WALKER MINE REPORT

1979

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SUMMARY

Active field work conducted by Conoco in the summer of 1979 consisted of geologic mapping, geochemical sampling, diamond drilling, claim staking and resurveying, geophysical surveying and water quality sampling. In addition to this, detailed petrography was done on surface samples and on new and existing drill core.

The geologic mapping conducted in the Northern Walker Area established a stratigraphic sequence of volcanic rocks as follows:

1. Undifferentiated Tertiary Volcanics that are the youngest rocks in the area.
2. Dacite Porphyry dikes and sills that intrude all the older rocks.
3. Intermediate lapilli tuffs and possible dacite flows with a thin silicious exhalative horizon all of the Jurassic Kettle Formation.
4. Basalt flows within the Kettle Formation. Interbedded in the basalts is a zone of chloritic fragmental rocks with a thin interbedded magnetite facies iron formation.

Geochemical surveys conducted in the Walker Mine area included:

1. Water quality sampling to monitor the acid mine discharge from the main portal of Walker Mine.

2. A soil survey on a 200 x 400 foot grid in the Northern Walker Area, the results of which indicated two distinct anomalies, one associated with a thin silicious exhalative and the other with dacite porphyry dikes.

Geophysical surveys conducted included ground magnetics, mise-a-la-masse and induced polarization. The mise-a-la-masse survey did not work due to the lack of conductivity in the exhalative zone. The ground mag survey clearly mapped the magnetite facies iron formation in the Northern Walker Area. The I.P. survey showed an anomalous zone at least 800 feet in length near the iron formation in the Northern Area. The I.P. did not see through the Tertiary Volcanic cover north of the North Piute Orebody.

Conoco drilled six shallow diamond drill holes into three separate targets for a total of 3,319 feet. Two drill holes WC-1 and WC-2 were drilled in the North Area and did not encounter any exhalative mineralization. Holes WC-3 and WC-4 were drilled into the footwall exhalative zone by the 712-Piute Orebodies. These holes encountered thin exhalative zones that were anomalous in copper. These holes also encountered numerous post-mineral dacite porphyry dikes and sills that intruded the section around the exhalative zones. Holes WC-5 and WC-6 were drilled into the footwall exhalative horizon by the North-Central Orebodies and encountered two thin, metal bearing, chert horizons. Neither horizon had enough thickness or high enough grade to pursue any further. In addition to the exhalite zones there were also significant thicknesses of

post-mineral dacite porphyry intercepted. In conclusion, the most interesting aspect, and possibly most discouraging, of the drilling program was the abundance of post-mineral dacite porphyry that was encountered in the Main Walker Area.

Conoco also conducted claim staking to cover invalid fractions around the patented millsite claims. Re-surveying of all existing un-patented claims was done to re-establish the claim corners as required by California State Law.

Water quality sampling to assist in evaluating potential environmental problems attributable to acid mine discharge was also conducted in 1979.

1980 RECOMMENDATIONS

The 1980 Recommended Program should consist of geophysics, diamond and rotary drilling, geologic mapping and whole rock geochemistry.

Dipole-dipole induced polarization with 1,000 foot dipole spacings should be run on at least lines 16/N and 32/N to determine if it can see through the Tertiary cover. If it works, it should be run on lines 48/N, 64/N, 80/N and 100/N to trace the horizon under the covered area. In addition to this, a small amount of fill-in 500 foot dipole-dipole IP should be run to complete the data coverage acquired during 1979. In addition, we should have misse-a-la masse electrodes ready to put in any drill holes that intercept massive mineralization.

A combination of rotary or down-hole hammer and diamond drilling to test the Tertiary covered area is proposed for 1980. The first drill

hole should be to re-enter AMAX's WA-3 and deepen it to ±750. Then we should step out to the northeast and drill a series of 5-7 holes that range in depth from 800 - 1,200 feet. The rotary or down-hole hammer drill will be used to drill through the Tertiary cover at a cheaper drilling cost. The rotary holes should then be cased and diamond cored to at least 100 feet into the footwall of the horizon. If, after three intersections of the mineralized horizon we can see zonal patterns developing that indicate we are going away from the center of mineralization, we should consider putting the remainder of the drilling budget into a deep hole in the Main Walker Area. This hole should be placed opposite Transverse Ridge and drilled so it will intersect the horizon at least 800 feet below the lowest level in the mine and also drill 300 - 500 feet into the footwall to test for "stringer type" mineralization. One other possible drill target remains, the iron formation in the Northern Area. A shallow, 500 - 700 foot hole might be drilled into this target if detailed geology and additional geophysics show that it is warranted.

The immediate area around the Walker Mine Area should be mapped in detail to understand the detailed stratigraphy of the mine area. More detailed mapping and sampling needs to be done on the Sobrero Property (Copper King Claims) in the Northern Walker Mine Area to see if there is a drill target associated with the iron formation in this area. In addition to conducting mapping and prior to conducting geophysics, we should acquire the Cu King Claims (negotiations are in progress).

A detailed whole rock geochemical alteration study should be conducted in the Main Walker Area and should include surface and drill hole samples. Ponca City has offered to cover the expense of this as a research project to be conducted by Matthias Petersen.

INTRODUCTION

Location

The Walker Mine property is approximately 80 miles by road northwest of Reno, Nevada, in east-central Plumas County, California (Figure 1). Access to the property is by a forest service road that leaves State Highway 70 at Portola and heads northwest towards recreation areas at Lake Davis, then onward to the mine and beyond. The 25-mile distance from Portola to the mine is about half paved. The other half, which is dirt and gravel, is impassable by wheeled vehicles during the winter months.

Elevations range from 5,500 to 7,200 feet above sea level. Topography is moderate. Mt. Ingalls, a prominent topographic feature, is two miles east of the Walker Mine.

Property Status

Conoco controls 34 patented claims, 351 unpatented claims, several patented mill sites and a townsite for a total of approximately 7,966 acres. Conoco optioned the property by letter of agreement with Amax on April 1, 1978, and at that time, option payments were re-negotiated with the owner, Mr. R. R. Barry. The Amax terms require Conoco to spend $170,000 by January 31, 1980 to acquire a 51% interest in the property.

Conoco has exceeded the $170,000 earning requirement and carried Amax until January 31, 1980. At that time Amax decided not to participate in the 1980 exploration program and to take dilution for all expenditures beyond the $170,000. For 1978 and 1979 Amax will be taking a 1%/$60,000

INDEX MAP - WALKER MINE

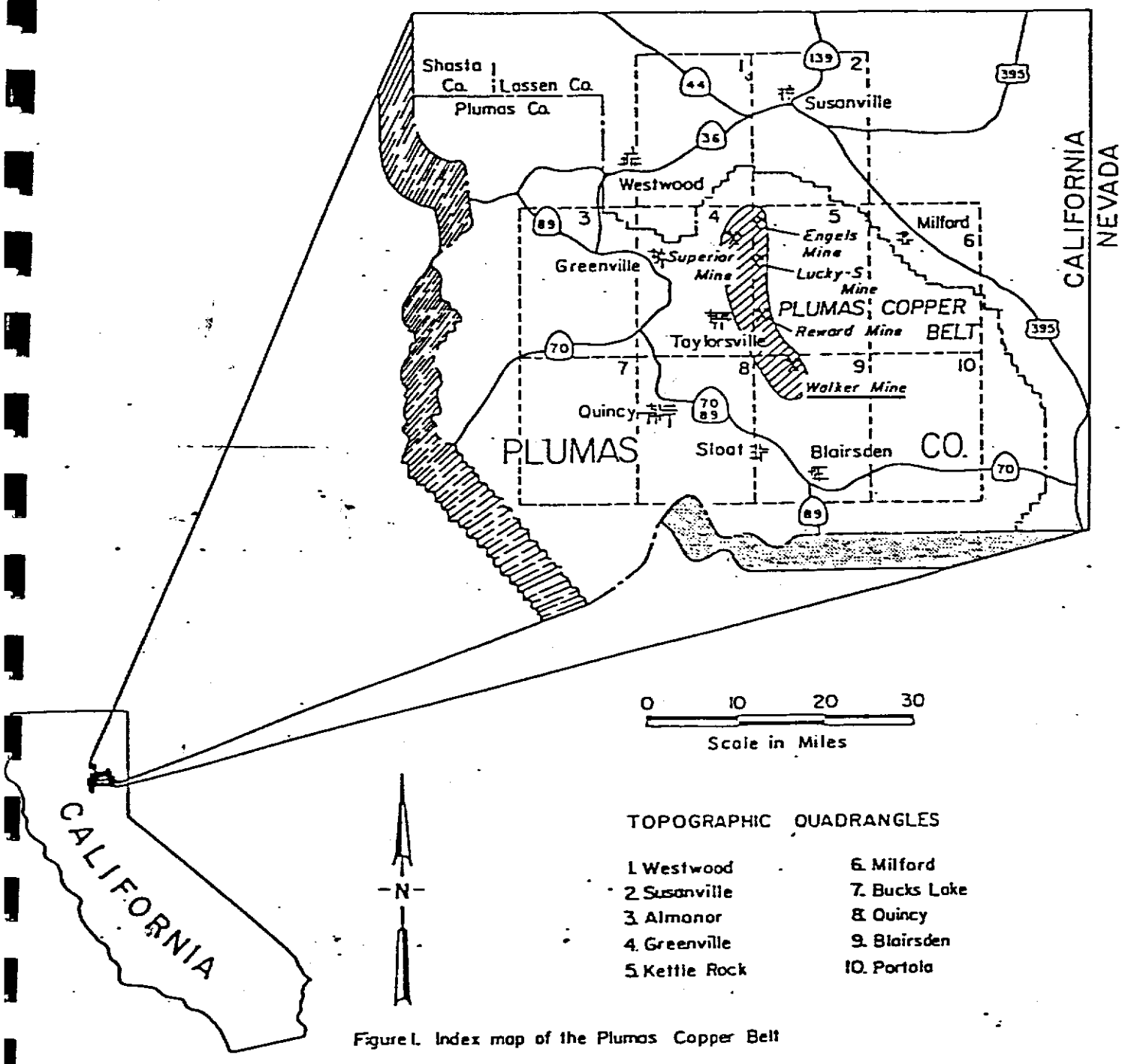


Figure 1. Index map of the Plumas Copper Belt

dilution on $225,000 for a 4.25% decrease, giving them a 44.75% interest in the Walker Mine property.

Environmental Studies

The Walker Mine property and tailings deposit have an unfortunate history as a significant contributor of pollution to Grizzly Creek. Toxic waters from the mine and tailings are documented by state and federal agencies as being a serious environmental problem.

In May 1978, Dawn Kaback, an environmental geochemist from Conoco's Ponca City office, visited the Walker Mine property to review and expand the water quality monitoring program. Her comments are recorded in a memo titled "Walker Mine Environmental Monitoring" dated June 7, 1978.

Previous Work

The Walker Mine was one of the largest copper producers in Plumas County, yielding 163 million pounds of copper. The mine was operated almost continuously from 1916 to 1941 by the International Smelting Company, a subsidiary of the Anaconda Mining Company. During this time, the mine produced a total of 5,045,800 tons of ore averaging 1.5% Cu, 0.80 oz. Ag and 0.04 oz. Au (Reith, 1972).

Norandex conducted an exploration program on the property from 1969 to 1971 consisting of geologic mapping, geochemical and geophysical surveys as well as drilling 11 diamond drill holes.

Amax Exploration Inc. acquired the property in 1976 and conducted exploration activities during the summers of 1976 and 1977. Their work

consisted of regional geologic reconnaissance, detailed geologic mapping, claim surveying, stream drainage and water quality sampling, whole rock geochemistry and diamond drilling (Hursh, 1977).

Conoco Inc. optioned the property from Amax on April 1, 1978 and conducted an exploration program during the summer of 1978. Conoco work consisted of detailed geologic mapping, soil geochemical sampling, logging of drill core, environmental water sampling and re-establishing existing mining claims. For a detailed account of the 1978 program the reader is referred to Kilbreath and Leger, 1978.

CONOCO EXPLORATION PROGRAM - 1979

Introduction

The Conoco exploration program started in early June and continued until November 21. The main emphasis for 1979 was the evaluation of the North Walker Mine Area and the footwall exhalative zones in the Main Walker Area. Detailed geologic mapping, soil sampling, ground magnetics, induced polarization, and diamond drilling was carried out in the North Area. Diamond drilling was conducted in the Main Area to test for mineralization in the footwall exhalative zones. Induced polarization and mise-a-la-masse surveys were conducted in the volcanic covered area between the North and Main Walker Areas (See Figure 3).

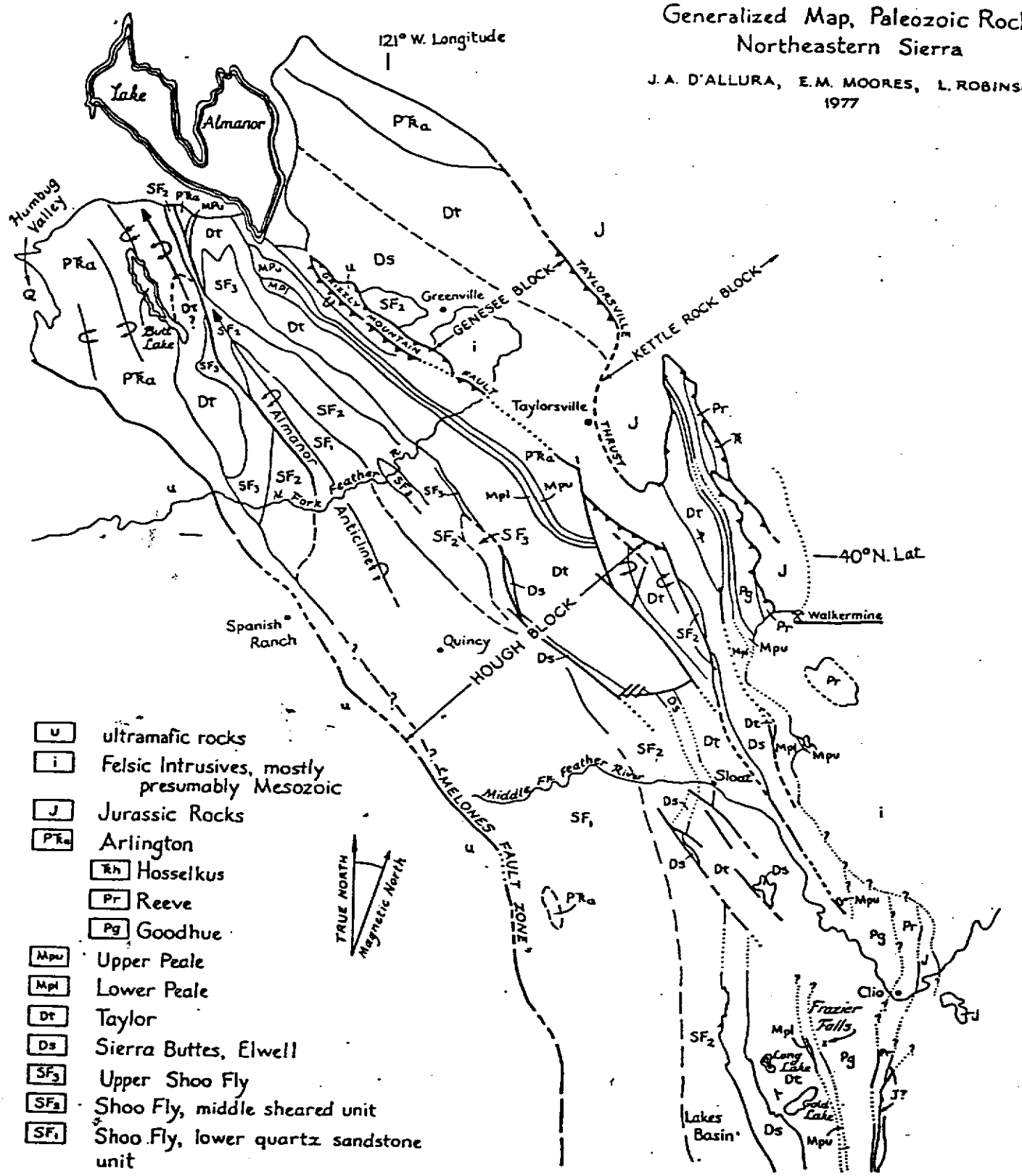
Regional Geologic Setting

The Walker Mine is located on the eastern margin of a complex series of northwest striking marine volcanic and sedimentary rocks that range

Figure 2

Generalized Map, Paleozoic Rocks
Northeastern Sierra

J. A. D'ALLURA, E. M. MOORES, L. ROBINSON
1977



from pre-late Devonian to Jurassic in age (Figure 2). Two Paleozoic and one Mesozoic volcanic assemblages are present in this sequence (D'Allura and others, 1977). The oldest of the volcanic assemblages is represented by the Upper Shoo Fly (SF), Sierra Buttes and Elwell (Ds), Taylor (Dt) and Lower Peale (Mpe) Formations (See Figure 2). This older volcanic assemblage was deposited on the Lower (SF) and Middle (SF 2) Shoo Fly basement rocks. Separating the old Palezoic volcanic assemblage from the young Paleozoic assemblage is a period of volcanic quiescence represented by cherts and epiclastic sediments of the Upper Peale (Mpu) Formation. The young Paleozoic volcanic assemblage is represented by the Goodhue (Pg) and Reeve (Pr) Formations. Overlying these volcanic rocks are sediments and limestones of the Arlington Formation (Pra). The Arlington is overlain by a series of Jurassic (J) volcanic and sedimentary rocks. The Jurassic rocks are represented by the submarine andesites of the Kettle Formation and the epiclastic sediments of the Trail Formation. It is believed that the Walker Mine is contained within the andesites of the Kettle Formation. This northwest striking band of Jurassic rocks is the host for the Plumas Copper Belt.

The Paleozoic-Mesozoic rocks of the northern Sierra Nevada can be divided into three distinct structural blocks (See Figure 2), the Hough Block, Genesee Block, and the Kettle Rock Block (McMath, 1966, D'Allura and others, 1977). All three of the structural blocks are bounded by northwest striking faults. The Hough Block is thrust over the Genesee Block on the Grizzly Mountain Fault and the Genesee Block is in turn thrust over the

Kettle Rock Block on the Taylorsville Thrust. The Walker Mine is in the Jurassic rocks in the Kettle Rock Block which forms the lower plate of the Taylorsville Thrust.

Project Geology - Main Walker Area

The Walker Mine is a volcanogenic sulphide system that occurs in a thick sequence of intermediate to felsic submarine volcanic rocks that are thought to be a part of the Jurassic Kettle Formation. The structural footwall of the ore zone is a thick accumulation of andesitic to dacitic crystal lithic tuffs. Scattered through these tuffs are irregular zones and lenses of coarse fragmental tuff of the same composition. Locally within these intermediate tuffs thin zones of more felsic tuff occurs. East of the above tuffs are two sub-parallel exhalative horizons that are separated by 100-300 feet of altered, intermediate pyroclastics. The exhalatives consist of 6 to 150 foot-thick zones of chert and chert magnetite breccia. The easternmost of these exhalatives is the main Walker Mine Ore Zone. Immediately east of the exhalative is a zone of felsic breccia that is thought to be a vent breccia. East of the vent breccia is another zone of intermediate pyroclastics similar to those in the footwall. Within these rocks is a zone of felsic tuffs that are similar to those in the footwall. Intruding all of the above rocks is dacite porphyry which occurs as a large sill-like mass east of the above rocks and as small dikes and sills throughout both the hanging and footwall volcanic sequence. Intruding all of the Jurassic rocks described above is a large body of Sierran granodiorite. Unconformably overlying all of the rocks in the Walker Mine area are intercalated

flows of laharic breccia and basalt to dacite flows. (See Figure 3).

Within the main Walker Mine area the only stratigraphic marker is the exhalite horizons. It is assumed that the rocks are right side up and the stratigraphic top of the section is to the east.

For a detailed description of the stratigraphic units present in the Main Walker Area the reader is referred to the 1978 Progress Report by Kilbreath & Leger.

Project Geology - Northern Walker Mine Area

The Northern Walker Mine Area, located 2½ miles north of the Main Walker Mine Area, occurs in a series of sedimentary and basic to intermediate volcanic rocks. McMath (1958) mapped the sedimentary and volcanic rocks as the Jurassic Trail and Kettle Formations, respectively.

The westernmost rocks mapped in the Northern Walker Mine Area (Jt Plate 1) belong to Jurassic Trail Formation. These rocks are a series of northwest striking, northeast dipping shales, sandstones and conglomerates. No detailed mapping was done in this unit except to define the eastern contact. A general sequence from west to east consists of a conglomerate - arkose sequence which gives way to a graphitic shale sequence. The conglomerate - arskose sequence consists of a series of interbedded medium grained quartz - feldspar arkoses with beds of poorly sorted, angular to rounded conglomerate. The conglomerate fragments range in size from 1 cm to 12-15 cm and consists of chert and volcanic rock fragments in an arkosic matrix. Immediately east of the conglomerate - arkose sequence and in conformable contact with it, is a series of black

carbonaceous shales. The shale has a well developed platy cleavage that appears to be parallel to bedding. Locally the shale contains abundant plant fragments and occasional mollusk casts. A few of the casts were collected and given to Dr. Joe Lintz, paleontologist at the University of Nevada, Reno, for identification. The casts were too poorly preserved for an exact identification, but Dr. Lintz said they were definitely not Jurassic in age but were probably upper Carboniferous-Permian. If this is true there were some very interesting regional implications that may affect the Jurassic age for the rocks that host the Walker mineralization.

Immediately east of, and presumably stratigraphically above (?) the Trail Formation are a series of volcanic rocks ranging in composition from basalt to dacite. The basal unit, JKb (See Plate 1) is a fine grained basalt flow or series of flows that is marked by green to dark color, very fine grain size and occasional vesicles. In thin section this unit consists of 15-20% trachytic microlites of albite that are 0.1 - 0.3 mm in length. The microlites are set in a very fine grained matrix of biotite, actinolite and chlorite in roughtly equal proportions with minor magnetite. Scattered throughout the rock are 0.5 - 2 mm sized clots of actinolite, biotite and chlorite that are presumed to be pseudomorphing pyroxene or olivine. Locally there are vesiculated zones with the vesicles filled with actinolite, chlorite and epidote. In one area there were possible pillows observed in float. Interlayered with the basalt flows is a thin lense-like zone of basic to intermediate fragmental (JKf, Plate 1). This fragmental unit is pervasively chloritized and consists of dark green elongate fragments up to 15 cm long set in a finer grained dark green chlorite matrix. On broken

surfaces there are 5-10 mm sized, dark green, radiating andalusite clusters with chlorite inclusions along cleavages. Andalusite comprises 10-15 percent of the rock with 30-40 percent chlorite, 20-30 percent quartz and 10-15 percent magnetite. Interbedded with the fragmental is a thin (10'-15') well bedded, magnetite facies iron formation (Fe Plate 1). The mineralogy of the iron formation consists of about 50 percent magnetite with roughly equal amounts of andalusite and quartz comprising the remainder of the rock. The andalusite occurs as radiating, randomly oriented rosettes, indicating no preferred directional stress during metamorphism. The quartz has been totally recrystallized into equant grains that intersect at triple points. No sulfide minerals were seen in this iron formation and it was not geochemically anomalous in any metals. East of the basalt unit (stratigraphically above) is a zone of andesitic/dacitic lapilli tuffs and flows (JKlt Plate 1). In the field these rocks are fine grained, dark green to black, very silicious appearing and very non-descript. Only in a few outcrops are there any textures, such as relict phenocrysts or fragments, that are indicative of the original rock types. Locally there are very well developed zones of ovoid holes or round balls that are cordierite porphyroblasts. In most outcrops dark green to black, fibrous, radiating clots of andalusite can be seen. In general these rocks are similar appearing to the rocks on Transverse Ridge in the Main Walker Area. In thin section these rocks are marked by high andalusite (10-25%), cordierite (10-20%), biotite (20-40%), and magnetite (4-10%). Hornblendes that are pseudomorphed by biotite and

magnetite ± cordierite are abundant throughout the section. Occasional relict feldspar phenocrysts that are pseudomorphed by sericite are present. No garnet was seen in any of the rocks from the Northern Walker Mine Area. The rocks in drill holes WC-1 and WC-2 are andesitic/dacitic flows and crystal lithic tuffs. These rocks consist of hornblende phenocrysts that have been pseudomorphed by biotite and magnetite, and albitic plagioclase phenocrysts in a fine grained matrix of biotite, quartz and magnetite. Locally very strong zones of coarse cordierite (1-3 cm) clots occurs in a biotite matrix. These cordierites are assumed to be related to pre-metamorphic alteration that consisted of Fe metasomatism and intense kaolinization. Interbedded with the andesite/dacite flows and pyroclastics is a thin band of silicious exhalative (ex Plate 1, 124N 9W). The exhalative is a recrystallized, sugary chert with abundant magnetite and local zones of chert - magnetite breccia. Locally strong limonite that may be after chalcopyrite is developed. This exhalite ranges from 200 to 500 ppm in copper and has no other anomalous metals.

Intruding all of the above rocks is a large mass of dacite porphyry (dp, Plate 1). The dacite porphyry is identical to that in the Main Walker Area. Locally there are a few small dikes of dacite porphyry intruding the pre-Tertiary volcanic rocks.

Unconformably overlying all the above described rocks is a series of undifferentiated Tertiary volcanic rocks and river gravels.

Structure

The only prominant structural feature in the Northern Walker Area is a N 30-40°W trending fault that crosses the baseline at 159/N (See Plate 1). This fault forms the Tertiary - pre-Tertiary contact along the northern margin of the area. This is probably a normal fault with the north side down dropped. Displacement on the fault is hard to estimate but is probably on the order of at least 1,000 feet.

In the main Walker Area a set of N 45-55°W trending faults and an EW fault can be inferred from the Anaconda level maps (See Plate 3). It is this set of faults that accounts for the apparent displacement to the east of the North Piute Orebody. The largest amount of displacement on these faults is 900 feet of apparent right lateral offset.

Metamorphism

Metamorphism in the Northern Walker Area is very similar to that of the Main Walker Area (See pages 18-22 in Kilbreath & Leger, 1979) and appears to be lower amphibolite facies. The most noteworthy features are the abundance of cordierite, biotite and andalusite. The andalusite shows good bow tie and full radiating rosettes indicating no preferred directional stress during growth.

Alteration - Main Walker

The alteration has been discussed in detail in Kilbreath & Leger 1978, pp. 22-26 but there has been some additional work done since that time. Detailed logging and petrographic analysis from Conoco drill holes WC-3, 4, 5 and 6 show some very interesting zonal patterns developing.

Garnet shows one of the most interesting and possibly most significant zonal patterns. In the area of Transverse Ridge there is a distinct halo of garnet (±10%) that extends 125 feet into the hangingwall volcanic rocks (Plate 4a). Along the main exhalative horizon both north and south garnet extends into the hangingwall rocks only 20-30 feet. This is shown by the footwall horizon also. There is a very distinct zone of visible 1-2 mm sized pink garnets disseminated in this zone. The zone is also shown by the distinct manganese halo displayed in holes WC-6 and WC-5 (See Graphic Logs). There is also a perched garnet halo in the hangingwall rocks by the 712-Piute Orebodies. This zone is about 200 feet above the exhalative horizon and up to 150 feet thick and contains 5% garnet.

Andalusite zones in a similar pattern as garnet (Plate 4a). There is a strong zone of andalusite (50' - 100' of ±20%) that occurs along the hangingwall of the footwall exhalative zone by the Central-North orebodies as seen in drill holes WC-5 and 6. There is a zone (50' - 100') immediately footwall to the main horizon that contains no andalusite in drill hole WC-5, 4 and 3, WA 1 and 2, and WM-1 and 5. Andalusite also forms a strong halo in the hangingwall rocks by the 712-Piute Orebodies. This zone is up to 300 feet thick and contains 15-30 percent disseminated andalusite.

Amax drill hole WA-3 has a 15-20 foot thick zone that contains 15% andalusite and 5% garnet immediately hangingwall to the main exhalative horizon.

Biotite and magnetite occur together in a strong halo (±20%) that extends into the hangingwall rocks 150-300 feet above the 712-Piute Ore-

bodies. This strong Fe zone extends about 150 feet above the mineralized horizon intercepted in hole WA-3. This strong Fe zone also continues into the footwall rocks about 70-100 feet below the Piute Orebody.

Cordierite and cordierite-anthophyllite (Plate 4b) also zone very well within the drill holes. Cordierite occurs as a hangingwall alteration along the Piute - 712 Orebodies that extends from 30-100 feet into hangingwall rocks. Opposite Transverse Ridge the cordierite zone trends up into hangingwall rocks and occurs as a perched zone that is 70 to 100 feet above the felsic fragmental unit. Cordierite also occurs as a thick footwall alteration zone below the 712 - Piute Orebodies. This alteration zone is wedge shaped and thickens towards Transverse Ridge. Cordierite also occurs as a distinct zone around the footwall exhalative horizon below the North-Central Orebodies. In addition to the cordierite zones there is a strong zone of cordierite - anthophyllite in the footwall rocks below the 712 Orebody. This zone is also wedge shaped and thickens towards Transverse Ridge. The dimensions of this zone are 1,400 feet by 300 feet and it has the shape of an elongate wedge with the thin end to the north.

Alteration - North Walker Area

A detailed alteration study of the Northern Walker Area has not been completed at this time. Despite this fact there are several very interesting things that can be pointed out.

All the rocks that occur east of the basalt flows have undergone some type of intense Fe metasomatism and possibly K metasomatism. This is represented by biotite contents that range up to 30-50% of the rock, and

all the rocks are anomalously high in magnetite (5-10%). In addition to the biotite and magnetite most of the rocks have very high cordierite contents. Locally cordierite may range up to 40% of the rock as porphyroblastic growths and disseminations through the groundmass.

Another interesting aspect of the rocks in the Northern Walker Mine Area is the high amount of andalusite. Andalusite is present in almost all of the rocks and locally comprises up to 30-50 percent of the rock. This has to represent an originally high clay content that may in some way be related to leaching by a hot springs system.

At this time it seems unlikely that the alteration present in the North Area is totally related to the thin exhalite zones present near drill holes WC-1 and WC-2. The alteration seems too strong and widespread to be related to these very thin silicious exhalative zones. During the 1980 Exploration Program, the North Area should be re-examined to see if there can be any projections or trends developed that may lead to a new area of mineralization.

Drilling Program

During the 1979 Exploration Program, Conoco drilled 6 shallow angle holes for a total of 3,319 feet. Two holes, WC-1 and WC-2 were drilled in the North Area (See Plate 1 for location) to depths of 720 feet and 595 feet respectively. Four holes, WC-3, WC-4, WC-5 and WC-6 were drilled in the Main Walker Area to test the footwall exhalative horizons. These holes were drilled 497 feet, 522 feet, 500 feet and 455 feet respectively.

Drill holes WC-1 and WC-2 drilled in the Northern Walker Area had very discouraging results. WC-1 and WC-2 did not encounter any mineralized exhalative zones (See Plates 5 & 6 for graphic log). The highest grade copper interval encountered was a 10 foot zone of 285 ppm Cu that corresponded to some small quartz-schorl veining in a fault zone. No significant quantities of lead or zinc were encountered.

Drill holes WC-3, WC-4, WC-5 and WC-6 (Plates 7-10) drilled into the footwall exhalative horizons in the Main Walker Area had mixed results but in general were discouraging. Holes WC-3 and WC-4 were supposed to intercept the footwall exhalative horizon by the 712 - Piute Orebodies, but intercepted post-mineral dacite porphyry instead. Drill holes WC-5 and WC-6 were drilled into the footwall horizons by the North-Central orebodies and were very encouraging in the fact that they did intersect the footwall zone and had very good zonal alteration patterns developed, but were discouraging due to the low metal contents. One very interesting feature to note in the drill logs and graphic logs is the Mn halo above the footwall exhalative in holes WC-5 and WC-6.

Detailed drill logs with assays follow and the reader is also referred to the plates of this report for a graphical representation of the logs.

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-1 Started 8/28/79 Direction 580°W

Location 132/N + 200W Completed 9/18/79 Inclination -48°

Sec 18 T25N R12E Scale 1" = 20' Collar Elevation 5,860

Log	Geology & Alteration	Ft	Assays Cu	Pb	Zn	Mn	Au	Ag
	0-20 Rock Bit & Casing	10						
	20-96 Mixed Tertiary Volcanics	20						
		30						
		40						
		50						
		60						
		70						
		80						
		90						
	96-718 Jurassic Kettle Formation - dacitic lapilli tuffs and possibly dacitic flows 96-112 Extremely broken and weathered	100						
40		110						
	112 - Light gray to dark green matrix with 1-2 mm sized amphiboles and lapilli replaced by biotite and magnetite and 1-2 mm feldspars replaced by sericite	120	185	20	135	315		
60		130	55	15	220	585		
	140 Trace brown garnet	140	185	10	270	860		
		150	350	10	250	810		
	157 1 cm fragments	160	10	15	205	840		

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-1 Started _____ Direction _____

Location _____ Completed _____ Inclination _____

_____ Collar Elevation _____

Log	Geology & Alteration	Assays						
		Ft	Cu	Pb	Zn	Mn	Au	Ag
∠60	165 4" magnetite-biotite-quartz vein	170	20	19	175	1000		
∠65		180	20	10	135	955		
∠55		190	5	10	115	830		
	200 2-5mm sized lapilli	200	5	10	110	840		
		210	10	10	95	685		
≈	215-221 Fault zone with broken pieces of quartz-schorl veins	220	285	15	115	.16%		
∠40		230	55	20	80	.15%		
	235-262 8-10% biotite, 10-15% sericite and 4-6% magnetite							
∠35	240 Fracture surfaces coated with coarse sericite	240	5	15	80	555		
	Fragments to 3 cm, hornblendes to 6 mm, 1-2 mm Feldspars.	250	30	10	80	635		
		260	15	10	85	670		
	264 Biotite starting to replace matrix							
	270 Local biotite + magnetite halos around fragments.	270	15	10	90	640		
∠35		280	10	15	155	735		
∠45	290 Thin quartz-sericite vein with cordierite halo	290	15	10	105	770		
	300 Occasional fragments to 6 cm	300	5	10	90	800		
≈	302 2mm quartz-sericite vein	310	15	10	95	745		
	313-316 Fault zone							
		320	5	15	110	815		

CONOCO . DRILL LOG - WALKER MINE PROJECT

Hole No. WC-1 Started _____ Direction _____

Location _____ Completed _____ Inclination _____

_____ Collar Elevation _____

Log	Geology & Alteration	Assays						
		Ft	Cu	Pb	Zn	Mn	Au	Ag
	Scattered quartz sericite veins							
	333 Thin biotite-magnetite vein	330	10	15	125	.11%		
		340	5	15	105	690		
30		350	10	10	110	750		
	359-360 Fault Zone							
	Biotite - magnetite in matrix	360	5	10	115	690		
		370	5	10	110	680		
		380	20	10	95	800		
	387-392 Badly broken & heavily fractured core							
		390	40	15	105	665		
		400	90	15	120	605		
50	412, 414 Fault Zones							
	415-452 Badly broken core							
	Biotite along fractures	410	10	15	115	640		
		420	10	10	115	695		
		430	15	10	115	790		
		440	15	5	110	910		
40		450	5	15	125	780		
	456 Increase in vein controlled alteration, coarse sericite in veins cutting biotite - magnetite rich rocks also sericite + magnetite + biotite + chlorite halo's around fragments.	460	15	10	120	825		
		470	40	15	135	1000		
		480	40	15	145	.12%		

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-1 Started _____ Direction _____

Location _____ Completed _____ Inclination _____

_____ Collar Elevation _____

Log	Geology & Alteration	Assays						
		Ft	Cu	Pb	Zn	Mn	Au	Ag
	495 Increase in chlorite	490	15	15	165	1000		
	500-509 Pervasive alteration to chlorite-sericite-biotite-magnetite	500	15	15	160	.11%		
	509 Pervasive biotite-magnetite w/fresh feldspars.	510	100	15	125	820		
	517-524 Badly broken core 520-522 Fault	520	25	15	135	835		
	530-618 Very strong, texturally destructive biotite-magnetite-sericite-chlorite alteration.	530	40	15	125	695		
		540	15	20	115	690		
		550	15	20	120	645		
		560	10	20	110	725		
		570	15	15	100	540		
	578 - 3" sericite-chlorite vein	580	10	15	105	535		
		590	15	15	110	580		
	594-596 Fault zone	600	75	15	75	740		
		610	40	15	80	350		
	618-665 Intense cordierite-biotite alteration zone. Very coarse cordierite clots up to 8 cm in a biotite matrix. Ghosty fragments of a fine grained, porphyritic volcanic rock.	620	25	15	80	690		
		630	15	20	120	.14%		
		640	30	20	135	.15%		

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-1 Started _____ Direction _____

Location _____ Completed _____ Inclination _____

_____ Collar Elevation _____

Log	Geology & Alteration	Assays						
		Ft	Cu	Pb	Zn	Mn	Au	Ag
		650	10	10	115	.16%		
	665-720 Lapilli tuffs 1-2 mm lapilli & hornblendes that are replaced by biotite and magnetite.	660	25	5	130	.12%		
		670	10	5	116	925		
		680	55	10	85	870		
		690	15	10	100	915		
		700	10	10	105	875		
		710	90	15	100	945		
50	718 Trace pyrite							
	TD=720	720	10	10	100	870		

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-2 Started 9/18/79 Direction S80°W

Location 124/N + 600W Completed 10/4/79 Inclination -50

Sec 18 T25N R12E Scale 1" + 20' Collar Elevation 5,820

Log	Geology & Alteration	Assays						
		Ft	Cu	Pb	Zn	Mn	Au	Ag
		10						
		20						
			ppm	ppm	ppm	ppm		
	0-23 Rock bit & casing	30	35	20	80	825		
	23-128 Jurassic Kettle Formation badly weathered to 85 1-2mm hornblendes and feldspars, 2-20 mm fragments, fragments and hornblendes - biotite + magnetite and feldspars - sericite	40	-5	5	70	870		
		50	-5	5	55	730		
	53 Fault zone.	60	-5	5	65	865		
		70	-5	5	80	825		
50		80	15	10	85	825		
	oxidized to 85	90	10	5	65	865		
	92-95 Zone of cordierite porphyroblasts fragments rimmed with biotite.							
	90-104 Pervasive biotite-magnetite alteration.	100	35	5	50	875		
	104 Broken pieces of chert magnetite exhalite & breccia in fault zone.							
	104-115 Decrease in alteration	110	10	5	65	845		
	120 Fragments to 6 cm	120	5	5	55	690		
45	128-136 Dacite Porphyry	130	10	5	45	685		
	136-595 JKlt	140	5	15	55	745		
	144-160 Good lapilli tuff - heterolithic w/ mafic & dacitic fragments.	150	5	5	50	805		
30		160	10	10	55	835		

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-2 Started _____ Direction _____

Location _____ Completed _____ Inclination _____

_____ Collar Elevation _____

Log	Geology & Alteration	Assays						
		Ft	Cu	Pb	Zn	Mn	Au	Ag
	168 5mm magnetite vein at 50° CA 166, 167, 183, 189 - Thin quartz - magnetite veins - pre-metamorphic	170	20	-5	55	805		
		180	15	5	65	835		
	191 Small biotite-cordierite zone associated with quartz veining	190	20	10	75	.1%		
	193, 196, 197, 201, 209, 211, 214 - Quartz magnetite veins 8°-20° CA.	200	25	5	70	.12%		
	Mafics + mafic fragments biotite + magnetite feldspars sericite weak-moderate biotitization of matrix	210	20	-5	65	985		
	222, 225, 263 Quartz magnetite veins	220	15	-5	65	.11%		
A35		230	15	-5	55	1000		
		240	20	5	60	.15%		
	256-259 Zone of intense biotite-magnetite-chlorite-	250	15	10	75	.12%		
A35	looks like rocks were shattered and then extremely altered - biotite rims on fragments.	260	45	5	90	.17%		
	259 Back into lapilli tuffs as above	270	20	5	65	.12%		
		280	15	10	60	.1%		
	281 Epidote coating on fracture							
	287-293 Fault zone 40° CA	290	20	-5	100	.15%		
	296-299 Strong biotite zone	300	10	-5	75	.1%		
		310	20	10	95	.12%		
		320	25	-5	75	.11%		

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-2 Started _____ Direction _____

Location _____ Completed _____ Inclination _____

_____ Collar Elevation _____

Log	Geology & Alteration	Assays						
		Ft	Cu	Pb	Zn	Mn	Au	Ag
	323-330 Fragmental zone in the JKlt 2-70 mm fragments scattered 2-4 cm biotite clots	330	15	5	70	945		
		340	10	-5	65	830		
	351-359 Fault Zone	350	15	-5	80	925		
	360 Thin cordierite? zone	360	25	-5	90	875		
		370	20	-5	50	.11%		
		380	15	-5	60	965		
A 45	390 5cm wide biotite-magnetite vein	390	20	-5	60	.11%		
	overall rocks are intermediate lapilli tuffs	400	20	75	-5	.11%		
		410	25	-5	60	.1%		
	418-420 Cordierite zone	420	20	-5	45	945		
	431, 436-440 Cordierite spotting	430	15	-5	55	865		
	440 Start of fresh feldspars, continues to end of hole.	440	20	-5	55	.1%		
	450 Biotite starting to increase	450	25	185	70	.1%		
	455 Biotite starting to replace matrix	460	20	-5	80	.13%		
		470	20	-5	65	.11%		
		480	15	-5	60	950		

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-2 Started _____ Direction _____

Location _____ Completed _____ Inclination _____

_____ Collar Elevation _____

Log	Geology & Alteration	Assays						
		Ft	Cu	Pb	Zn	Mn	Au	Ag
	493 Zone of high biotite + magnetite-andalusite-andalusite occurs as radiating clots w/mgt inclusions	490	15	-5	70	.1%		
	502,504,506,511,513,517,519,527 and 544 Thin quartz veins.	500	15	-5	75	.12%		
		510	25	-5	95	.12%		
		520	25	-5	70	.11%		
	526-529 1 cm wide quartz-magnetite vein. o° to core axis.	530	25	5	70	.12%		
//	540 2" thick chert? magnetite breccia 1% cpy Tr pyrite and chalcocite	540	25	5	70	.11%		
		550	75	5	75	.11%		
	564 quartz-magnetite-pyrite vein 20° CA.	560	20	5	75	995		
		570	50	-5	69	.1%		
		580	25	-5	75	990		
	583 quartz vein with biotite + magnetite halo.	590	20	-5	55	855		
	TD=595 in lapilli tuffs with weak biotite-magnetite alteration, fresh feldspars.		60	-5	65	900		
		600						

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-3 Started 10/27/79 Direction 580°W

Location 9/S + 350W Completed 11/08/79 Inclination -50°

SE¼ Sec 30 T25N R12E Scale 1" = 20' Collar Elevation 6730

Log	Geology & Alteration	Assays						
		Ft	Cu	Pb	Zn	Mn	Au	Ag
	0-51 Rock bit + casing							
	51-64 JKlt. Dacite lapillituffs with texturally destructive Fe-K-Al alteration. Very magnetic	50						
		60	700	15	30	.13%	.1	-1
	64 - 4" Silicious Exhalative							
60	65-75 Extremely weathered JKlt.							
	79-118 Badly broken and weathered JKlt. Abundant iron and manganese oxides. Scattered ovoid holes lined with iron oxide that probably represent weathered cordierite porphyroblasts.	70	580	20	45	895	-.1	-1
		80	.34%	20	85	.11%	-.1	-1
		90	.18%	15	65	.1%	-.1	-1
		100	.22%	20	95	730	-.1	-1
		110	.16%	20	105	.11%	-.1	-1
	119-125 Zone of high cordierite in JKlt with round porphyroblasts up to 1 cm.	120	.16%	15	95	.1%	-.1	-1
		130	.17%	15	75	735	-.1	-1
		140	.17%	20	120	780	-.1	-1
80		150	.13%	25	120	815	-.1	-1
	142-189 Moderate Fe-Al-K alteration, mafics and lapilli altered to biotite and magnetite.	160	165	20	100	.12%	-.1	1

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-3 Started _____ Direction _____

Location _____ Completed _____ Inclination _____

_____ Collar Elevation _____

Log	Geology & Alteration	Assays						
		Ft	Cu	Pb	Zn	Mn	Au	Ag
		170	250	20	115	865	-.1	1
		180	155	10	100	.12%	-.1	1
	189-193 Dacite Porphyry	190	100	20	80	.1%	-.1	1
	193-215 JKlt Extremely altered and silica flooded lapilli tuffs. 10-15% cordierite, 1-5% garnet traces of pyrite and chalcopyrite at contact.	200	30	15	100	.19%	-.1	-1
		210	135	10	70	.18%	-.1	-1
	215-238 Dacite Porphyry	220	55	15	100	.19%	-.1	-1
		230	180	25	80	.11%	-.1	-1
	238-241 JKlt. Very large cordierite porphyroblasts in a weathered matrix	240	40	20	85	.1%	-.1	-1
	241-430 Dacite Porphyry. 1-2 mm hornblende and plagioclase phenocrysts set in a fine grained bioite rich matrix.	250	25	10	90	785	-.1	-1
		260	10	10	80	895	-.1	-1
		270	15	5	70	730	-.1	-1
		280	15	5	70	740	-.1	-1
		290	30	5	60	870	-.1	-1
		300	35	5	55	770	0.1	-1
		310	35	10	65	845	-.1	-1
		320	25	10	60	820	-.1	-1

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-3 Started _____ Direction _____

Location _____ Completed _____ Inclination _____

_____ Collar Elevation _____

Log	Geology & Alteration	Assays						
		Ft	Cu	Pb	Zn	Mn	Au	Ag
		330	20	10	65	815	-.1	-1
		340	55	10	75	925	-.1	-1
		350	25	10	90	870	-.1	-1
	Dacite Porphyry	360	45	10	65	760	.3	-1
		370	25	10	85	810	-.1	-1
		380	40	10	75	.1%	-.1	-1
		390	60	10	80	.11%	-.1	-1
		400	30	10	85	916	-.1	-1
		410	15	5	80	905	-.1	-1
		420	15	10	95	855	-.1	-1
	430-445 JKlt. Very well foliated dacitic lapilli tuff. Hornblendes and lapilli are altered to biotite and magnetite, and the feldspars are altered to sericite.	430	45	85	145	.15%	-.1	-1
V 75		440	25	25	130	.12%	-.1	-1
	444-497 Dacite Porphyry	450	130	20	135	.15%	-.1	-1
		460	35	20	130	.13%	-.1	-1
		470	20	15	110	.11%	-.1	-1
		480	30	15	85	.11%	-.1	-1

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-3 Started _____ Direction _____

Location _____ Completed _____ Inclination _____

_____ Collar Elevation _____

Log	Geology & Alteration	Assays						
		Ft	Cu	Pb	Zn	Mn	Au	Ag
	Dacite Porphyry	490	35	20	100	.13%	-.1	-1
	TD= 497	497	40	20	135	.17%	-.1	-1

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-4 Started 10/5/79 Direction 580W

Location 16/S + 400W Completed 10/27/79 Inclination -45

SE¼ Sec 30 T24N, R12E SCALE 1" = 20' Collar Elevation 6,850

Log	Geology & Alteration	Assays * = oz/t						
		Ft	Cu	Pb	Zn	Mn	Au	Ag
	0-8 Rock Bit & Casing							
	8-31 Silicious Exhalative. Granular quartz with abundant hematite after magnetite and limonite after sulfide. Trace garnet. This is the Main Walker Zone in 712 Orebody.	10						
		20	.15%	50	25		*.01	*.74
		30	666	20	25		*012	*.89
	31-33 Biotite - Magnetite altered JKlt. Trace Garnet.							
	33-36 Exhalative. Abundant limonite after pyrite.	40	.18%	19	40		*176	*.41
	36-46 JKlt. Strong cordierite andalusite, biotite and magnetite. Scattered ¼" quartz veins.	50	.21%	25	95		*.01	*.16
	46-48 Banded Exhalative. 1-3% limonite after sulfides							
	49-51 & 52-53 Exhalative	60	775	15	55		*012	*.21
	53-70 JKlt. Strong biotite and magnetite, trace garnet, locally high sericite and scattered quartz veins.							
		70	285	10	65		---	---
	68'-6" Zone of well foliated, fine grained ash tuff.							
	70-71 Exhalative	80	550	15	70		---	---
	71-77 JKlt. Fe-Al-K Alteration							
	77-79 Exhalative							
	79-83 JKlt. Fe-Al-K Alteration	90	.14%	15	50		*.02	*.41
	83-106 Exhalative. Sugary quartz with limonite after sulfides. Trace garnet. Locally the chert is fragmental.	100	.44%	20	30		*014	*1.29
	90-93 High Chlorite zone in exhalative with 2-5% chalcopyrite.							
	106-225 JKlt. Fe-Al-K alteration.	110	.16%	20	35	.32%	*012	*.44
	116-125 Trace disseminated chalcopyrite with strong cordierite anthophyllite.							
		120	.1%	25	75	.24%	---	---
A 50		130	.16%	25	120	.16%	---	*.08
			205	20	70	.12%	-.1	1
		140	755	20	85	.13%	-.1	1
	145-146 Thin silica flooded zones.							
		150	640	25	85	.13%	-.1	1
	155-159 Moderate to abundant quartz-chlorite veins with sericite halos.							
		160	585	25	55	930	-.1	1

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-4 Started _____ Direction _____

Location _____ Completed _____ Inclination _____

_____ Collar Elevation _____

Log	Geology & Alteration	Ft	Assays * = oz/t Cu	Pb	Zn	Mn	Au	Ag
	159 Trace disseminated chalcopyrite							
		170	.15%	25	55	.1%	-.1	1
		180	.14%	20	90	.1%	-.1	1
	183-184 Thin exhalative zone							
	190 6" Exhalative Band	190	995	25	95	.1%	0.1	1
	194 Fault							
		200	.11%	20	125	970	-.1	-1
	208 Fault							
	209 and 212 Thin 1" thick silicious zone with disseminated cpy.	210	.17%	20	60	.1%	-.1	1
	219-221 Dacite Porphyry	220	495	20	45	895	-.1	-1
	225-238 Dacite Porphyry	230	260	25	70	.11%	-.1	-1
	240-243 Exhalative. Scattered barite, chalcopyrite with sericitized feldspars.	240	60	25	70	.12%	-.1	-1
	243-274 JKlt	250	260	10	55	.2%	-.1	5
	259 - 1' Silica flooded zone	260	300	25	60	.1%	-.1	-1
	265-274 Good cordierite spots in biotite magnetite anthophyllite	270	505	20	50	.1%	0.1	-1
	274-330 Dacite Porphyry	280	520	25	75	.11%	-.1	-1
		290	145	25	65	.13%	-.1	-1
		300	240	25	60	.12%	-.1	-1
		310	125	20	55	.1%	-.1	-1
			140	25	40	.11%	---	*.06
		320	30	20	25	.11%	---	*.13

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-4 Started _____ Direction _____

Location _____ Completed _____ Inclination _____

_____ Collar Elevation _____

Log	Geology & Alteration	Assays * = oz/t						
		Ft	Cu	Pb	Zn	Mn	Au	Ag
			50	25	55	.12%	---	---
	330-403 JKlt	330	380	30	45	.15%	---	*.17
	330-357 Silica flooding, trace disseminated cpy in Cordierite-anthophyllite-biotite alteration.		205	25	45	.14%	---	*.21
	338 High silica zone w/2-3% Cpy	340	.12%	20	40	.16%	---	*.2
			.1%	20	35	.13%	---	*.1
		350	.12%	20	45	.16%	---	---
	357-368 15-25% biotite		100	25	35	.12%	---	*.1
		360	60	20	65	.12%	-.1	-1
	368-373 Zone of very pronounced cordierite spots that seem to flood out from fractures.	370	40	20	60	.11%	-.1	-1
		380	95	20	60	.11%	-.1	-1
	390-400 Fragments to 5 cm, hi anthophyllite?	390	170	20	55	.11%	-.1	-1
	403-460 Dacite porphyry	400	.11%	20	55	.13%	-.1	-1
		410	85	20	65	.12%	-.1	-1
		420	35	20	60	.1%	-.1	-1
		430	45	20	60	.096%	-.1	-1
		440	95	15	60	945	-.1	-1
		450	25	10	40	895	-.1	-1
	460 Fault	460	40	15	40	955	-.1	-1
	460 - 470.5 JKlt 402 & 466 ½" quartz-chlorite-Cpy bands 470 - 6" zone of silica flooding with Cpy	470	970	15	45	825	.2	-1
	470.5 - 512 Dacite Porphyry							
		480	275	20	50	780	-.1	-1

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-4 Started _____ Direction _____

Location _____ Completed _____ Inclination _____

_____ Collar Elevation _____

Log	Geology & Alteration	Assays						
		Ft	Cu	Pb	Zn	Mn	Au	Ag
		490	565	45	45	770	-.1	-1
		500	130	15	50	950	-.1	-1
	512-527 JKlt. High biotite, magnetite with abundant cordierite spots.	510	650	15	55	775	.2	
		520	195	20	50	960	-.1	-1
	527-529 Dacite Porphyry 529-552 JKlt as above	530	70	15	115	880	-.1	-1
		540	155	15	50	865	-.1	-1
	TD=552	550	335	15	55	800	-.1	-1
			395	15	55	1000	-.1	-1

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-5 Started 11/08/79 Direction S80W

Location 42/S + 50E Completed Inclination -50°

NE¼ Sec 31 T25N R12E SCALE 1" - 20' Collar Elevation 7,100

Log	Geology & Alteration	Ft	Assays Cu	Pb	Zn	Mn	Au	Ag
		10						
		20						
		30						
	0-30 Rock bit & cased							
	34-36 JKlt. very intense Fe-Al-K alteration							
	36-43.5 Exhalative. 5-10% limonite after sulfides, traces magnetite.	40	775	5	20	.17%	.2	4
	43.5-48.5 JKlt + exhalative. Intense biotite & garnet + magnetite altered JKlt with thin interbedded exhalative.	50	.19	10	55	.5%	.6	9
	48.5-55.5 JKlt							
	57-68 Intense biotite + garnet + magnetite alteration - locally up to 15% garnet	60	875	10	55	.4%	-.1	2
	66,73,82 2'-4" Silicious exhalative zones							
	68-140 Intense cordierite-biotite-garnet magnetite alteration - 20-40% of core is cordierite - garnet decreasing to a few percent.	70	930	5	85	.29%	-.1	2
		80	.17%	15	115	.22%	-.1	1
		90	.11%	15	95	.2%	-.1	1
		100	165	25	115	.2%	-.1	-1
		110	745	15	125	.26%	-.1	-1
		120	855	20	130	.48%	-.1	1
		130	.15%	20	150	.45%	-.1	1
	140-150 Decrease in cordierite, increase in biotite with preservation of lithic textures.	140	.12%	15	150	.26%	-.1	2
		150	370	25	145	.22%	-.1	1
	160 Andalusite picking up to a few %	160	.12%	25	130	.21%	-.1	1

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-5 Started _____ Direction _____

Location _____ Completed _____ Inclination _____

_____ Collar Elevation _____

Log	Geology & Alteration	Assays						
		Ft	Cu	Pb	Zn	Mn	Au	Ag
	170-180 Very marked increase in garnet above the chert breccia zone - up to 20% garnet-garnet zones from brown to pink.	170	625	20	170	.23%	-.1	1
	181.5 - 186 Chert magnetite Breccia with traces of cpy.	180	575	5	150	2.45%	-.1	1
	186-202 JKlt	190	410	10	90	1.87%	-.1	-1
55	186-192 Zone of silica flooding - high sericite trace garnet and trace pyrite							
60	192-202 High garnet biotite-magnetite-andalusite	200	105	10	90	.9%	-.1	-1
	202-222 JKlt							
	205-216 High garnet and very strong biotite							
	216-222 Silica flooded JKlt	210	65	10	95	.65%	-.1	-1
		220	420	10	85	.71%	-.1	-1
	222-233 Exhalative - Chert mgt breccia high sericite, trace garnet and cpy							
		230	925	15	85	.93%	-.1	-1
	233-237 JKlt with biotite and magnetite after mafics *no garnet							
	237-246 Dacite porphyry	240	.14%	15	90	.29%	-.1	2
		250	230	25	75	.11%	-.1	-1
		260	455	25	90	.25%	-.1	-1
		270	215	20	60	.19%	-.1	-1
		280	120	20	85	.19%	-.1	-1
		290	50	25	95	.19%	0.1	-1
60	296-303 JKlt - Weak to moderate biotite and magnetite after mafics	300	105	20	80	.21%	-.1	-1
	303-342 - Dacite Porphyry							
		310	305	25	105	.20%	-.1	-1
		320	110	20	100	.18%	-.1	-1

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-5 Started _____ Direction _____

Location _____ Completed _____ Inclination _____

_____ Collar Elevation _____

Log	Geology & Alteration	Ft	Assays Cu	Pb	Zn	Mn	Au	Ag
	330 - Trace pyrite & cpy on fractures and traces of Cu oxides on fractures.	330	50	20	65	.12%	-.1	-1
		340	530	20	65	.13%	-.1	1
	342-359 JKlt. Weak to moderate biotite & magnetite alteration. Textures still preserved.	350	220	20	65	.13%	-.1	-1
	342-354 - Small dikes of Dacite porphyry in W/JKlt.	360	90	20	70	.14%	-.1	-1
	359-370 Dacite Porphyry	370	75	20	70	.1%	-.1	-1
	370-438 JKlt Weak to moderate biotite + magnetite alteration.	380	35	25	65	.11%	-.1	-1
	381, 383, 389 & 393 thin ¼"-1" quartz-chlorite epidote-pyrite veins that cut foliation - related to Dp	390	35	20	60	.1%	-.1	-1
		400	35	20	45	.08%	-.1	-1
A 50		410	65	20	50	.11%	-.1	-1
	416-417 & 428 - Vertical to core axis quartz - pyrite veins.	420	85	20	50	.11%	-.1	-1
		430	255	15	60	.11%	-.1	-1
	437 Bull quartz veins with coarse muscovite-related to Sierran Granite	440	190	15	55	.1%	-.1	-1
	438-450 Dacite Porphyry	450	30	15	55	.1%	-.1	-1
	450-500 JKlt. Well foliated pyroclastic with mafics gone to biotite and magnetite	460	50	20	45	.08%	-.1	-1
A 50	460-487 Cordierite zone - mottled matrix and along fractures - fades out at 487.	470	40	20	50	.1%	-.1	-1
		480	110	20	55	.1%	-.1	-1

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-5 Started _____ Direction _____

Location _____ Completed _____ Inclination _____

_____ Collar Elevation _____

Log	Geology & Alteration	Assays						
		Ft	Cu	Pb	Zn	Mn	Au	Ag
		490	50	15	55	.1%	-.1	-1
	TD=500	500	75	20	50	.1%	-.1	-1

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-6 Started 11/13/79 Direction S80W

Location 50/S + 100E Completed 11/20/79 Inclination -50°

SE¼ Sec 31 T25N R12E Scale 1" = 20' Collar Elevation ±7,000

Log	Geology & Alteration	Assays						
		Ft	Cu	Pb	Zn	Mn	Au	Ag
	0-11 Rock Bit & Casing.	10						
A 50	11-122 JKlt. Very strong Fe-Al-K alteration 5-15% garnet, 6-10% magnetite and 30-50% biotite.	20	760	10	215	1.35%	-.1	1
	30-42 Decrease in garnet.	30	285	5	125	.73	-.1	-1
		40	240	5	120	.9%	-.1	-1
	45-46 1' chert-magnetite exhalite band.	50	215	-5	130	.84%	-.1	-1
A 55	55 Scattered chlorite veins parallel to foliation- sparse coarse muscovite.	60	.12%	10	110	.88	-.1	-1
	61 Fault zone. 69-72 Chert-magnetite breccia-garnet present.	70	385	5	110	1.71%	-.1	-1
	82-83 Chert-magnetite breccia.	80	145	10	135	2.34%	-.1	-1
		90	170	5	100	1.91%	-.1	-1
A 45		100	135	-5	150	.78%	-.1	-1
	113 & 115 ¼" magnetite veins at 55° to C.A.	110	200	-5	105	1.98%	-.1	-1
A 55	118 Quartz-mgt-cpy vein 55° to C.A.	120	160	5	135	1.93%	.2	-1
	122 & 142 Zone of very intense silica flooding & mixed exhalite w/ abundant Fe oxides on fractures and strong sericite within the silicious rocks.	130	235	-5	155	2.66%	-.1	-1
	129-130 Massive magnetite breccia. 132 6" massive magnetite.	140	260	-5	120	2.91%	-.1	-1
	142-156 JKlt very intense Fe-Al-K alteration, high garnet and cordierite.	150	140	-5	110	1.34%	-.1	-1
	156-218 Silica flooded and mixed exhalite zone. Traces of pyrite & Cpy.	160	290	10	55	2.45	-.1	-1

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-6 Started _____ Direction _____

Location _____ Completed _____ Inclination _____

_____ Collar Elevation _____

Log	Geology & Alteration	Ft	Assays Cu	Pb	Zn	Mn	Au	Ag
	169 Vertical magnetite breccia zone.	170	470	10	45	2.33%	-.1	-1
		180	470	5	65	3.58%	-.1	-1
	185-196 Clots & pods of barite in with the magnetite	190	495	-5	25	.72%	-.1	-1
		200	760	5	45	.91%	-.1	-1
	211-218 Fragments of JKlt in chert magnetite matrix. JKlt has high garnet & biotite, trace cpy.	210	.12%	5	50	2.99%	-.1	1
	218-228.5 JKlt Pervasive andalusite-biotite-magnetite-Garnet.	220	.18%	5	130	.83%	-.1	4
∠60	228.5 - 232 Chert-Magnetite Breccia 2-3% Cpy	230	930	5	100	.51%	-.1	1
	235-262 Dacite Porphyry	240	.11%	15	80	.23%	-.1	2
		250	190	20	60	.15%	-.1	-1
		260	40	15	75	.16%	-.1	-1
	262-278 JKlt							
∠70	270-275 Silica Flooded zone w/Traces Cpy.	270	815	10	70	.23%	-.1	1
	278-307 Dacite Porphyry.	280	.13%	10	55	.25%	-.1	2
		290	35	5	50	.12%	-.1	-1
		300	45	5	45	.12%	-.1	-1
	307-310 JKlt	310	315	15	60	.13%	-.1	-1
	315 Fault							
	315-320 JKlt.	320	20	5	55	0.96%	-.1	-1

CONOCO DRILL LOG - WALKER MINE PROJECT

Hole No. WC-6 Started _____ Direction _____

Location _____ Completed _____ Inclination _____

_____ Collar Elevation _____

Log	Geology & Alteration	Assays						
		Ft	Cu	Pb	Zn	Mn	Au	Ag
	320-368 Dacite Porphyry. 326 Vertical quartz-epidote-pyrite vein							
		330	40	10	60	.1%	-.1	-1
		340	35	10	60	.12%	-.1	-1
		350	25	10	80	.12%	-.1	-1
		360	190	15	70	.12%	-.1	-1
	368-370 JKlt. Mafics biotite + mgt, high sericite 370-371 Dacite Porphyry 371-395 JKlt. weak to moderate biotite and magnetite, high sericite	370	120	20	65	.14%	-.1	-1
		380	175	20	80	.17%	-.1	-1
		390	35	15	65	.1%	-.1	-1
	395-455 Dacite Porphyry.	400	90	15	65	.096%	-.1	-1
		410	35	20	75	.1%	-.1	-1
		420	80	15	65	870	-.1	-1
		430	35	10	75	.1%	-.1	-1
		440	25	15	60	.1%	-.1	-1
		450	110	10	60	865	-.1	-1
	TD=455	455	20	10	50	.09%	-.1	-1

Soil Geochemistry

During the 1979 Field Season, 300 soil samples were collected on a 200' x 400' grid over the Northern Walker Area. The samples were analyzed for Cu, Pb, Zn, and Mn. No anomalous concentrations of lead were detected. Zinc values are very erratic with no correlation to geology (Plate 11). Copper values range up to 840 ppm and show three distinct anomalies (Plate 10). One of these, a large "U" shaped zone on lines 120/N through 140/N is probably related to contact metasomatic mineralization in a dacite porphyry dike. The second anomaly, on lines 120/N, 124/N, and 128/N is related to chert-magnetite exhalative. The third anomaly on lines 144/N through 152/N is in an area of no outcrop and its origin is not known at this time. Manganese values range from 350 ppm up to 0.5% and appear to follow the copper values (Plate 13).

Geophysics

During 1979 Conoco conducted three types of geophysical surveys on the Walker Mine Property, ground magnetics, induced polarization and mise-a-la-masse. The ground magnetics and mise-a-la-masse surveys were conducted by Conoco personnel and the IP was contracted to Phoenix Geophysics.

Two separate ground magnetic surveys were conducted in the Northern Walker Area for a total of 15.5 line miles of new data. The mag data was collected at 50 foot station intervals and 400 foot line spacings. The data showed four distinct linear anomalies. The largest and most continuous anomaly trends slightly west of north and is continuous from 3,200 W on

line 120/N to 2,950 W on line 152/N. This anomaly corresponds to the magnetite facies iron formation mapped in this area. There is a N 30-40°W trending anomaly that occurs from 1,800 W line 152/N to 2,150 W on line 158/N that may be the faulted off northern extension of the iron formation. There are two short linear anomalies that occur from 2,250 W line 136/N to 2,350 W line 140/N and 1,750 W line 144/N to 1,500 W line 148/N. The origin of these two anomalies is unknown at this time.

Phoenix Geophysics ran 12.5 line miles of 300 and 500 foot dipole-dipole IP in the Northern Walker Mine area and the Tertiary Volcanic covered area. Lines 124/N, 132/N, 140/N, 148/N, and 150/N were run on 300 foot dipole spacings and lines 48/N, 64/N, 72/N, 88/N, 108/N, and 116/N were run on 500 foot dipole spacings. Lines 124/N and 132/N were the only lines with any anomalies present. On line 124/N there is a west dipping metal factor and P.F.E. anomaly between 3,000 W and 3,300 W. On line 132/N there is also a west dipping metal factor and P.F.E. anomaly centered between 2,700 W and 3,000 W. This corresponds to the general area slightly east of the magnetite facies iron formation. R. N. Schnepfe has suggested the possibility of a sulfide bearing horizon overlain by a magnetite facies iron formation as the source for the IP and magnetic anomalies.

Conoco personnel conducted a mise-a-la-masse survey trying to trace the mineralized horizon under the volcanic cover to the north. Electrodes were placed in the mineralized horizon in AMAX drill hole WA-3 and also in the Central Orebody and readings were taken over the mineralized

horizon on 400' intervals. The Main Walker horizon was not conductive enough for this survey to be of any success at all.

Environmental Monitoring Program

During the 1979 Field Season Conoco continued to monitor the acid mine discharge from Walker Mine. All data collected from the monitoring program has been sent to the California Regional Water Quality Control Board.

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