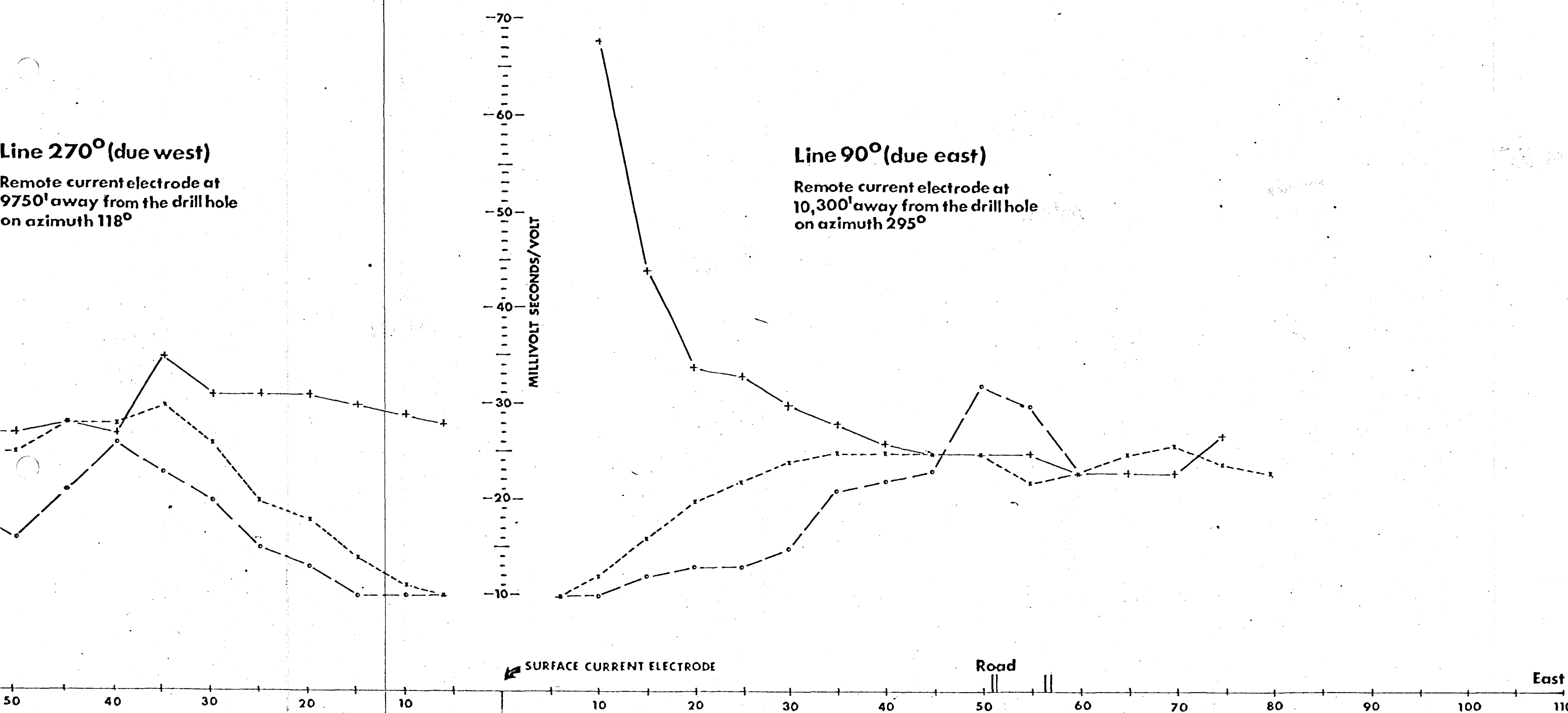
DOWNHOLE CURRENT ELECTRODE

RIPSEY HILL
DRILL HOLE SURVEY
RESISTIVITY PROFILES

ARIZONA PINAL 1" = 1000'

CONOCO

RDW



D.D.H.
Rip1

DOWNHOLE CURRENT ELECTRODE

PROFILES ARE PLOTTED FOR EACH CURRENT ELECTRODE PAIR.

PROFILE LEGEND:

+——— + DOWNHOLE-REMOTE
x- - - - - -x SURFACE-REMOTE
o— — o SURFACE-DOWNHOLE

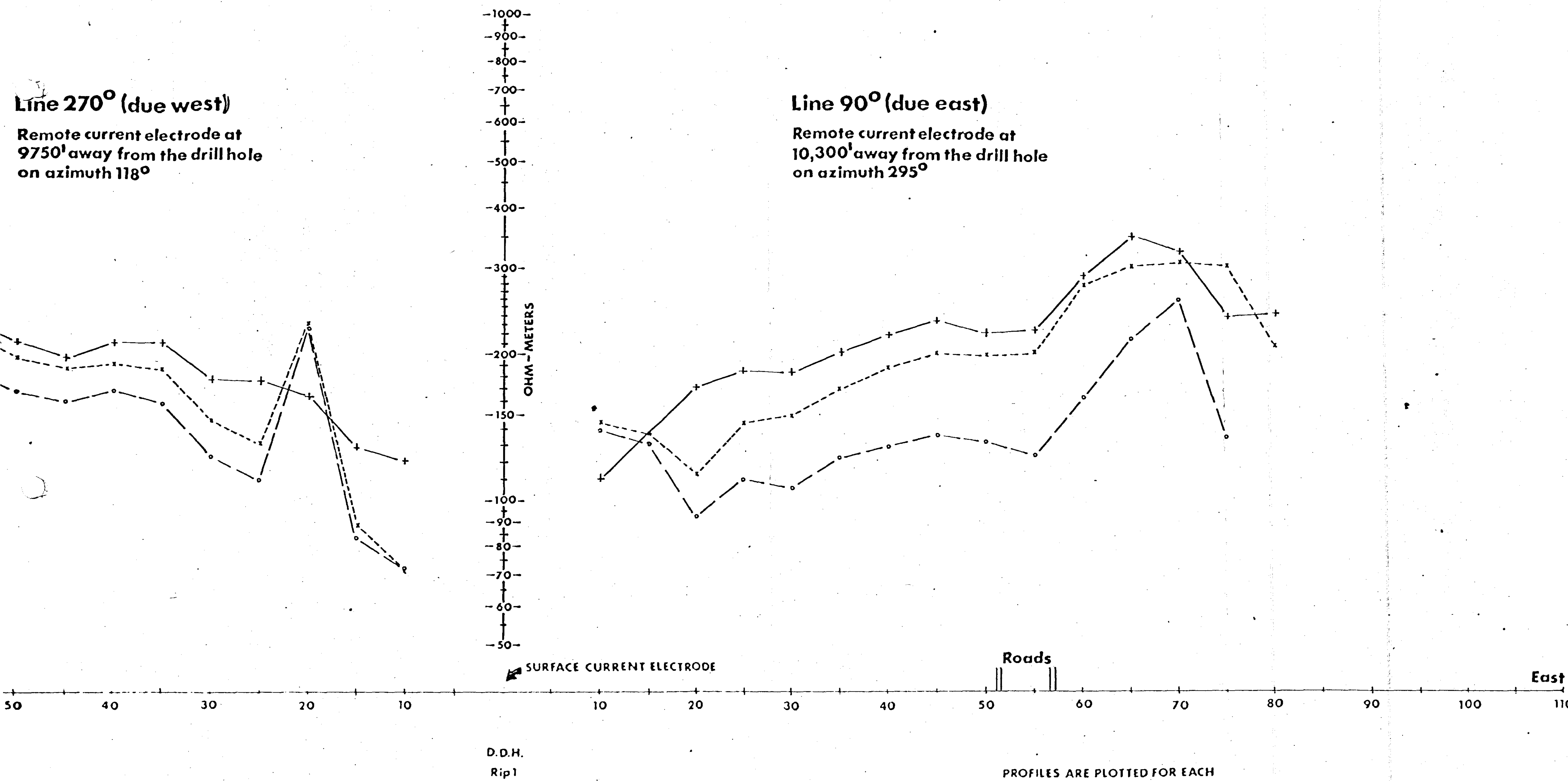
DATA POINTS ARE PLOTTED AT THE CENTER OF A 1000' RX DIPOLE.

RIPSEY HILL
DRILL HOLE SURVEY
I.P. PROFILES

ARIZONA PINAL 1" = 1000'

CONOCO

RDW



PROFILES ARE PLOTTED FOR EACH CURRENT ELECTRODE PAIR.

PROFILE LEGEND:

+ —— + DOWNHOLE-REMOTE
x - - - x SURFACE-REMOTE
o — — o SURFACE-DOWNHOLE

DATA POINTS ARE PLOTTED AT THE CENTER OF A 1000' RX DIPOLE.

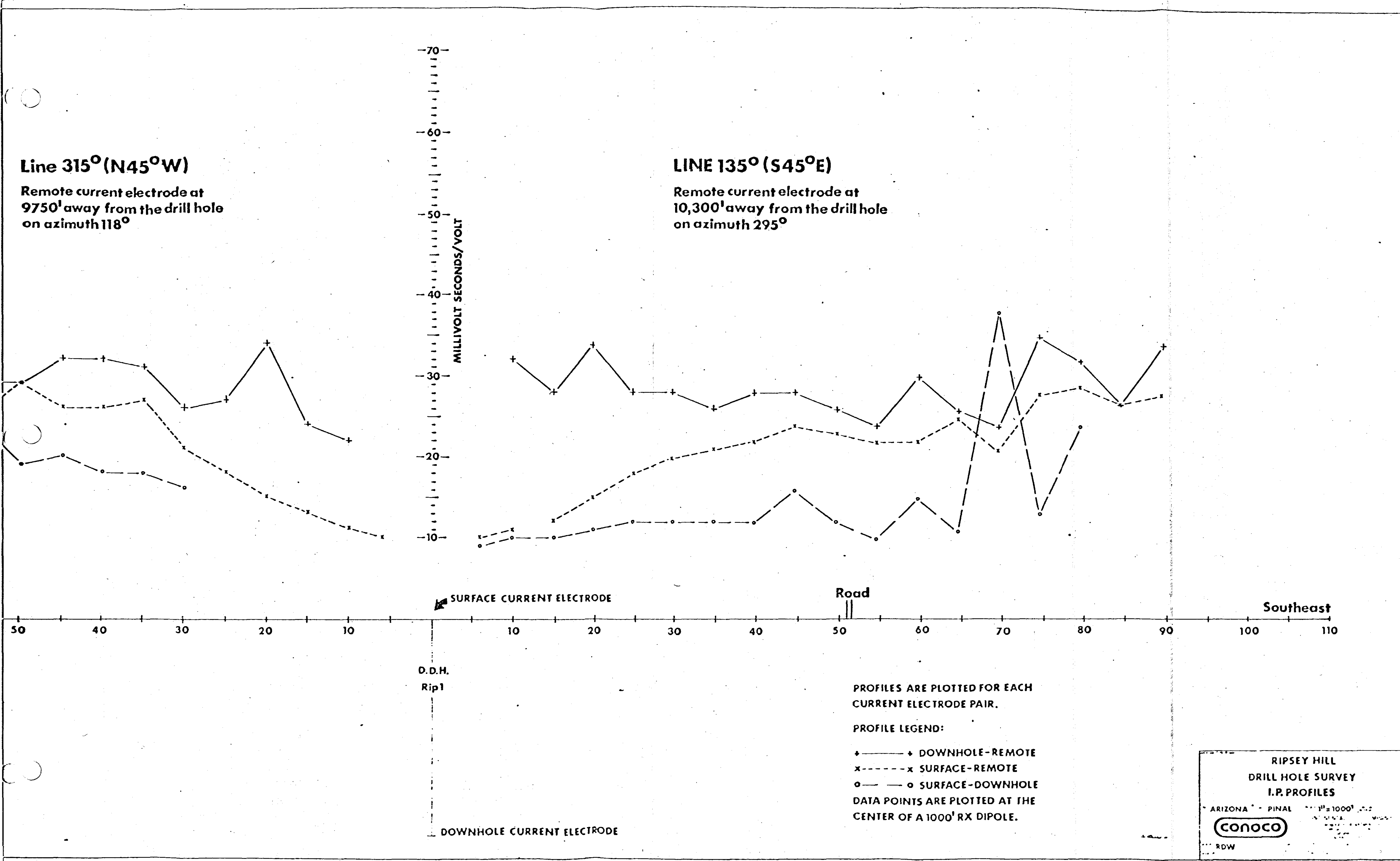
— DOWNHOLE CURRENT ELECTRODE

RIPSEY HILL
DRILL HOLE SURVEY
RESISTIVITY PROFILES

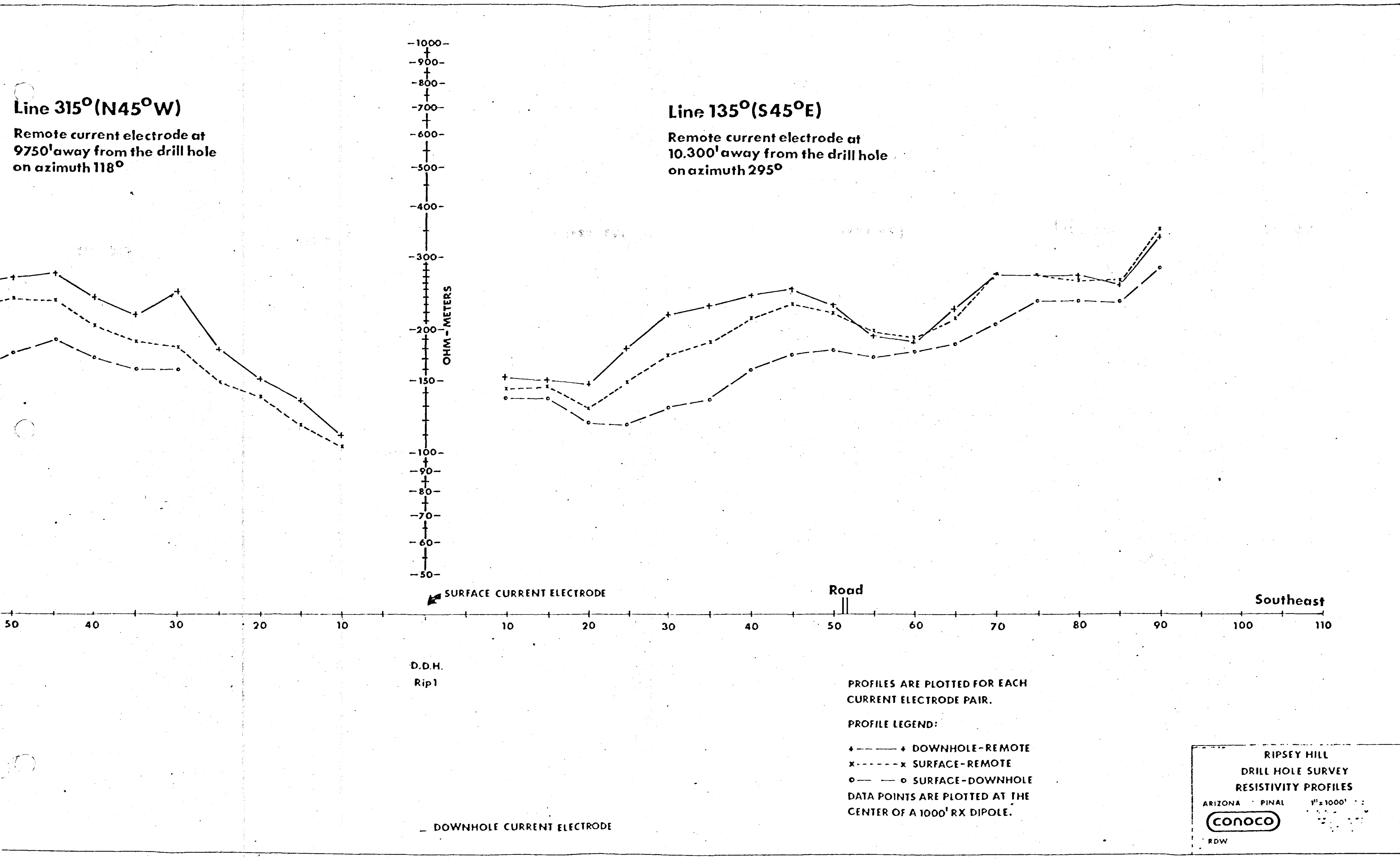
ARIZONA PINAL 1" = 1000'

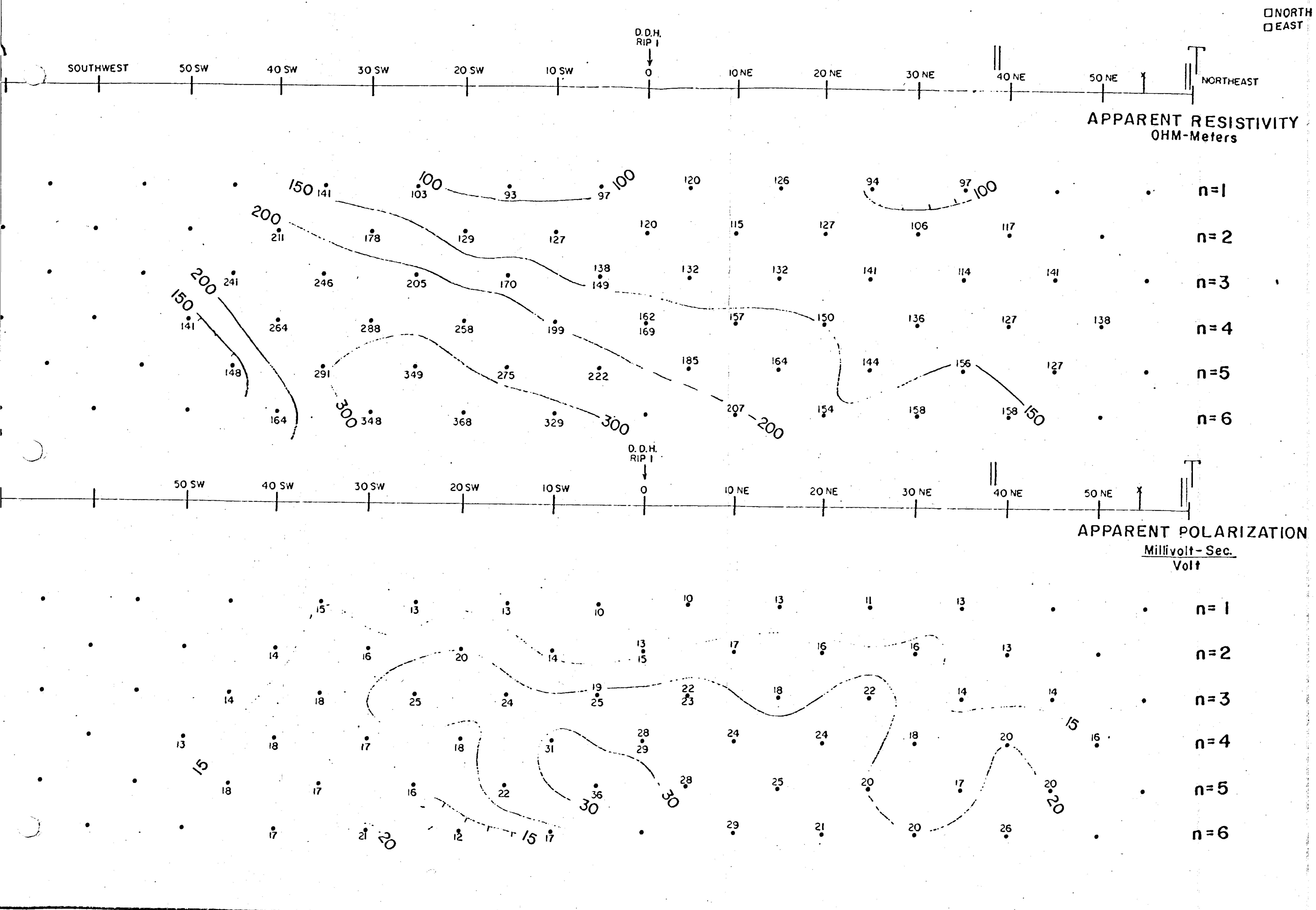
CONOCO

RDW



Line 315° (N45°W)
Remote current electrode at 9750' away from the drill hole on azimuth 118°
LINE 135° (S45°E)
Remote current electrode at 10,300' away from the drill hole on azimuth 295°
MILLIVOLT SECONDS/VOLT
70
60
50
40
30
20
10
SURFACE CURRENT ELECTRODE
Road
Southeast
50 40 30 20 10 10 20 30 40 50 60 70 80 90 100 110
D.D.H.
Rip 1
DOWNHOLE CURRENT ELECTRODE
PROFILES ARE PLOTTED FOR EACH CURRENT ELECTRODE PAIR.
PROFILE LEGEND:
+——+ DOWNHOLE-REMOTE
x------x SURFACE-REMOTE
o— —o SURFACE-DOWNHOLE
DATA POINTS ARE PLOTTED AT THE CENTER OF A 1000' RX DIPOLE.
RIPSEY HILL
DRILL HOLE SURVEY
I.P. PROFILES
ARIZONA
PINAL
1" = 1000'
CONOCO
RDW


Line 315° (N45°W)
Remote current electrode at 9750' away from the drill hole on azimuth 118°
Line 135° (S45°E)
Remote current electrode at 10.300' away from the drill hole on azimuth 295°
OHM-METERS
1000
900
800
700
600
500
400
300
200
150
100
90
80
70
60
50
SURFACE CURRENT ELECTRODE
Road
Southeast
50 40 30 20 10
10 20 30 40 50 60 70 80 90 100 110
D.D.H.
Rip 1
DOWNHOLE CURRENT ELECTRODE
PROFILES ARE PLOTTED FOR EACH CURRENT ELECTRODE PAIR.
PROFILE LEGEND:
DOWNHOLE-REMOTE
SURFACE-REMOTE
SURFACE-DOWNHOLE
DATA POINTS ARE PLOTTED AT THE CENTER OF A 1000' RX DIPOLE.
RIPSEY HILL
DRILL HOLE SURVEY
RESISTIVITY PROFILES
ARIZONA
PINAL
1" = 1000'
conoco
RDW



☐ NORTH
☐ EAST

CONOCO

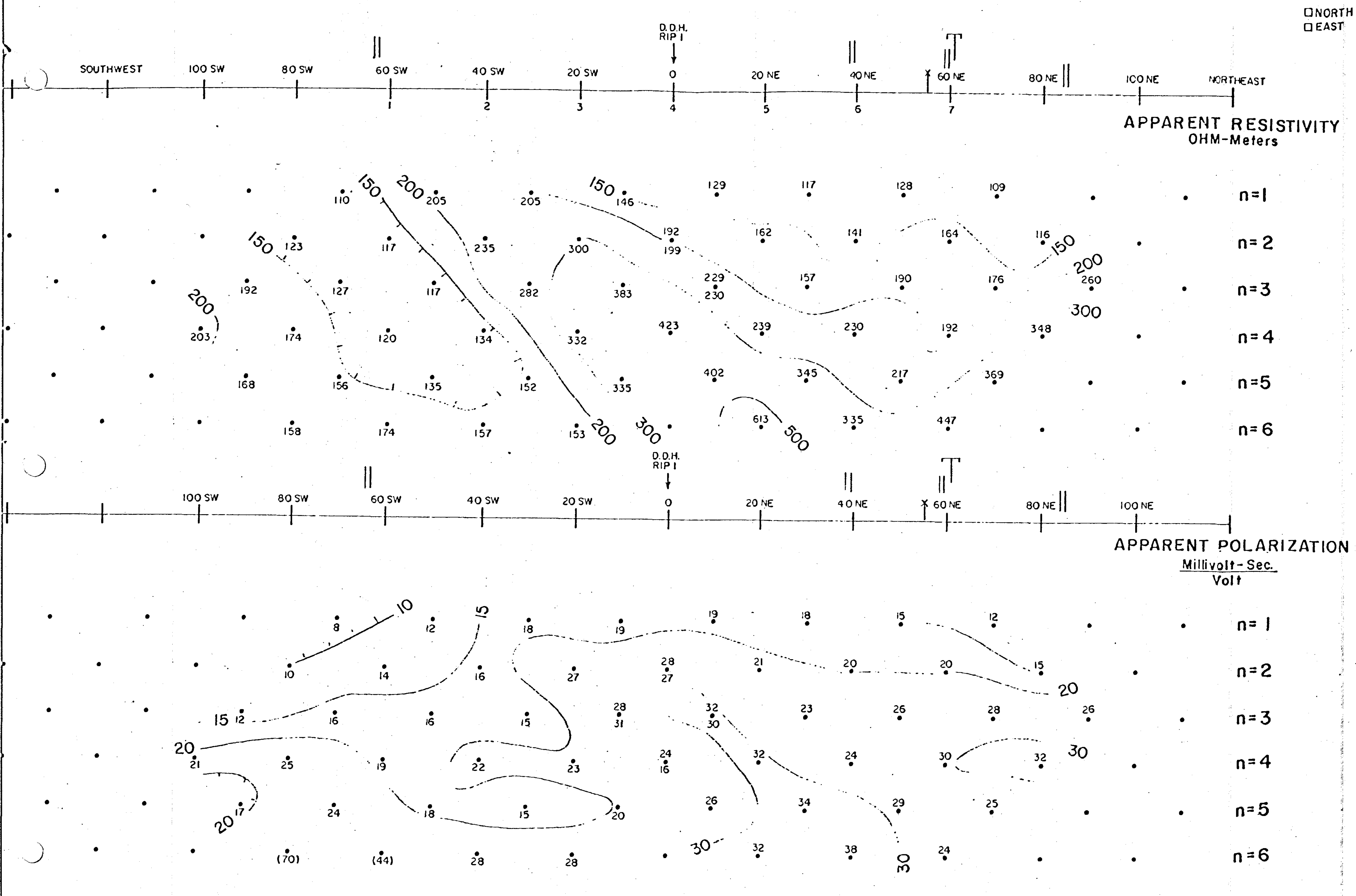
INDUCED POLARIZAT[ION]
& RESISTIVITY SURVE[Y]

LINE NO. 0 (NW-SE)
AREA RIPSEY HILL
STATE ARIZONA
COUNTY PINAL
DIPOLE LENGTH 1,000'
ARRAY DIPOLE-DIPOLE
CREW CHIEF A. SMITH
DATE FEB. 3-7, 1978

LOG CONTOURS
FOR RESISTIVITY DATA.
1-1.5-2-3-5-7.5-10
15-20-30-50....00

REMARKS: BEARING OF LINE
APPROX. N45°E

POWER LINE
PIPE LINE
FENCE
ROADWAY
STREAM DRAINAG[E]



CONOCO

INDUCED POLARIZAT[ION] & RESISTIVITY SURV[EY]

LINE NO. 0 (NW-SE)
AREA RIPSEY HILL
STATE ARIZONA
COUNTY PINAL
DIPOLE LENGTH 2,000'
ARRAY DIPOLE-DIPOLE
CREW CHIEF A. SMITH
DATE FEB. 3-7, 1978

LOG CONTOURS
FOR RESISTIVITY DATA.
1-1.5-2-3-5-7.5-10
15-20-30-50....00

REMARKS: BEARING OF LINE
APPROX. N45°E

POWER LINE
PIPE LINE
FENCE
ROADWAY
S...EAM DRAINAG[E]

CONOCO

Interoffice Communication

To: R. B. Loring

From: R. N. Schnepfe

Date: April 5, 1979

Subject: IP Surveys, Ripsey Hill Project, Pinal County, Arizona

Three separate IP surveys have been run in the Ripsey Hill area, one by Conoco personnel and two under contract by Zonge Engineering. Although reports have been prepared on each of these surveys, no previous attempt has been made to provide a comprehensive interpretation of the entire set of data. This has now been accomplished and the resulting interpretation is shown on the accompanying map and discussed below.

The resistivity pattern generally defines a bull's-eye centered on the area of interest as defined by geologic mapping. The central portion of this pattern is underlain to a depth of 1,500 to 2,000 feet by material having an apparent resistivity of 100 - 150 ohm-m. Material having an apparent resistivity of 300 - 500 ohm-m occurs between these depths and approximately 4,000 feet beneath the surface, below which much higher resistivities are interpreted to be present. Higher near-surface apparent resistivities (150 - 200 ohm-m) appear to be present to the northeast along Lines 0 and 33 SE, but this may be a localized phenomena.

This central zone is bordered to the east, west, and south (no data exists to the north) by a relatively narrow zone of higher resistivity material. Apparent resistivities in this zone to the east are on the order of 300 ohm-m whereas those to the west and south are on the order of 200 - 300 ohm-m. Lower resistivities occur on the periphery of the surveyed area. These are on the order of 75 - 150 ohm-m to the east and 100 - 200 ohm-m to the west and south.

A polarization high occurs at depth within the central zone defined by the resistivities. The central portion of the polarization high, that which is judged to be the most prospective, has been defined as that which is greater than 20 milliseconds in amplitude using the data that has been corrected for electromagnetic coupling effects. There is a vague suggestion in this data, particularly well expressed on Line 33 SE, of higher polarization values along the periphery of this central zone. This may arise from geometric effects of the relationship of the anomalous mass to the dipole-dipole electrode array or may reflect an annular zone of higher polarization on the periphery of the anomalous mass. This mass is interpreted to lie at a depth of 2,000+ feet; a possible southeastern extension detected on Line 87 SE lies in excess of 3,000 feet beneath the surface.

A maximum area of interest has been defined, again as that which is greater than 20 milliseconds in amplitude, from the polarization data prior to correction for electromagnetic coupling effects. This is seen to encompass a much larger area, and probably includes all possible anomalous ground.

The IP surveys have defined an area of anomalous polarization that coincides with the area of greatest potential as defined geologically. This is believed to represent the main mass of alteration and mineralization that is evidenced by the surface manifestations. DDH RIP-1 appears to lie on the southwestern edge of the anomaly, which also would agree with the geologic estimate of its location (Remember that contacts cannot be picked closer than half the dipole length, in this case to better than ± 1,000 feet). The proposed drill hole north-northeast of DDH RIP-1 should provide a good test of the anomaly; other holes will undoubtedly be required to the north and east to thoroughly prospect it.

The anomalous polarization appears to coincide with higher resistivity material, suggesting that this is not the typical porphyry copper situation of lower resistivities and higher polarization. The present situation is analogous to that at Ajo, where in situ measurements showed that the mineralization is characterized by higher resistivities along with higher polarization. It may, therefore, be inferred that similar mineralization occurs at Ripsey Hill, i.e., that this is a "dry" porphyry system.

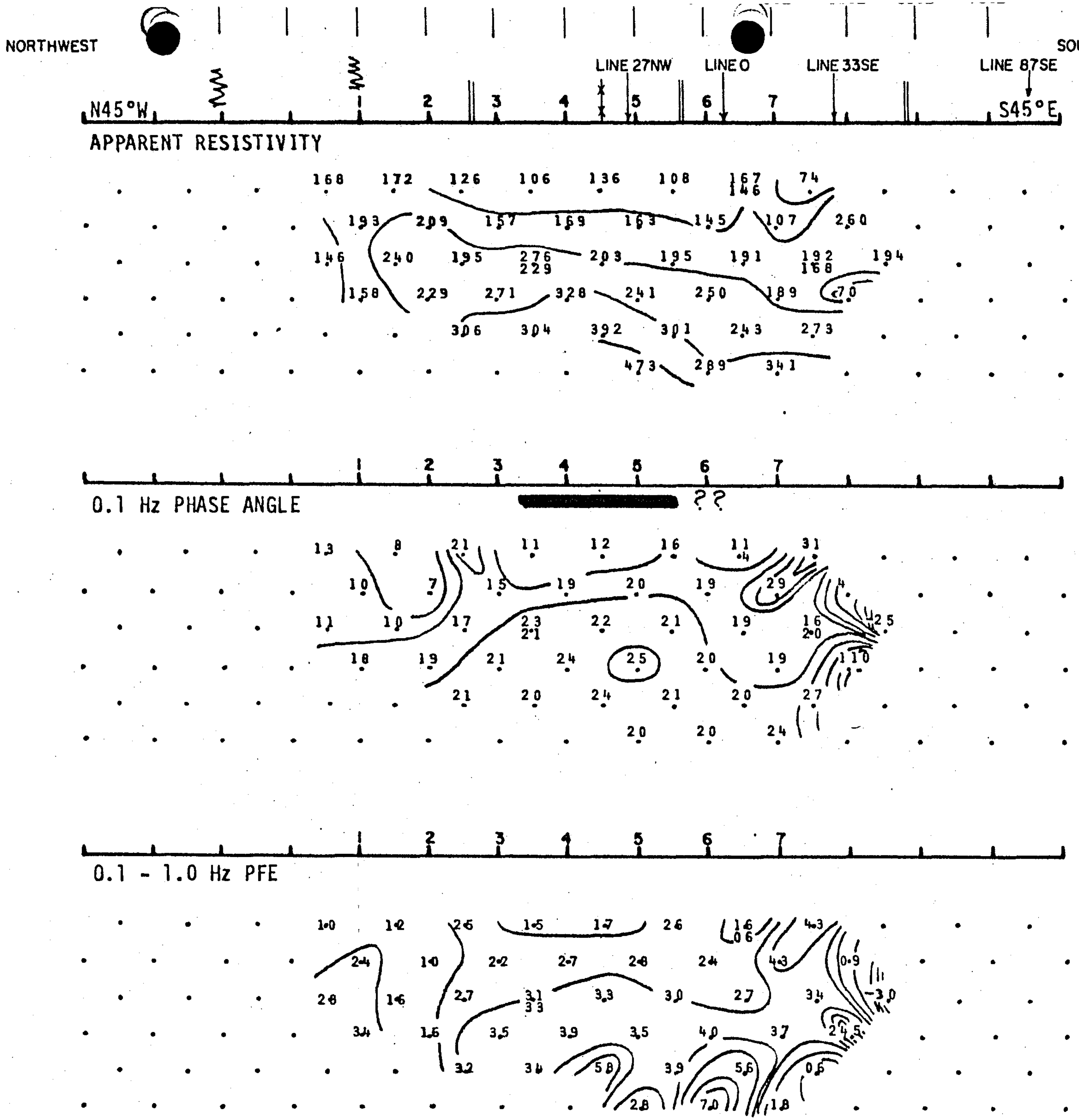
R. N. Schnepfe

R. N. Schnepfe

Attachments

CC: W. A. Petersen/P. H. Kirwin

pg



ZONGE ENGINEERING COMPLEX RESISTIVITY

CONOCO

Ripsey Hill

LINE 18NE (1)

SPACING a = 2000 feet

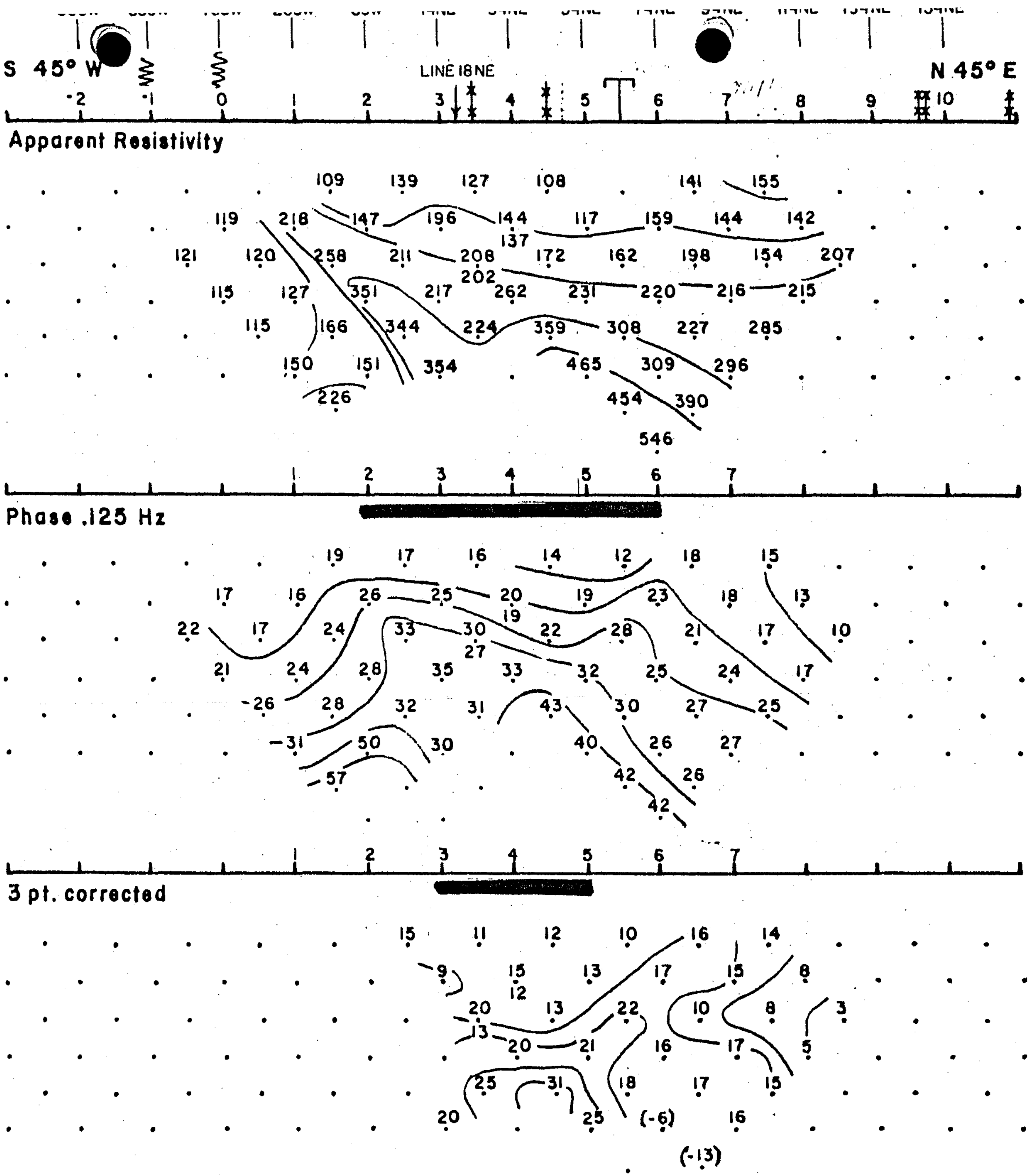
DATE 20 September 1978

PAGE 1 **OF** 2

LEGEND:

- FENCE
- PIPELINE
- POWERLINE
- ROAD

cp



ZONGE
ENGINEERING
COMPLEX
RESISTIVITY

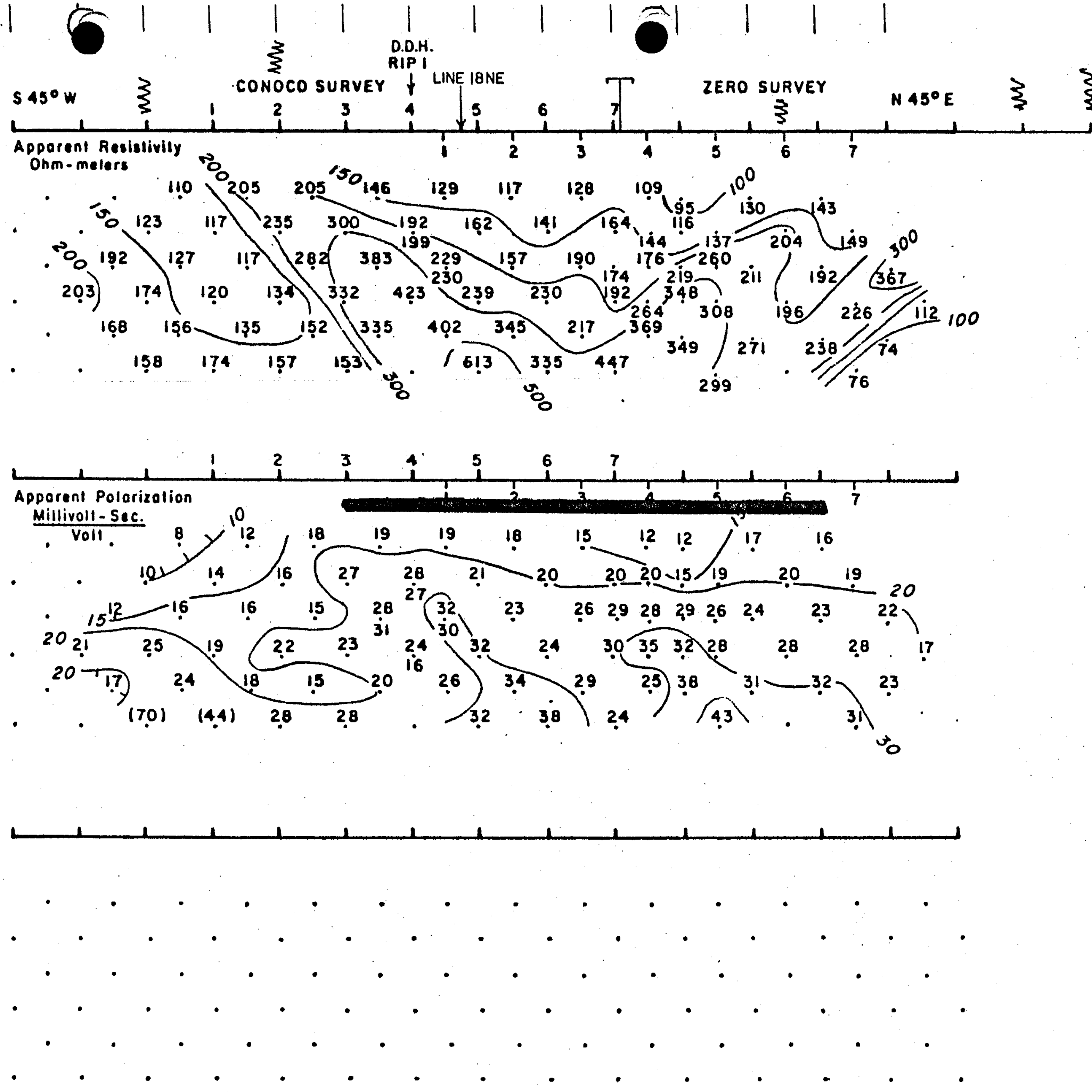
CONOCO
RIPSEY HILL PROJECT

LINE 27 N.W. SPD I
SPACING 2000'
DATE 11/18/78
PAGE I OF I

LEGEND:

- FENCE
- PIPELINE
- POWERLINE
- ROAD

cρ



ZONGE ENGINEERING

COMPLEX RESISTIVITY

CONOCO
INDUCED POLARIZATIC
& RESISTIVITY SURVE

RIPSEY HILL PROJECT

LINE 0

SPACING 2000'

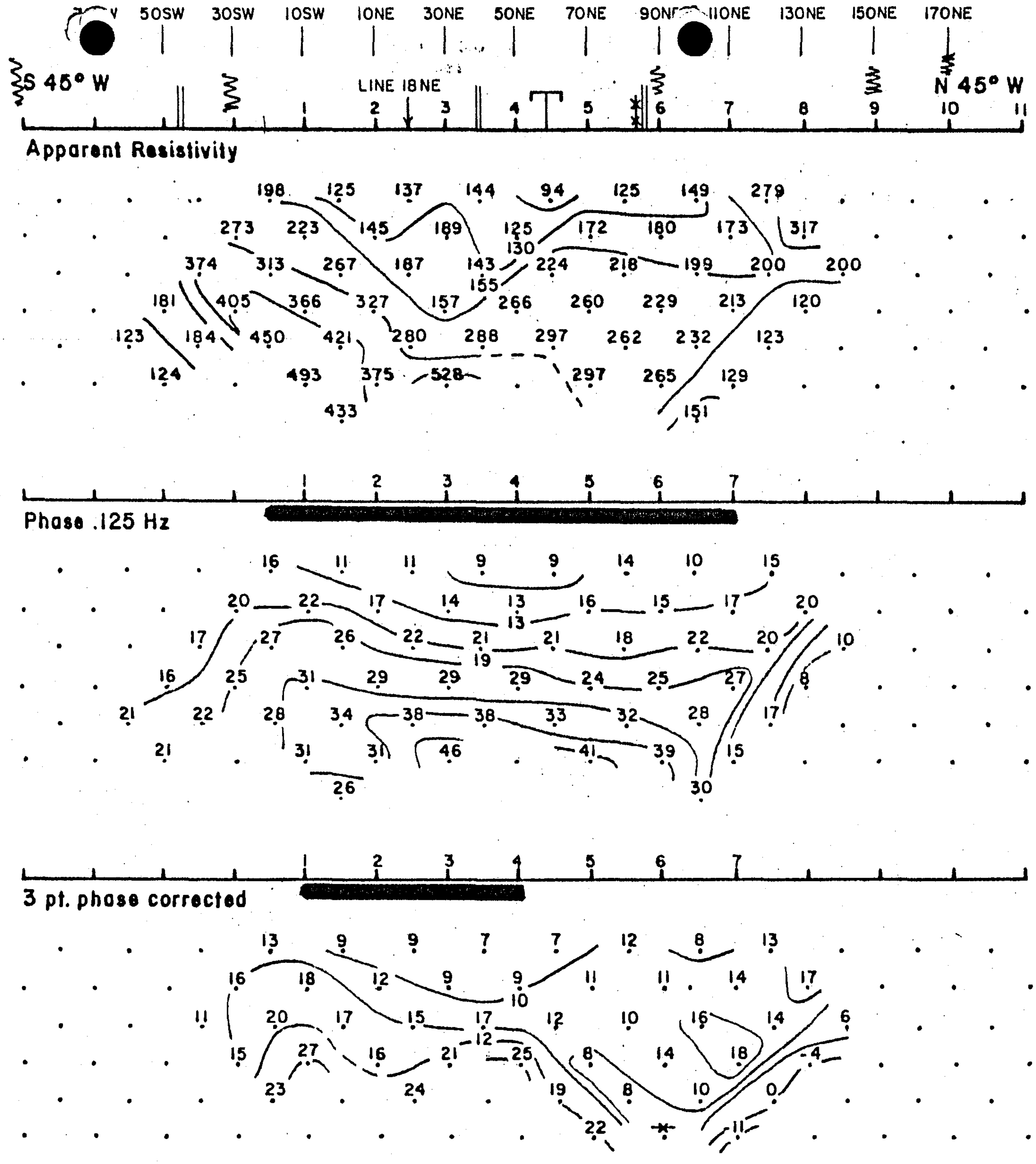
DATE CONOCO: 2/3/
ZERO: 12/1/7

PAGE 1 OF 1

LEGEND:

- FENCE
- PIPELINE
- POWERLINE
- ROAD

CP



ZONGE ENGINEERING

COMPLEX RESISTIVITY

CONOCO

RIPSEY HILL PROJEC

LINE 33 S.E.

SPACING 2000'

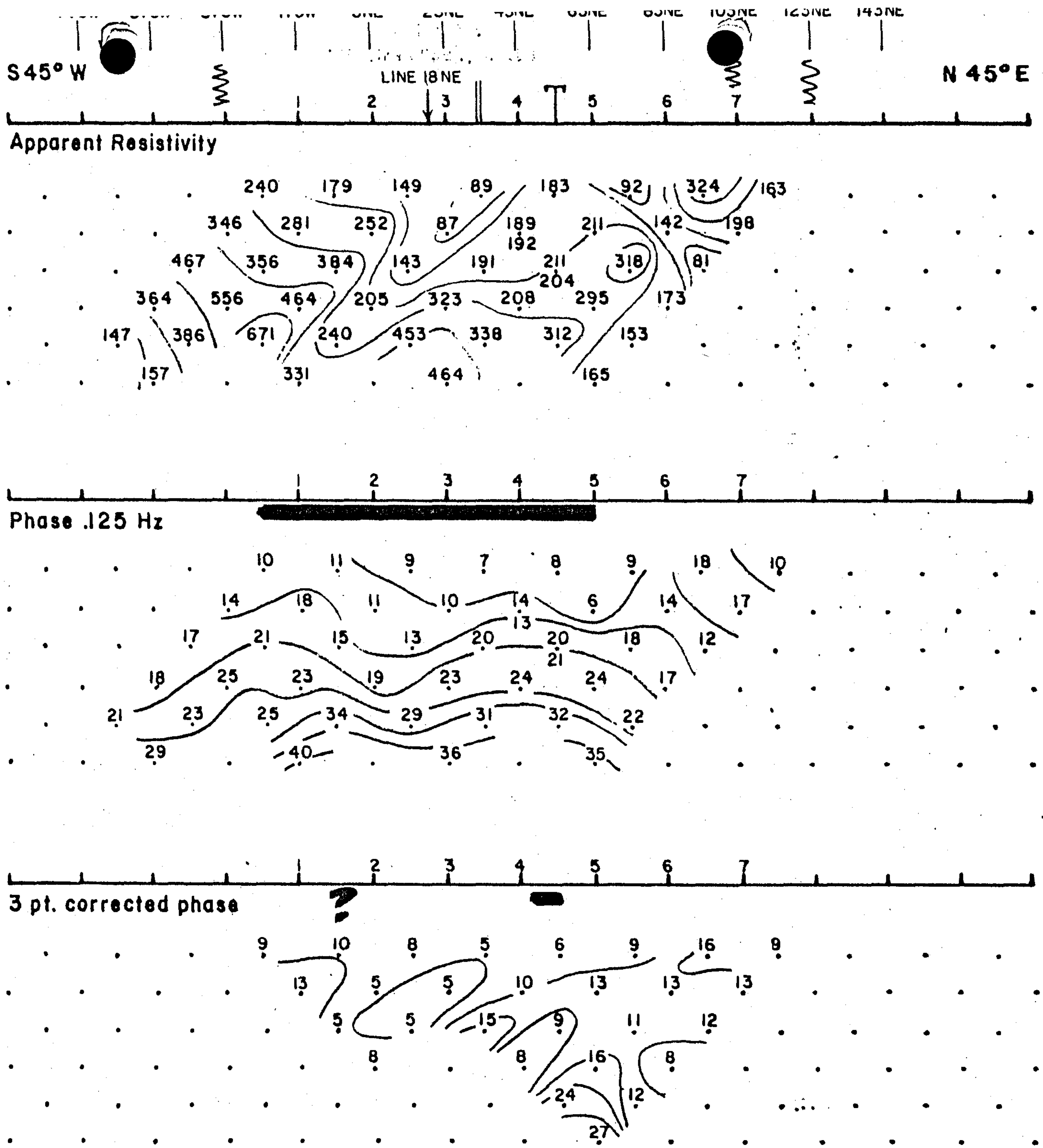
DATE 11/28/78

PAGE 1 OF 1

LEGEND:

- FENCE
- PIPELINE
- POWERLINE
- ROAD

cρ



ZONGE
ENGINEERING
COMPLEX
RESISTIVITY

CONOCO
RIPSEY HILL PROJECT

LINE 87 S.E.
SPACING 2000'
DATE 12/3/78
PAGE 1 OF 1

LEGEND:

- FENCE
- PIPELINE
- POWERLINE
- ROAD

TAB

RIP-4

(CONOCO)

Interoffice Communication

To: J. N. Lukanuski

From: J. M. Kirkwood

Date: June 17, 1980

Subject: Drill Hole Summary - Ripsey Hill

Drill Hole: RIP-4 Project: Ripsey Hill

Location: SE 1/4, SE 1/4 Sec. 22; T.5S. R.6E; Pinal Co., Arizona
Collar Elevation: @3241'
Depth to Bedrock: @ 65'
Oxide - Sulfide Interface: 1575'
Total Depth: 3501'
Rotary Starting Date: 2/21/80 Completion: 2/22/80 Footage: 65'
Core Starting Date: 2/22/80 Completion: 5/30/80 Footage: 3436'

Assay Data: See attached assay sheets

Rock Type:

0' - 60' (60'):	Alluvium and subcrop material
60' - 659' (599'):	Precambrian diabase
659' - 1009' (350'):	Precambrian Ruin Granite
1009' - 1021' (12'):	Precambrian diabase - dip 20° - 25°
1021' - 1024' (3'):	Laramide granodiorite porphyry
1024' - 1035' (11'):	Precambrian Ruin Granite
1035' - 1045' (10'):	Laramide ? porphyritic quartz latite
1045' - 2221' (1176'):	Precambrian Ruin Granite
2221' - 2229' (8'):	Precambrian aplite dike - dip 50°
2229' - 2257' (28'):	Precambrian Ruin Granite
2257' - 2260' (3'):	Precambrian aplite dike - dip 40°
2260' - 2451' (191'):	Precambrian Ruin Granite
2451' - 2454' (3'):	Precambrian aplite dike - dip 60°
2754' - 3212' (758'):	Precambrian Ruin Granite
3212' - 3217' (5'):	Laramide andesite dike - dip 70°
3217' - 3435' (218'):	Precambrian Ruin Granite
3435' - 3437' (2'):	Laramide andesite dike
2437' - 3441' (4'):	Precambrian Ruin Granite
3441' - 3501' (60'):	Laramide quartz diorite porphyry

Structure:

a) Faults

370' - 372' (2'): dip ?
390' - 391' (1'): dip ?
412' - 417' (5'): dip ?
564' - 565' (1'): dip ?
658.5' - 659.0' (0.5'): dip @ 15°
678' - 679' (1'): dip ?
704' - 705' (1'): dip ?
709' - 710' (1'): dip ?

760' - 765' (5'): dip ?
834' - 835' (1'): dip ?
837' - 838' (1'): dip ?
860' - 862' (2'): dip ?
910' - 914' (4'): dip ?
917' - 924' (7'): dip 70° ?
927' - 1010' (83'): rock broken and sheared
1030' - 1031' (1'): dip ?
1050' - 1051' (1'): dip ?
1071' - 1072' (1'): dip 40°
1266' - 1271' (5'): dip ?
1286' - 1290' (4'): dip 20° ?
1345' - 1386' (41'): crushed, sheared zone with dips from 20° to 60°
1681' - 1682' (1'): dip 10° - 15°
1858' - 1868' (10'): dip 20° ?
1913' - 1915' (2'): dip 40°
1931' - 1954' (23'): crushed, sheared zone dips 20° - 30°
1980' - 1985' (5'): dip 30° ?
2001' - 2003' (2'): dip 20°
2197.0' - 2197.5' (0.5') dip 55°
2214' - 2215' (1'): dip ?
2366' - 2368' (2'): dip ?
2400' - 2401' (1'): dip ?
2522' - 2556' (34'): rock sheared and gougy
3173' - 3174' (1'): dip 50°
3173.0' - 3173.5' (0.5'): dip 50°
3182.0' - 3182.5' (0.5'): dip 60°

b) Fracturing

The Precambrian diabase exhibits moderate to locally strong multi-directional fracturing, many with slicken sided surfaces.

The Precambrian granite is generally weakly fractured except for intervals adjacent to faults and the zone of quartz sulfide veinlets and overall higher sulfide content from about 1500' to 1900'.

The interval of Laramide andesite and quartz diorite porphyry at the bottom of the hole is weakly fractured.

Fracture dips range from 10° to 90°, however, the most common sets dip from 20° - 40° and from 60° - 80°.

Alteration and Mineralization

The Precambrian diabase exhibits only supergene weathering effects such as oxidation of ferromagnesion minerals and break down of plagioclase to clay. Calcite fracture coatings and veinlets are common. No sulfides or limonite derived from sulfides are present.

Alteration and mineralization in the Precambrian granite is summarized as follows:

659' - @1440': plagioclase partially argillized; biotite fresh to partially chloritized; epidote occurs as disseminated blebs and/or random veinlets. From about 1100' minor pyrite limonite and pyrite casts are present on some fractures. Beginning about 1220' scattered quartz and quartz epidote veinlets appear.

@1440' - @2580': alteration is essentially propylitic. Plagioclase phenocrysts are weakly to moderately argillized; biotite exhibits partial to complete alteration to chlorite and occassionally to epidote; quartz-sericite-pyrite and quartz epidote veinlets occur sporadically, clay-sericite-chlorite combinations occur on fractures. Mixed pyrite and oxidized pyrite occur from @1440' to @ 1730'. From @ 1730' to @ 2550' sulfides occur as disseminated grains, along fractures and in the quartz-sericite and/or quartz epidote veinlets. The major sulfide mineral is pyrite with scattered traces of chalcopyrite and sphalerite. From @ 1530' to 2030' the pyrite contant ranges from 1% to 5%; from @ 1930' to @ 2430' the pyrite content is in the order 1/2%. From @ 1930' to @ 2580' the pyritic content ranges from 1/2% to 3%.

@2580' - @3390': alteration consist of weak argillization of plagioclace weak chloritization of biotite and sparse epidote or quartz epidote veinlet development. Except for a rare veinlet, pyrite content is trace to nil.

@3390' - @3435': Chlorite and epidote content increases scattered quartz-chlorite-epidote-pyrite veinlets appear; and the sulfide content increases to 1/2% to 1%.

@3435' - 3501': Alteration of the Laramide andesite and quartz diorite porphyry is essentially phyllic to argillic. Plagioclase phenocrysts are argillized, clay-chlorite-sericite occurs on fractures. Sulfide content is from 2% to 3% fine disseminated pyrite with traces of chalcopyrite noted.

Geochemical copper molybdenum and zinc values, as illustrated on the attached strip log, are erratic and do not exhibit any definite zoning patterns. In a general way copper, in the form of concentrated higher peak values, is higher in the zone of propylitic alteration and greater sulfide content. In a vague way molybdenum values tend to peak at the upper and lower portions of the propylitic zone, and the 300' interval above the Laramide andesite-quartz diorite porphyry infrusives encountered at the bottom of the hole. Zinc values generally tend to mimic copper values, but the grouping of zinc high peaks does begin about 350' above the propylitic zone which contains the higher copper and molybdenum values and subtly decreases in value progressing downward into the copper-molybdenum "high" zone. This pattern could possibly be interpreted as a crude zoning effect.

J. M. Kirkwood

JMK:mm

cc: Rich Loring

P

EFCO LABORATORIES

North Freeway at Ruthrauf Road P. O. Box 5526
TUCSON, ARIZONA 85703
Phone (602) 887-4241

EFCO

Laboratory Analysis Report

Conoco, Inc.
2020 N. Forbes Blvd. Suite 105
Tucson, Arizona 85705

John Kirkwood

REPORT NO. 807225

DATE SUBMITTED 3/7/80

DATE REPORTED 3/14/80

Sample Number	PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
42701 65-70	56	6	13	69
2 70-80	56	7	12	64
3 80-90	48	7	13	90
4 90-100	62	5	16	78
5 100-110	55	17	15	68
6 110-120	56	6	17	77
7 120-130	72	8	61	150
8 130-140	68	<1	21	98
9 140-150	54	6	14	68
10 200-210	53	33	12	72
11 250-260	54	9	14	56
12 300-310	57	8	14	77
13 350-360	57	7	22	78
14 400-410	53	<1	17	55
15 450-460	55	15	18	88
16 500-510	49	9	12	88
17 550-560	58	7	31	108

Nancy Turner (DT)
Signed

EFCO

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North Freeway at Ruthrauf Road P. O. Box 5526
TUCSON, ARIZONA 85703
Phone (602) 887-4241

Laboratory Analysis Report

Conoco, Inc.
2020 N. Forbes Blvd. Suite 105
Tucson, Arizona 85705

John Kirkwood

REPORT NO. 807233

DATE SUBMITTED 3/17/80

DATE REPORTED 3/27/80

Sample Number	PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
42718 600-610	60	4	12	178
19 650-660	75	5	53	126
20 660-670	30	12	12	34
21 670-680	26	9	<5	36
22 680-690	5	3	<5	62
23 690-700	5	3	<5	56
24 700-710	5	2	<5	51
25 710-720	6	5	<5	51
26 720-730	9	5	<5	43
27 730-740	13	6	9	28
28 740-750	10	6	12	17
29 750-760	9	7	13	17
30 760-770	12	<1	11	26
31 770-780	13	3	12	18
32 780-790	12	3	13	21
33 790-800	8	4	14	20
34 800-810	11	8	10	22
35 810-820	35	20	8	36
36 820-830	22	<1	11	33
37 830-840	10	5	10	44
38 840-850	11	2	13	56
39 850-860	13	8	12	37

Nancy Turner
Signed

A Division of Arizona Feeds

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TUCSON, ARIZONA 85703
Phone (602) 887-4241

Laboratory Analysis Report

Conoco, Inc.
2020 N. Forbes Blvd. Suite 105
Tucson, Arizona 85705

John Kirkwood

REPORT NO. 807234

DATE SUBMITTED 3/19/80

DATE REPORTED 3/27/80

Sample Number	PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
42740 860-870	13	4	15	33
41 870-880	12	8	17	18
42 880-890	10	19	16	26
43 890-900	6	2	15	24
44 900-910	15	5	19	29
45 910-920	8	2	19	30
46 920-930	9	3	14	26
47 930-940	9	5	15	36
48 940-950	10	5	17	27
49 950-960	19	5	12	36
50 960-970	9	6	20	24

Nancy Turner
Signed

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North Freeway at Ruthrauf Road P. O. Box 5526
TUCSON, ARIZONA 85703
Phone (602) 887-4241

Laboratory Analysis Report

Conococo, Inc.
2020 N. Forbes Blvd. Suite 105
Tucsoon, Arizona 85705

John Kirkwood

REPORT NO. 807239
DATE SUBMITTED 3/24/80
DATE REPORTED 3/31/80

Sample Number		PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
42751	970 - 980	20	7	10	35
52	980 - 990	25	7	10	36
53	990 - 1000	21	5	<10	52
54	1000 - 1010	52	15	11	67
55	1010 - 1020	85	5	13	92
56	1020 - 1030	58	2	12	161
57	1030 - 1040	23	3	<10	91
58	1040 - 1050	18	1	11	48
59	1050 - 1060	14	6	<10	43
60	1060 - 1070	113	5	<10	297
61	1070 - 1080	36	5	<10	110
62	1080 - 1090	23	5	10	69

Harvey Turner
Signed

KIP-7 — 5 P

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TUCSON, ARIZONA 85703
Phone (602) 887-4241

EFCO

Laboratory Analysis Report

Conoco, Inc.
2020 N. Forbes Blvd. Suite 105
Tucson, Arizona 85705

John Kirkwood

REPORT NO. 807241

DATE SUBMITTED 3/31/80

DATE REPORTED 4/3/80

Sample Number	PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
42763 1090 - 1100	38	2	13	98
64 1100 - 1110	10	3	17	55
65 1110 - 1120	48	3	20	121
66 1120 - 1130	33	5	<10	147
67 1130 - 1140	16	2	10	61
68 1140 - 1150	12	2	13	85
69 1150 - 1160	12	1	12	53
70 1160 - 1170	62	2	31	193
71 1170 - 1180	214	5	14	480
72 1180 - 1190	35	15	21	250
73 1190 - 1200	23	6	17	175
74 1200 - 1210	74	2	20	410
75 1210 - 1220	21	5	21	220
76 1220 - 1230	25	7	18	101
77 1230 - 1240	32	3	16	112
78 1240 - 1250	36	5	11	125
79 1250 - 1260	32	7	16	81
80 1260 - 1270	101	14	22	120
81 1270 - 1280	206	3	23	178
82 1280 - 1290	293	2	23	290
83 1290 - 1300	195	5	21	163
84 1300 - 1310	63	4	24	119

Nancy Turner
Signed

RIP-4 6/F

EFCO LABORATORIES

2819 W. Ruthrauf Road P. O. Box 5526
TUCSON, ARIZONA, 85703
Phone (602) 887-4241

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Laboratory Analysis Report

Conoco, Inc.
2020 N. Forbes Blvd. Suite 105
Tucson, Arizona 85705

John Kirkwood

REPORT NO. 807307

DATE SUBMITTED 4/9/80

DATE REPORTED 4/14/80

Sample Number	PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
42785 1310-1320	38	2	10	123
86 1320-1330	79	5	<10	134
87 1330-1340	23	2	10	90
88 1340-1350	20	2	<10	82
89 1350-1360	270	2	10	265
90 1360-1370	83	2	<10	180
91 1370-1380	44	<1	12	85
92 1380-1390	84	1	11	103
93 1390-1400	100	<1	11	96
94 1400-1410	83	2	12	132
95 1410-1420	36	<1	13	98
96 1420-1430	43	<1	10	75
97 1430-1440	33	<1	16	72
98 1440-1450	39	<1	17	95
99 1450-1460	103	<1	12	141
42800 1460-1470	15	<1	<10	58
43101 1470-1480	11	<1	15	47
02 1480-1490	12	<1	11	36

Nancy Turner
Signed

A Division of Arizona Feeds

EFCO LABORATORIES
2819 W. Ruthrauf Road P. O. Box 5526
TUCSON, ARIZONA, 85703
Phone (602) 887-4241

Laboratory Analysis Report

Conoco, Inc.
2020 N. Forbes Blvd. Suite 105
Tucson, Arizona 85705

John Kirkwood

REPORT NO. 807313

DATE SUBMITTED 4/15/80

DATE REPORTED 4/24/80

Sample Number		PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
43103	1490-1500	200	3	10	63
4	1500-1510	129	5	10	96
5	1510-1520	158	1	<10	93
6	1520-1530	132	2	10	110
7	1530-1540	83	5	15	63
8	1540-1550	170	2	<10	87
9	1550-1560	750	4	18	266
10	1560-1570	63	11	11	63
11	1570-1580	70	6	10	66
12	1580-1590	70	4	11	59
13	1590-1600	83	5	17	70
14	1600-1610	76	22	10	133
15	1610-1620	145	14	12	129
16	1620-1630	55	2	10	99
17	1630-1640	78	1	14	85
18	1640-1650	30	6	12	60
19	1650-1660	84	8	16	86
20	1660-1670	102	7	13	81
21	1670-1680	61	6	12	56
22	1680-1690	77	9	10	41
23	1690-1700	79	2	10	59
24	1700-1710	171	5	10	91
25	1710-1720	181	3	11	52
26	1720-1730	155	2	11	82
27	1730-1740	206	69	109	350
28	1740-1750	145	3	<10	74
29	1750-1760	35	5	10	47
30	1760-1770	920	9	24	101
31	1770-1780	232	4	10	36
32	1780-1790	49	4	<10	47

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XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Signed

Sample Number	PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
43133 1790-1800	27	2	<10	48
34 1800-1810	57	7	<10	75
35 1810-1820	52	7	<10	47
36 1820-1830	32	7	<10	53
37 1830-1840	74	9	11	78
38 1840-1850	74	7	<10	57
39 1850-1860	96	4	10	87

Geochemical Assay

Sample Number	% Copper
43508	0.17

Sample Number	PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
43501 2470-2480	26	49	<10	24
2 2480-2490	33	4	11	27
3 2490-2500	35	6	<10	32
4 2500-2510	96	3	10	45
5 2510-2520	22	2	<10	20
6 2520-2530	40	<1	10	33
7 2530-2540	45	<1	<10	30
8 2540-2550	+1000	<1	67	643
9 2550-2560	184	6	10	39
10 2560-2570	36	1	<10	44
11 2570-2580	109	<1	13	85
12 2580-2590	19	5	<10	34
13 2590-2600	23	3	10	29

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TUCSON, ARIZONA, 85703
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Laboratory Analysis Report

Conoco, Inc.
2020 K. Forbes Blvd. Suite 105
Tucson, Arizona 85705

John Kirkwood

REPORT NO. 807332

DATE SUBMITTED 5/1/80

DATE REPORTED 5/5/80

Sample Number	PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
43140 1860-1870	46	4	68	53
41 1870-1880	25	3	60	68
42 1880-1890	46	6	70	92
43 1890-1900	39	3	67	70
44 1900-1910	66	5	65	146
45 1910-1920	79	2	67	78
46 1920-1930	38	4	74	86
47 1930-1940	43	9	80	67
48 1940-1950	42	6	76	74
49 1950-1960	113	6	74	59
50 1960-1970	297	3	69	68
51 1970-1980	200	4	81	75
52 1980-1990	102	9	92	40
53 1990-2000	197	8	81	-10
54 2000-2010	242	6	69	73
55 2010-2020	478	5	88	792
56 2020-2030	33	3	75	57
57 2030-2040	48	5	93	41
58 2040-2050	140	5	96	118
59 2050-2060	31	4	94	43
60 2060-2070	22	5	92	20
61 2070-2080	49	5	90	45
62 2080-2090	25	2	87	35
63 2090-2100	34	9	102	59
64 2100-2110	303	5	87	181
65 2110-2120	89	4	94	52
66 2120-2130	24	5	96	52
67 2130-2140	75	3	98	49
68 2140-2150	78	2	98	46

XXXXXXXXXXXXXXXXXXXXXXXXXXX
Signed

Sample Number	PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
43169 2150 - 2160	44	1	106	45
70 2160 - 2170	38	-1	93	57
71 2170 - 2180	53	2	100	150
72 2180 - 2190	15	2	108	35
73 2190 - 2200	32	2	102	46

Signed

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2819 W. Ruthrauf Road P. O. Box 5526
TUCSON, ARIZONA, 85703
Phone (602) 887-4241

P/L P

Laboratory Analysis Report

Conoco, Inc.
2020 N. Forbes Blvd. Suite 105
Tucson, Arizona 85705

John Kirkwood

REPORT NO. 807401
DATE SUBMITTED 5/14/80
DATE REPORTED 5/15/80

Sample Number	PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
43514 2600-2610	13	7	14	21
15 2610-2620	10	-1	-10	25
16 2620-2630	12	2	-10	12
17 2630-2640	17	7	-10	16
18 2640-2650	15	-1	11	17
19 2650-2660	60	-1	13	61
20 2660-2670	23	1	-10	31
21 2670-2680	21	5	12	29
22 2680-2690	19	-1	-10	30
23 2690-2700	21	-1	12	21
24 2700-2710	20	2	10	24
25 2710-2720	22	5	11	26

Nancy Turner
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EFCO LABORATORIES
2819 W. Ruthrauf Road P. O. Box 5526
TUCSON, ARIZONA, 85703
Phone (602) 887-4241

Laboratory Analysis Report

Conoco, Inc.
2020 N. Forbes Blvd. Suite 105
Tucson, Arizona 85705

John Kirkwood

REPORT NO. 807412

DATE SUBMITTED 5/22/80

DATE REPORTED 5/29/80

Sample Number	PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
43526 2720-2730	15	<1	<10	29
27 30 40	17	<1	<10	56
28 40 50	35	<1	<10	34
29 50 60	16	<1	<10	30
30 60 70	12	<1	<10	31
31 70 80	14	<1	<10	29
32 80 90	44	5	<10	80
33 2790 - 2800	17	<1	12	38
34 00 10	15	<1	<10	32
35 10 20	14	<1	10	39
36 20 30	24	<1	10	43
37 30 40	21	<1	10	54
38 40 50	21	<1	<10	50
39 50 60	406	15	<10	814
40 60 70	18	<1	<10	32
41 70 80	142	8	<10	41
42 80 90	47	<1	<10	117
43 2890 - 2900	20	<1	<10	58
44 00 10	20	<1	<10	53
45 10 20	17	<1	<10	46
46 20 30	14	<1	<10	40
47 30 40	14	<1	<10	85
48 40 50	15	<1	12	80
49 50 60	32	<1	30	63
50 60 70	37	<1	<10	73
51 70 80	23	<1	<10	35
52 80 90	15	<1	<10	32
53 2990 - 3000	21	<1	<10	37
54 60 10	16	<1	<10	33
55 10 20	19	<1	<10	47
56 20 30	22	<1	<10	45
57 3030 3040	22	<1	<10	45

Nancy Turner
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EFCO LABORATORIES

2819 W. Ruthrauf Road P. O. Box 5526
TUCSON, ARIZONA, 85703
Phone (602) 887-4241

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Laboratory Analysis Report

Conoco, Inc.
2020 N. Forbes Blvd. Suite 105
Tucson, Arizona 85705

John Kirkwood

REPORT NO. 807414

DATE SUBMITTED 5/28/80

DATE REPORTED 6/2/80

Sample Number	PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
43558 3040-3050	26	17	10	50
59 50 60	24	16	10	50
60 60 70	28	16	13	58
61 70 80	31	7	12	53
62 80 90	29	6	10	48
63 3090 - 3100	44	9	13	59
64 00 10	43	8	10	38
65 10 20	29	6	11	50
66 20 30	82	5	14	54
67 30 40	54	18	10	45
68 40 50	49	7	10	47
69 50 60	27	11	<10	41
70 60 70	27	3	<10	39
71 70 80	61	5	10	66
72 80 90	56	7	<10	48
73 3190 - 3200	32	7	<10	36
74 00 10	179	4	<10	21
75 10 20	144	11	10	117
76 20 30	35	3	<10	34
77 30 40	30	5	<10	41
78 40 50	19	8	<10	30
79 50 60	23	9	<10	34
80 60 70	36	9	<10	28
81 70 80	21	9	<10	27
82 80 90	24	9	<10	34
83 3290 - 3300	54	11	15	41
84 00 10	52	9	<10	35

[signature]
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P

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2819 W. Ruthrauf Road P. O. Box 5526
TUCSON, ARIZONA, 85703
Phone (602) 887-4241

Laboratory Analysis Report

Conoco, Inc.
2020 N. Forbes Blvd. Suite 105
Tucson, Arizona 85705

John Kirkwood

REPORT NO. 807426
DATE SUBMITTED 6/11/80
DATE REPORTED 6/17/80

Sample Number			PPM Copper	PPM Molybdenum	PPM Lead	PPM Zinc
43585	3310	-3320	13	<1	10	36
86	20	30	14	<1	11	41
87	30	40	16	<1	<10	30
88	40	50	18	<1	<10	34
89	50	60	20	<1	10	34
90	60	70	20	5	13	36
91	70	80	16	4	10	30
92	80	90	22	6	11	31
93	3390	3400	25	<1	10	29
94	00	10	10	7	<10	25
95	10	20	16	7	10	28
96	20	30	13	<1	<10	30
97	30	40	60	<1	<10	43
98	40	50	11	2	13	46
99	50	60	14	<1	37	84
43600	60	70	61	2	41	165
40861	70	80	30	<1	13	74
62	80	90	17	<1	39	136
63	3490 -	3501	52	<1	80	194
* JK #1	1300-1308		7	<1	<10	44
* JK #1	1490-1500		23	3	<10	43

* Two samples with the same ID.

FLORENCE ASSESSMENT HOLE MH-53-86

A Division of Arizona Feeds

Nancy Turner
Signed

Rich Loring CONOCO

To Clark. Date 12-1-80

Forget the potassic alteration described in the Detailed Geology report (pg 6). The dikes really are syenites petrographically, and some feldspars in other rocks have been stained by hematite, not replaced by K-spar.

The only "real" potassic alteration recognized is the weak K-spar augmentation seen in the bottom half of RIP-1.

Rich

RIPSEY HILL DDH RIP-4 — DRILL HOLE STRIP LOG

COLLAR ELEVATION: 3241 ft.
LOCATION: SE 1/4 SE 1/4 Sec 22
FINAL DEPTH: 3501 ft.
COMPLETED: 5/30/80

EXPLANATION
- Precambrian Diabase
- Precambrian Granite
- ? Fault dip unknown
- Laramide Andesite (AND)
- Laramide Qtz. Diorite Porph. (QDP)
- Fault dip 20° etc
- Crushed & Sheared Zone

STRIP LOG, DDH RIP-4

ARIZONA | PINAL

Conoco Inc.
Minerals Department
Metallics Exploration
Tucson, Arizona

J. M. KIRKWOOD 6/30/80
S. B. GAUL 7/2/80

D-033-32

CONOCO

Interoffice Communication

To: J. N. Lukanuski

From: R. B. Loring

Date: November 25, 1980

Subject: Ripsey Hill Project - Analysis of 1980 Results

Exploration activity at Ripsey Hill consisted of the drilling of D.D.H. RIP-4 and a geochemical sampling program covering parts of sections 21 and 22. The following are recommendations for future work and a summary of contributions these latest efforts have made to the analysis of the prospect.

CONCLUSIONS AND RECOMMENDATIONS

1. The geochemical sampling has established an anomaly probably representing the up-dip projection of upper plate, high Zn mineralization encountered in D.D.H. RIP-1. Oxidation and enrichment of the minor Cu in this zone may augment the fairly substantial Zn and thus create a potential small tonnage target about 700 to 1200 feet northwest of RIP-1. Two to five million tons of 2% combined Cu-Zn would not be unreasonable. It is recommended that sampling on a much smaller grid spacing be done in the area of the anomaly, and that acquisition of Denogean ground be accomplished to provide drill access to the target.

2. A drill target is now confirmed about 2000 feet east or east northeast of D.D.H. RIP-1. The I.P. anomaly in this area coupled with the very probable continuity of mineralization between D.D.H.'s RIP-2 and RIP-4 substantiates the buried target postulated east of the high-Mo root zone mineralization encountered in the lower segment of D.D.H. RIP-1. This is the prime drill target on the prospect, and it should be drilled as the priority activity at Ripsey Hill in 1981.

3. A target about 2000 feet west or west southwest of D.D.H. RIP-1 may exist as an offset from the prime target east of RIP-1. If an eastward ore zone is successfully drilled, this western offset becomes a strong secondary target.

1980 GEOCHEMICAL RESULTS

A grid sampling program on a 500-foot spacing covered about half of section 21 and a quarter of section 22 (figures 1A through 1E) in the area of apparent vein-dike convergence defined during detailed mapping. Several anomalies were generated, and one of coincident Mo, Cu, and Zn occurs about 1800 feet NW of D.D.H. RIP-1. This anomaly consists of four to six points depending on the metal, and it occurs in a location reasonable for the up-dip projection of the high-zinc interval encountered in that drill hole. The initial purpose of the sampling was to demonstrate mineralization to the west of RIP-1, but the pattern of surface assays reveals a lack of base metal sulfides in the area thought to constitute a structural-offset target (figure 3). Single point anomalies indicate local vein mineralization.

The main anomaly generated limits the mineralization encountered in D.D.H. RIP-1 and provides a reasonable geometry to the target. Oxidation and enrichment processes are very likely to have created a small target between the surface anomaly and D.D.H. RIP-1. However, further sampling is necessary to substantiate and to better define the anomaly. Therefore, a 100-foot sample grid is recommended in the area 1500 to 2000 feet NW of D.D.H. RIP-1. Drill confirmation of a target will have to await acquisition of Denogean claims.

DRILLING

D.D.H. RIP-4 was located in the southeast corner of section 22 to test the down-dip extent of the shallowly plunging I.P. anomaly thought to represent the eastward structural offset of mineralization encountered in D.D.H. RIP-1 (Loring report of 3-2-78). The latest drill hole encountered weak, erratic, and very crudely zoned mineralization in various intensities of propylitic alteration between 1200 and 2600 feet (John Kirkwood's report of 6-17-80). The mineralization and introduction of sericite-quartz-pyrite veinlets in this segment is similar to, and less well zoned as that described in D.D.H. RIP-2 from 600 to 3050 (Loring report of 11-13-79), but the drill holes are too far apart to reliably connect these separate zones. It can be said, however, that peripheral mineralization has been encountered in both RIP-2 and RIP-4 and that the presence of anomalous Cu, Mo, and Zn mineralization still provides evidence for a porphyry system somewhere in the area of section 22.

TARGET DEVELOPMENT

The over all target concept establishing the prospect is unchanged since the drilling of D.D.H. RIP-1 (Loring report of June, 1978). The drilling of RIP-2 and RIP-4 have provided important refinements and limitations on the positioning of the target relative to RIP-1 and surface geology.

The target still represents a down-structure projection along the south and southeastward dipping vein-dike system converging in the area of NW quarter section 22 and NE quarter section 21. The strong, well-zoned, and mutually exclusive Mo and Zn mineralization in D.D.H. RIP-1 provides a target somewhere east of the drill hole in a buried fault block bounded by shallow dipping, rotated normal or listric faults (figure 3). The eastern vector is established on the by-product grade Mo encountered in the buried block of RIP-1 and the demonstrated eastward rotation of that block (figure 3). The geophysical anomaly encountered east and eastnortheast of RIP-1 in the down-hole radial I.P. survey (Whitman, 1978) is now thought to represent a sulfide body intimately related to the potential copper-bearing system rather than the peripheral pyrite halo previously interpreted. It is the old interpretation that lead in part to the locations of both RIP-2 and RIP-4.

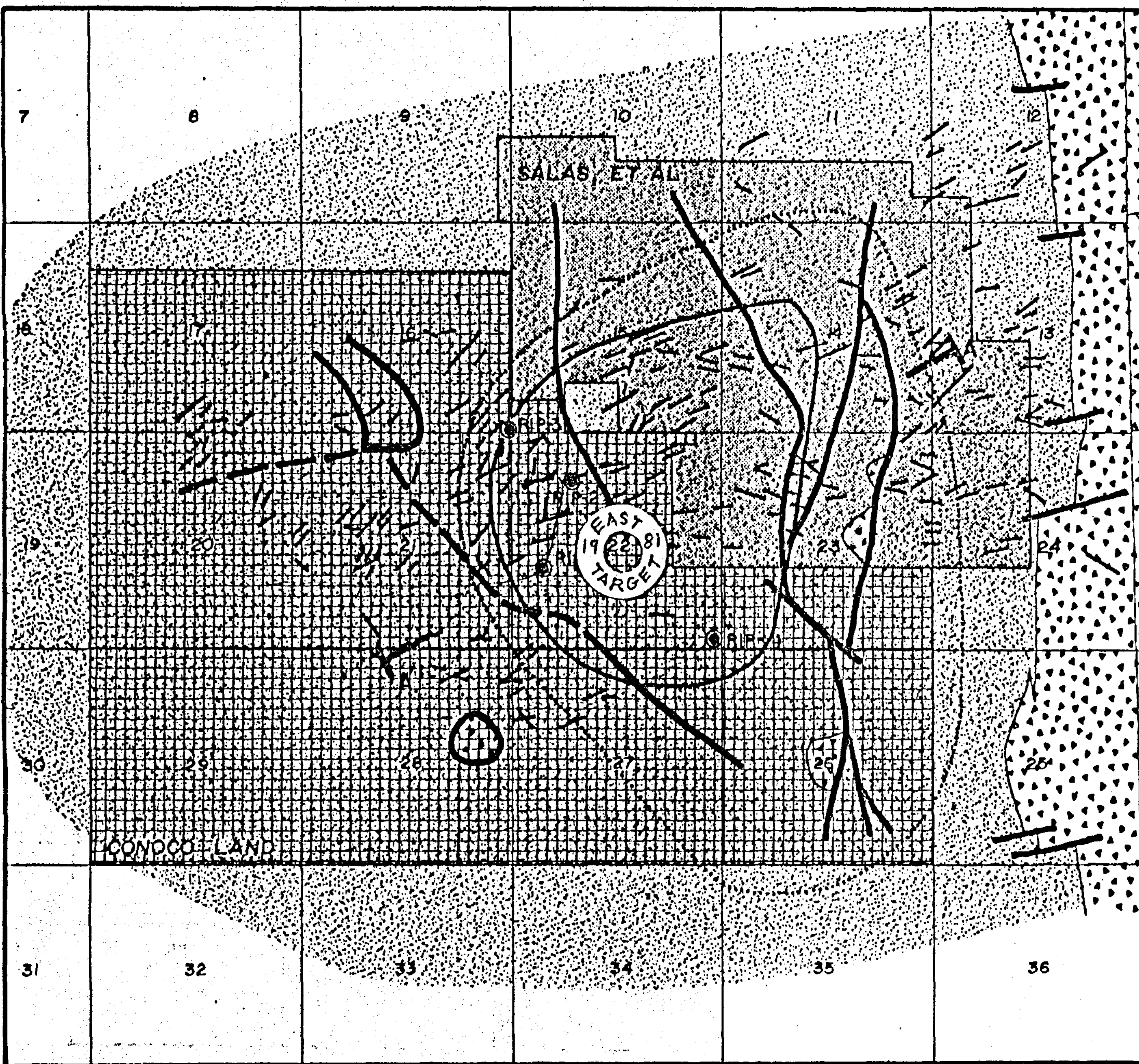
The results of D.D.H. RIP-4 demonstrate that this hole is located much too far onto the opposite side of the target systems and that a site somewhere between RIP-2 and RIP-4, about 2000 feet east to east northeast of RIP-1 is the best location. This is the main target on the prospect and should be the primary object of any further drilling.

Based on the listric fault interpretation, the results of D.D.H. RIP-1 (report of 3-2-78) provide a second target west of the drill hole. The isolation of Mo and Zn with a small Cu anomaly in highly broken rocks between the other two metal zones demonstrates the existence of two chemically unique structural blocks: a lower Mo rich (~100 ppm), high magnetite, weakly potassic to fresh Ruin granite, overlain by an upper block containing structurally controlled Zn and very minor Cu in several zones, one of which is 190 feet of 0.53% Zn in sepiolitic (?)-altered Ruin granite and Cretaceous granodiorite porphyry. The listric faulting establishes that the high Zn (shallow zone mineralization) plate has moved down and westward over the high Mo (root zone) plate, thus either leaving the high copper zone behind in the lower plate to the east or moving the copper westward in the upper plate "ahead" of the zinc. Most data point to the former target east of D.D.H. RIP-1, and geochemical sampling has failed to establish the traces of a westward buried target, but should drilling of the eastward target prove successful, part of that body may have been displaced into a position west of RIP-1 in the upper plate (figure 3). It then becomes a strong secondary target.

Rich Loring

R. B. Loring

RBL:mm



RIPSEY HILL PROJECT GEOLOGIC MAP & TARGET DEFINITION

ARIZONA	PINAL	1" = 4000'	

CONOCO

CONTINENTAL OIL COMPANY
MINERALS DEPARTMENT
METALLICS DIVISION
TUCSON, ARIZONA

A-033-27

Ripsey Hill

Land:

A - Mining Claims- Required work before 9/1/any year = $43,000.

1 - 305 unpatented lode "Tort" mining claims; $30,500/year assessment work.
2 - 125 unpatented claims optioned from Salas et al; $12,500/year assessment work.

Payments for Salas Option - 10 year Option:

Amount	Due Date
$ 28,000	7/17/81
35,000	7/17/82
70,000	7/17/83
84,000	7/17/84
98,000	7/17/85
150,000	7/17/86
200,000	7/17/87
300,000	7/17/88
400,000	7/17/89-93 (make 1, make all)

B - State of Arizona Prospecting Permit.
356.04 acres - 3/38/80-3/27/85, work on the ground;
$3,560.40 to 3/27/82, $7,120.80, 1983-1985, plus rent of $356.04.

C - Conflicts:

1 - Denogean/Aguirre conflict - 25 claims all of which were over-staked by Conoco. Have a good rapport with Denogean. He works for Kennecott at Ray.
2 - Turnipseed - 12 claims, only talked to him once. Easy to deal with, knows mining.

Rich Loring

CONOCO

To Clark. Date 12-1-80

Forget the potassic alteration described in the Detailed Geology report (pg 6). The dikes really are syenites petrographically, and some feldspars in other rocks have been stained by hematite, not replaced by K-spar.

The only "real" potassic alteration recognized is the weak K-spar augmentation seen in the bottom half of RIP-1.

Rich

QUATERNARY TO LATE TERTIARY	Qal	Stream alluvium	
	Qc	Colluvium; old alluvium, mixed gravels	
	QTs	Lithified alluvial deposit, mostly granitic material	
	TKd	Aphanitic flow laminated dacite	
LATE CRETACEOUS TO LARAMIDE	TKda, TKgdp, TKgd	Light grey to pink porphyritic dacite and andesite dikes (da) grading to diorite or grading to quartz diorite-quartz monzonite, averaging granodiorite (gd,gdp)	
	TKa	Porphyritic, fine grained andesite locally grading to quartz diorite	
PALEOZOIC	Pzs	Sediments, mostly Escabrosa *(Miss.)* and Martin *(Dev.)* limestones	
	db	Diabase dikes	
PRECAMBRIAN	p€t / p€a	Apache group sediments (p€a): mostly Dripping Springs quartzite, local Mescal limestone, Pioneer shale, conglomerate; Troy quartzite (p€t)	
	gr / apl	Medium to coarse grained granite-quartz monzonite (gr); cut by aplite pods and dikes (apl)	

SYMBOLS

- Intrusive contacts, dotted under cover
- Outcrop boundary of sedimentary rocks
- Inferred fault with local, exposed dip and plunge of slickenslides
- Dip of sedimentary beds
- Mineralized vein with local copper oxide, goethite or hematite; local chalcocite (cc), sphalerite (sp) and galena (gl); with dip where exposed
- Mineralized fractures and shear zones with breccia (4ә), quartz veins (qv) and calcite (c)
- Breccia zones, usually mineralized
- Pervasive sericite or phyllic alteration usually mineralized
- Drill hole

0' 500' 1000' 2000'

N

DISTRICT
SURVEY
REFERENCE
NOTES AND REVISIONS

Outer 1-mile strip modified after Kreiger et al, 1974

AREA AND TYPE OF MAP

RIPSEY HILL PROJECT
GEOLOGIC MAP

STATE ARIZONA | COUNTY PINAL | SCALE 1:12000 | 20'/40'

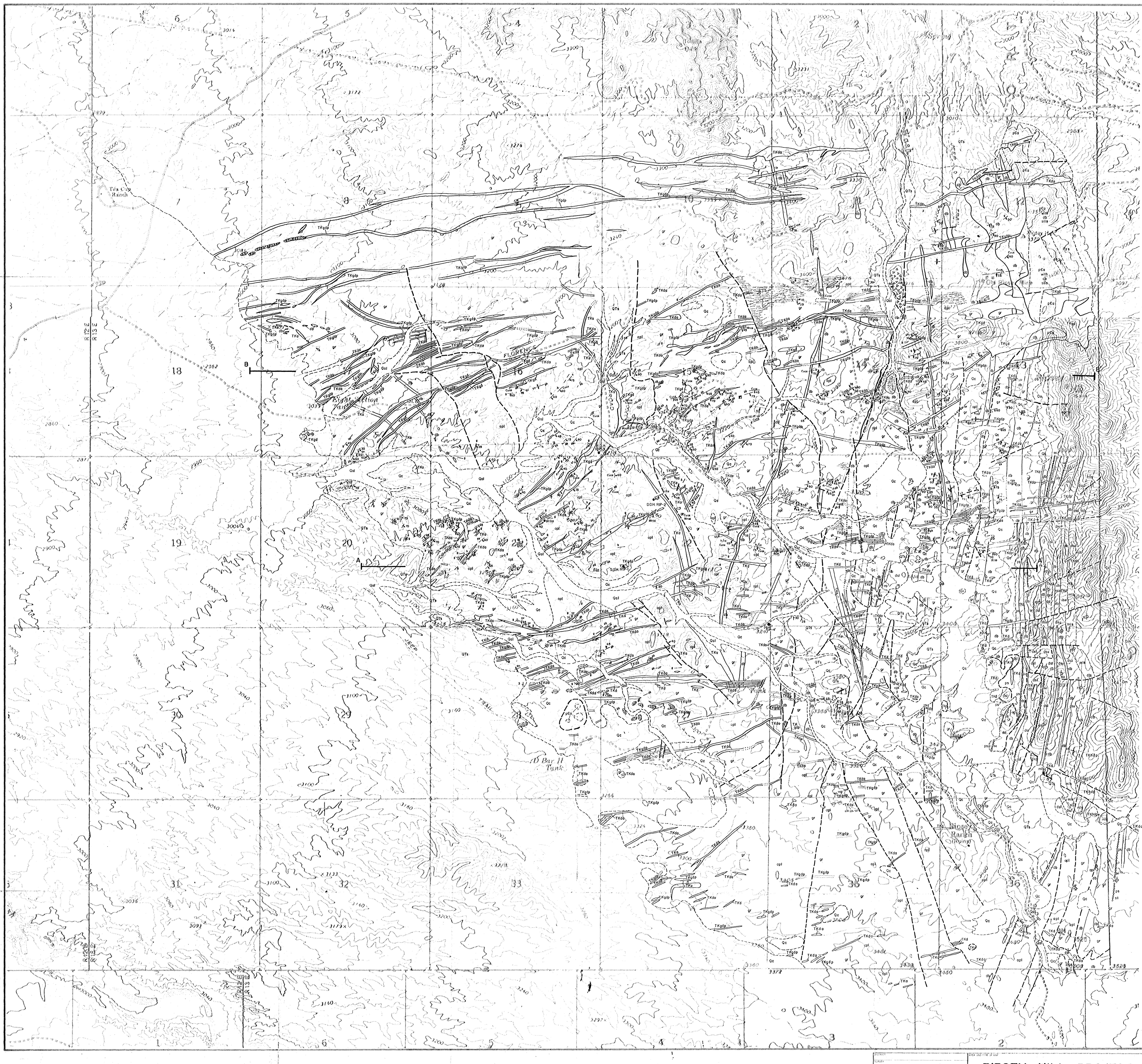
CONOCO

CONTINENTAL OIL COMPANY
MINERALS DEPARTMENT
METALLICS DIVISION
TUCSON, ARIZONA

DATA BY R.B. LORING 12/78
DRAWN BY M.T. MURPHY 3/79
FILE NO. E-033-4a

Kearney Quad.

CONOCO STATE PP-08-77763 MP-810
3/4/80 – 3/3/85
$10/acre work per year thru 1982
$20 1983-1985
STARK
AURORA CLAIMS
R.C. CLAIMS
WEST RIPSEY GROUP
BLUE BOY CLAIMS
MO-784
CONOCO "TORT" CLAIMS MM-741
RED DIPPER CLAIMS Edward Denogean
FEE H. & V. O'Neill, Jr. Southern Az. Bank, Trustee & J.H. & M. Dunn
FEE T-Cup Rch (lim. pshp.) Rainwater & Gooding
R13E R14E
T5S
State Surf., P.D. Mins.
REVISED: 3/78, 4/78, 5/80.
CENTRAL TORTILLA MOUNTAINS
RIPSEY HILL PROJECT
LAND AND CLAIM MAP
STATE ARIZONA
COUNTY PINAL
SCALE 1" = 1000'
CONTINENTAL OIL COMPANY
MINERALS DEPARTMENT
METALLICS DIVISION
TUCSON, ARIZONA
CONOCO
DATA BY G. IWAN
DRAWN BY C.A.C.
DATE 2/78
DATE 3/78
D-033-15a



Age	Symbol	Description
QUATERNARY AND LATE TERTIARY	Qal	Stream alluvium
	Qc	Colluvium; old alluvium, mixed gravels
	QTs	Lithified alluvial deposit, mostly granitic material
	TKd	Aphanitic, flow-laminated dacite
LATE CRETACEOUS TO LARAMIDE	TKda, TKgdp, TKgd	Light grey to pink porphyritic dacite and andesite dikes (da) grading to diorite or grading to quartz diorite-quartz monzonite, averaging granodiorite (gd,gdp)
	TKdp, TKa, TKhdp	Porphyritic, fine grained andesite (a) locally grading to quartz diorite, also hornblende dacite (?) porphyry (hdp)
PALEOZOIC	Pzs, Dm, Ꞓa	Sediments, Cambrian Abrigo and Devonian Martin Limestone
PRECAMBRIAN	db	Diabase dikes
	t	Troy quartzite
	pꞒa: mls, dsu, dsl, bc, ps, sc	Apache group: Mescal limestone Upper Dripping Spring quartzite Lower Dripping Spring quartzite Barnes conglomerate Pioneer shale Scanlon conglomerate
	gr / apl	Medium to coarse grained granite-quartz monzonite (gr); cut by aplite pods and dikes (apl)

SYMBOLS

- Dip of sedimentary beds
- Mineralized vein with local copper oxide, goethite or hematite; local chalcocite (cc), sphalerite (sp) and galena (gl); with dip where exposed
- Mineralized fractures and shear zones with breccia (◁▽), quartz veins (qv) and calcite (c)
- Breccia zones, usually mineralized
- Pervasive sericite or phyllic alteration usually mineralized
- Drill hole
- Intrusive contacts, dotted under cover
- Outcrop boundary of sedimentary rocks
- Inferred fault with local, exposed dip and plunge of slickenslides

0' 500' 1000' 2000'

N

DISTRICT

SURVEY

REFERENCE

NOTES AND REVISIONS

Northern 1-mile strip modified after Kreiger et al, 1974

Revised by S. B. Gaul 1/80

AREA AND TYPE OF MAP

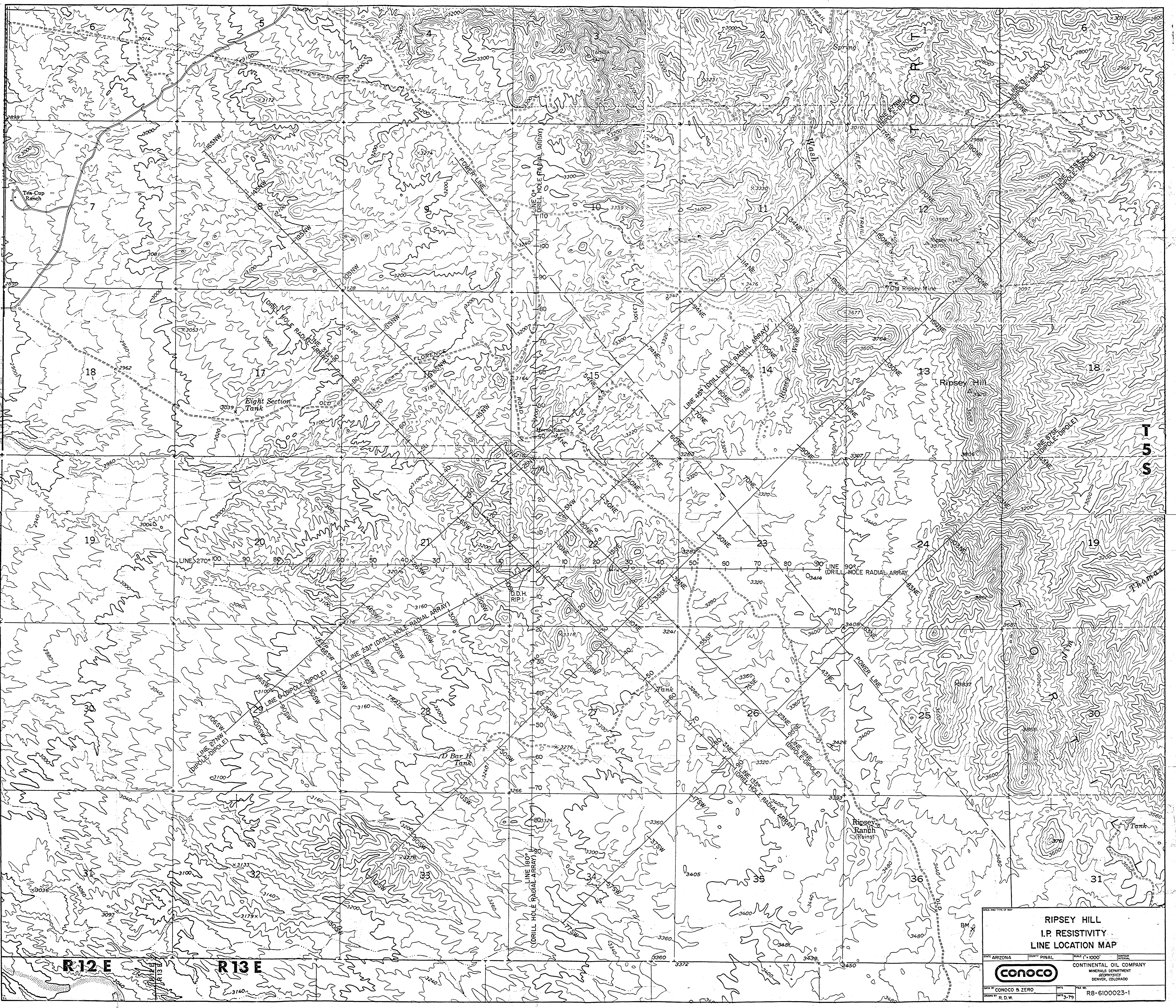
RIPSEY HILL PROJECT GEOLOGIC MAP

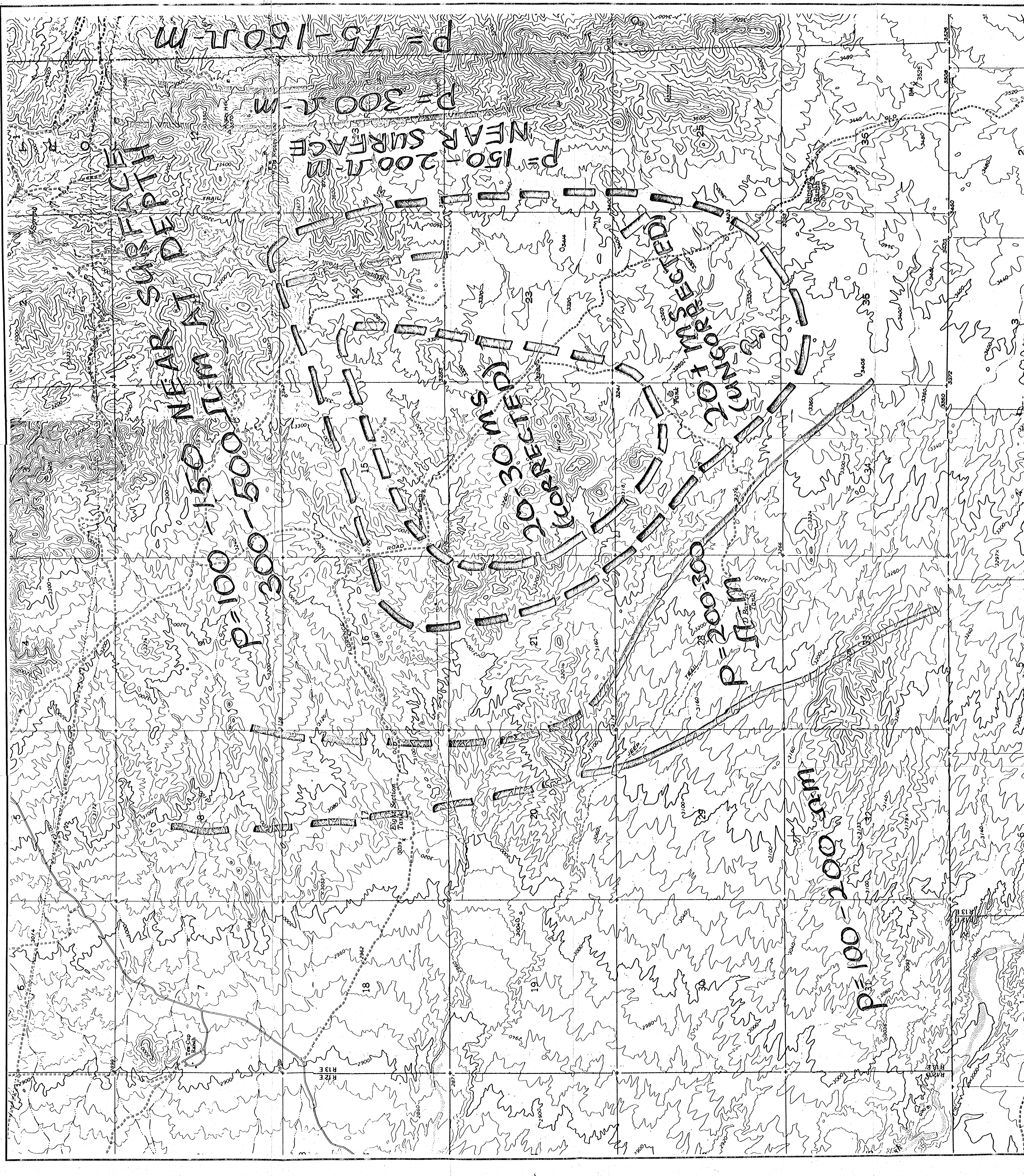
STATE	COUNTY	SCALE	CONTOUR INTERVAL
ARIZONA	PINAL	1:12000	20'/40'

CONOCO

CONTINENTAL OIL COMPANY
MINERALS DEPARTMENT
METALLICS DIVISION
TUCSON, ARIZONA

DATA BY R.B. LORING	DATE 12/78	SIZE	FILE NO E-033-4a
DRAWN BY M.T. MURPHY	DATE 3/79	PROJ FILE NO	


RIPSEY HILL
I.P. RESISTIVITY
LINE LOCATION MAP
AREA AND TYPE OF MAP
STATE ARIZONA
COUNTY PINAL
SCALE 1" = 1000'
CONTOUR INTERVAL
CONTINENTAL OIL COMPANY
MINERALS DEPARTMENT
GEOPHYSICS
DENVER, COLORADO
DATA BY CONOCO & ZERO
DRAWN BY R.D.W.
DATE 3-79
FILE NO. R8-6100023-1
Ripsey Hill
Old Ripsey Mine
Ripsey Ranch (Ruins)
Tea Cup Ranch
Eight Section Tank
D Bar H Tank
Horse Ranch
D.D.H. RIP 1
LINE 0° (DRILL HOLE RADIAL ARRAY)
LINE 90° (DRILL HOLE RADIAL ARRAY)
LINE 180° (DRILL HOLE RADIAL ARRAY)
LINE 270°
LINE 45° (DRILL HOLE RADIAL ARRAY)
LINE 135° (DRILL HOLE RADIAL ARRAY)
LINE 231° (DRILL HOLE RADIAL ARRAY)
LINE 315° (DRILL HOLE RADIAL ARRAY)
LINE 27NW (DIPOLE-DIPOLE)
LINE 9 (DIPOLE-DIPOLE)
LINE 18NE (DIPOLE-DIPOLE)
LINE 87SE (DIPOLE-DIPOLE)
LINE 33SE (DIPOLE-DIPOLE)
POWER LINE
FLORENCE
T 5 S
R 12 E
R 13 E



I.P. RESISTIVITY

AREA AND TYPE OF MAP

STATE | COUNTY | SCALE | CONTOUR INTERVAL

CONOCO

CONTINENTAL OIL COMPANY
MINERALS DEPARTMENT
METALLICS DIVISION
TUCSON, ARIZONA

DATA BY | DATE | SIZE | FILE NO.
DRAWN BY | DATE | PROJ. FILE NO.

DISTRICT
SURVEY
REFERENCE
NOTES AND REVISIONS:

Ripsey Topography