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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Sheep Mountain

HOLE NO. [illegible] SHEET NO. 3
COORDINATES [illegible] 100W
TYPE DRILL [illegible] BIT SIZE NX to 230'
DATE STARTED [illegible] NX 230'+

COLLAR ELEVATION 307[illegible]
TOTAL FOOTAGE
LOGGED BY [illegible]
DATE COMPLETED

FROM	TO	CORE RECOVERY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION
220	250	100%	Andesite	Fractured, Broken Soft Maroon Andesite Breccia, Poorly Cemented.		
250	270	70%	"	✓ ✓		
270	[illegible]	100%	"	✓ ✓ to 277 Then Medium Hard Maroon Fractured Andesite		
[illegible]	260	90%	"	Medium Hard Maroon Andesite Grading to Broken Soft Dark Maroon Andesite Breccia Poorly Cemented At 287'		
260	270	100%	"	Fractured Deep Maroon Andesite Breccia With Fragments of Granite and Schist Medium Hard.		
[illegible]	280	100%	"	✓ ✓ ✓ to 277 Grading to Medium Fine Grained Maroon Andesite Medium Hard		
[illegible]	290	90%	"	Fractured Medium Fine Grained Maroon Andesite Grading to Tuff At 289.		
[illegible]	[illegible]	[illegible]	Tuff	Friable White Buff Tuff Soft.		
[illegible]	[illegible]	[illegible]	"	" " " " " Grading to Medium Hard Light Maroon Andesite [illegible]		
[illegible]	[illegible]	[illegible]	[illegible]	Medium Hard Slightly Banded Maroon Andesite		
320	330	100%	"	" " ✓ Color Grading to Buff.		

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Sheep Mountain

SHEET NO. 3
100W
BIT SIZE NX to 230'
[illegible] NX 230'+

COLLAR ELEVATION 3076
TOTAL FOOTAGE
LOGGED BY [illegible]
DATE COMPLETED

ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION	GRAPHIC LOG
Andesite	Fractured, Broken Soft Maroon Andesite Breccia, Poorly Cemented.			Broken 45°
"	" "			Broken
"	" " to 277 Then Medium Hard Maroon Fractured Andesite			Broken 30°
"	Medium Hard Maroon Andesite Grading to Broken Soft Deep Maroon Andesite Breccia Poorly Cemented At 287'			Broken 15°
"	Fractured Deep Maroon Andesite Breccia With Fragments of Granite And Schist Medium Hard.			60° 60° 45°
	" " " to 277 Grading to Medium Fine Grained Maroon Andesite Medium Hard			45° 45°
"	Fractured Medium Fine Grained Maroon Andesite Grading to Tuff At 287.			Broken 45°
Tuff	Friable White Buff Tuff Soft.			Broken 10°
"	" " " " " Grading to Medium Hard Light Maroon Andesite [illegible]			[illegible]
Andesite	Medium Hard Slightly Sanded Maroon Andesite			45°
"	" " " Color Grading to Hard.			45°

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Sunny Mountain

HOLE NO. SM-4 SHEET NO. 4
COORDINATES 600 N 100 W
TYPE DRILL [illegible] BIT SIZE RX
DATE STARTED July 26, 1963

COLLAR ELEVATION 307
TOTAL FOOTAGE
LOGGED BY [illegible]
DATE COMPLETED

FROM	TO	CORE RECOVERY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION
330	340	100%	Andesite	White-Buff Feeble Andesite to 336. Then Maroon Medium Hard Arkosic Andesite.		
340	350	100%	"	Medium Hard Maroon Arkosic Andesite With Occasional Inclusions of Granite.		
350	[illegible]	100%	"	" " " Granite Inclusions Increasing up to 2" More Abundant 5 to 8 Per Foot.		
360	370	100%	"	" " " " " " "		
370	380	100%	"	Feeble Medium Maroon Arkosic Andesite With Granite and Schist Inclusions up to 2".		
380	390	100%	"	" " " " " "		
390	400	100%	"	" " " " " "		
400	410	100%	"	" " " " " " Frequency of Inclusions Less 1-3 Per Foot		
410	420	100%	"	" " " "		
420	430	100%	"	" " " " Frequency of Inclusions Less 2-1 Per Foot.		
430	440	100%	"	" " " "		

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Sunny Mountain

SHEET NO. 4

[illegible] 100W

[illegible] BIT SIZE RX

[illegible], 1963

COLLAR ELEVATION 3071

TOTAL FOOTAGE

LOGGED BY [illegible]

DATE COMPLETED

ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION	GRAPHIC LOG
Andesite	White-Buff Feeble Andesite to 336 then Maroon Medium Hard Arkosic Andesite.			60° S 45° S
"	Medium Hard Maroon Arkosic Andesite With Occasional Inclusions of Granite.			45° S 30° S
"	" " " Granite Inclusions [illegible] Abundant 5 to 8 Per Foot.			45° S
"	" " " " " " "			45° S 30° S
"	Feeble Medium Maroon Arkosic Andesite With Granite and Schist Inclusions up to 2".			
	" " " " " "			45° S 30° S
"	" " " " " "			No Structural Break
"	" " " " " " Frequency of Inclusions less 1-3 Per Foot.			"
"	" " " "			"
"	" " " " Frequency of Inclusions less [illegible] Per Foot.			"
"	" " " "			

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

HOLE NO. SM-4 SHEET NO. 5
COORDINATES 1900 N 100 W
TYPE DRILL [illegible] BIT SIZE 2.8
DATE STARTED July 21 1962

ALTERATION GRADES
P-PROP
F-FAIR
M-MODERATE
G-GOOD

GEOLOGIC LOG

Project Sugar Mountain

SIL-SILICIFICATION
FER-IRON FELDSPAR
PY-PYRITE
CP-CHALCOPYRITE
MOS-MOLYBDENITE

COLLAR ELEVATION [illegible]
TOTAL FOOTAGE
LOGGED BY [illegible]
DATE COMPLETED
⊙-LINE INCLINED RIGHT
⊙-LINE INCLINED RIGHT
LINE INCLINED LEFT

FROM	TO	CORE RECOVERY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION
440	[illegible]	[illegible]	Andesite	Friable, soft maroon arkosic andesite with occasional inclusions of granitic [illegible]		
[illegible]	160	[illegible]	"	Friable, soft maroon arkosic andesite grading to gouge, broken with [illegible] from 151 to 157 also [illegible] [illegible]	[illegible] soft [illegible] [illegible]	
160	170	100%	"	Friable, soft, maroon arkosic andesite with numerous inclusions of granite and [illegible] up to 2"		
170	180	100%	"	Friable soft maroon arkosic andesite with 40% of total granite inclusions some fragments of granite up to 4"		
180	191	90%	"	Friable soft maroon arkosic andesite with 60% or more of granite inclusions [illegible] with [illegible]		
191	[illegible]	90%	Granite	Fractured, well broken medium to coarse grained granite; the fractures contain iron oxides, water [illegible] and to [illegible], crushed with gouge [illegible] [illegible]	Sil, Fer, Feldspar, Fe, Serite	Fe [illegible]
[illegible]	[illegible]	85%	"	Fractured, broken medium to coarse grained granite, crushed [illegible] to soil with gouge from [illegible] to [illegible] fractures, quite [illegible]	Sil, Fer, Feldspar, Fe, Serite	Fe [illegible]
[illegible]	[illegible]	[illegible]	"	Fractured [illegible]	[illegible]	[illegible]
[illegible]	[illegible]	100%	Gouge	Fractured fine grained [illegible] in fractures with [illegible]	Sil, Fer, [illegible]	[illegible]
[illegible]	[illegible]	100	"	Fractured fine grained [illegible] with [illegible] to [illegible] fractures, pyrite and [illegible] in [illegible] fractures, [illegible] and [illegible]	Sil, Fer, [illegible]	[illegible]
[illegible]	526	90%	Granite	[illegible]	Sil, Fer, Feldspar, Fe, [illegible]	[illegible]
526	560	[illegible]	Granite	Fractured granite with [illegible] of [illegible]	Sil, Fer, Feldspar, Fe, Serite	[illegible]
[illegible]	[illegible]	[illegible]	"	Fractured granite	Sil, Fer, Feldspar, Fe, Serite	[illegible]

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

SHEET NO. 5
DIT SIZE [illegible]
[illegible] 1962

Alteration Grades
P - Poor
F - Fair
M - Moderate
G - Good

GEOLOGIC LOG

Project [illegible]

Sil - Silicification
Fer - Iron Oxides
Py - Pyrite
Cpy - Chalcopyrite
Mos - Molybdenum

COLLAR ELEVATION [illegible]
TOTAL FOOTAGE
LOGGED BY [illegible]
DATE COMPLETED
Line Inclined Right - Fracture - Barren
Line Inclined Right - Fracture - Mineralized
Line Inclined Left - Mineralized.

ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION	GRAPHIC LOG
[illegible]	Friable, Soft Maroon Arkosic Andesite With Occasional Inclusions Of Granite [illegible]			
	Friable, Soft Maroon Arkosic Andesite Grading To Coarse, Brecciated With Fragments From [illegible] To 45% Also [illegible]	[illegible] Soft Barren P - [illegible]		
	Friable Soft, Maroon Arkosic Andesite With Numerous Inclusions Of Granite And Schist Up To 2"			
	Friable Soft Maroon Arkosic Andesite With [illegible] % Of Total Granite Inclusions Some Fragments Of Granite Up To 4"			
	Friable Soft Maroon Arkosic Andesite With [illegible] % Of Total To 15% Granite Inclusions Then Solid Mass Breccia With Sheeting Or Faults			
[illegible]	Fractured, Well Broken Medium To Coarse Grained Granite. The Fractures Contain Iron Oxides, Water Choose Now To Use, Crushed With Grade [illegible] To Have	Sil. P, Feldspar G, Fer. A, Sericite A	Fer. 2-3%	
	Fractured, Broken Medium To Coarse Grained Granite, Crushed Soft To Soft With Fresh Fair [illegible] To Soft Fractures, Some Core Tourmaline	Sil. M, Feldspar G, Fair, Sericite M	Fer. 1-2%	
"	Fractured Granite, Fractures Contain Granite Crushed Pyrite Fair	Sil. A, Feldspar M, Fer. F, [illegible]	Fer. 1-2%	
[illegible]	Fractured Fine Grained Darker Rock In Contact With Fine	Sil. P, Feldspar A, Fer. F, [illegible] F	Py. 1-2% Fer. 1-2% Trace Surface [illegible]	
	Fractured Fine Grained Darker With Pieces In Some Fractures, Pyrite And Fer. In Zones Fractures, Rock Also Disintegrated	Sil. P, Feldspar A, Fer. F, [illegible] F	Py. 1-2% Fer. 1-2% Accumulation Surfaces [illegible] Trace Fer. 1-2%	
[illegible]	Thin Zone 1-2 Ft. To 2-3 Ft. Thick Fine Grained Broken Granite With Edges Of Granite Fragments	Sil. P, Feldspar G, Fer. A, Sericite F	[illegible]	
[illegible]	Fractured Granite With Edges Of Granite Fragments [illegible]	Sil. M, Feldspar A, Fer. F, Sericite M	[illegible]	
"	Fractured Granite	Sil. A, Feldspar M, Fer. F, Sericite M	[illegible] Trace Surface [illegible]	

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

HOLE NO. SM-4 SHEET NO. 6
COORDINATES 1900N 100W
TYPE DRILL [illegible] BIT SIZE BC
DATE STARTED July 26, 1963

Alteration Grades
P - Poor
F - Fair
M - Moderate
G - Good

Project [illegible]

Sil - Silicification
Fe - Iron Oxides
Py - Pyrite
Cpy - Chalcopyrite
Mos - Molybdenum

COLLAR ELEVATION 207
TOTAL FOOTAGE
LOGGED BY [illegible]
DATE COMPLETED
[illegible] Line Inclined Right
(3) Line Inclined Right
Line Inclined Left

FROM	TO	CORE RECOVERY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION
550	561	95%	Granite	Medium to Coarse Grained Granite	Sil M, Feldspar M, Sericite P, Feox P	Py 1-2% Feox 4% Cpy Trace, Total Oxidation Of Sulfides 1-2% [illegible]
561	570	100%	Pegmatite	Siliceous Pegmatite With A Lens Of Schist 562 To 565	Sil M, Feldspar F, Sericite P, Feox P	Py 1-2% Feox 4% Cpy Trace, Granite Trace, Total Oxidation Of Sulfides [illegible]
570	580	90%	"	Pegmatite, Breccia Zone 575 to 580	Sil F, Feldspar F, Sericite P, Feox P	Py 2-3% Feox 4% Cpy 4% [illegible]
[illegible]	[illegible]	100%	"	Pegmatite With Schist From 582 to 584, Strong Nearly Vertical Fracture 580 to 582.	Sil F, Feldspar F, Sericite P	Py 1-2% Cpy Trace, Total Sulfides [illegible]
[illegible]	[illegible]	[illegible]	Granite	Coarse Grained Granite	Sil M, Feldspar F, Sericite P	Py 1-2% Cpy Trace [illegible]
[illegible]	[illegible]	100%	"	Coarse Grained Granite	Sil M, Feldspar F, Sericite M	Py 1-2% Trace Cpy, Total Sulfides [illegible]
[illegible]	[illegible]	100%	"	Coarse Grained Granite	Sil F, Feldspar F, Sericite M	[illegible]
[illegible]	[illegible]	[illegible]	Granite	Pegmatite With A Lens Of Schist From 609-610	Sil F, Feldspar F, Sericite M	Py 1-2% Trace Cpy, Total Sulfides [illegible]
[illegible]	[illegible]	95%	"	Pegmatite With A Lens Of Schist 611 to 612	Sil F, Feldspar F, Sericite M	Py 4% [illegible]
[illegible]	[illegible]	100%	"	Pegmatite	Sil M, Feldspar F, Sericite M	Py 4% Trace Cpy
[illegible]	[illegible]	100%	Granite	Fractured Granite With A Lens Of Schist 632 to 634 And A Lens Of Pegmatite 635 to 636	Sil M, Feldspar F, Sericite M, Feox P	Py 1-2% Trace Cpy, Total Oxidation Of Sulfides [illegible]
[illegible]	[illegible]	[illegible]	"	Medium to Coarse Grained Granite With A Lens Of Schist 641 to 646	Sil M, Feldspar F, Sericite M, Feox P	Py 1-2% Trace Cpy, Total Oxidation Of Sulfides [illegible]
[illegible]	[illegible]	100%	Pegmatite	Fractured Pegmatite With A Lens Of Granite 654 to 656	Sil M, Feldspar F, Sericite M, Feox P	Py 1-2% Trace Cpy, Total Oxidation Of Sulfides [illegible]

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

SHEET NO 6
100W
BIT SIZE BK
1963

ALTERATION GRADES
P - POOR
F - FAIR
M - MODERATE
G - GOOD

GEOLOGIC LOG

Project Sierra Mineral

Sil - Silicification
Feld - Feldspars
Py - Pyrite
Cpy - Chalcopyrite
Mos - Molybdenite

COLLAR ELEVATION 2076
TOTAL FOOTAGE
LOGGED BY C.D.
DATE COMPLETED
① - Line inclined right - fractures - barren
② - Line inclined right - fractures >1 sec foot
③ - Line inclined left - mineralized

	ROCK DESCRIPTION	ALTERATION	METALLIZATION	GRAPHIC LOG
...NITE	Medium to coarse grained granite	Sil M, Feldspar M, Sericite P, Fe Ox P	Py 1-2% Fe Ox <1% Cpy trace, Total oxidation of sulfides 1-2%	30° S, 30° S, 45° S
...ITE	Siliceous pegmatite with 1" veins of schist 562 to 565	Sil M, Feldspar F, Sericite P, Fe Ox P	Py 1-2%, Fe Ox <1% Cpy trace, Sphalerite trace, Total oxidation of sulfides 1-2%	
"	Pegmatite, shear zone 575 to 580	Sil F, Feldspar F, Sericite F, Fe Ox P	Py 2-3%, Fe Ox <1% Cpy <1%, Some Bornite, Total oxidation of sulfides 2-3%	5°
	Pegmatite with schist fragments silicified, sheared, vertical fracture 580 to 582.	Sil F, Feldspar F, Sericite F	Py 1-2% Cpy trace, Total sulfides 1-2%	0° S, 15° S
...ITE	Coarse grained granite	Sil M, Feldspar F, Sericite F	Py 1-2% trace, Total sulfides 1-2%	
	Fine grained granite	Sil M, Feldspar F, Sericite M	Py 1-2% trace Cpy	0° S, 45° S, 45° S
	Fine grained granite	Sil F, Feldspar F, Sericite M, Sil F, Feldspar F, Sericite M	Py 1-2% trace Cpy, Py 1-2% trace, Total sulfides 1-2%	
...ITE	Pegmatite with veins of schist 609-610	Sil F, Feldspar F, Sericite M	Py <1%, Total sulfides 1-2%	30° S, 30° S
"	Pegmatite with veins of schist 611 to 612	Sil F, Feldspar F, Sericite M	Py <1%, Total sulfides 1-2%	15° S, 15° S, 15° S
"	Pegmatite	Sil M, Feldspar F, Sericite M	Py <1% trace Cpy	10° S
...ITE	Pegmatite & granite with veins of schist 632 to 634 and at 635 & 636	Sil M, Feldspar F, Sericite M, Fe Ox P	Py 1-2% trace Cpy, Total sulfides 1-2%	15° S
	Medium to coarse grained granite with veins of schist 641 to 642	Sil M, Feldspar F, Sericite M, Fe Ox P	Py 1-2% trace Cpy, Total sulfides 1-2%	10° S
...ITE	Fine grained pegmatite with veins of pegmatite 654 to 656	Sil M, Feldspar F, Sericite M, Fe Ox P	Py 1-2% trace Cpy, Total sulfides 1-2%	10° S, 10° S

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

HOLE NO. SM-4 SHEET NO. 7
COORDINATES 1000 N 1000 W
TYPE DRILL [illegible] BIT SIZE 4 X
DATE STARTED [illegible] 26, 1962

A - Abundant Grade
P - Poor
F - Fair
M - Moderate
G - Good

GEOLOGIC LOG

Project Sugar Mountain

Sil - Silicification
Feox - Iron Oxides
Py - Pyrite
Cpy - Chalcopyrite
Mos - Molybdenite

COLLAR ELEVATION [illegible]
TOTAL FOOTAGE
LOGGED BY C. [illegible]
DATE COMPLETED

FROM	TO	CORE RECOVERY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION
660	662	100%	Pegmatite	Pegmatite	Silc, Feldspar Cr, Sericite Mi, Feox P	Py 1-2% Cpy 1/2% Feox Tourmaline Quartz Tetra Sulfides [illegible]
662	680	100%	Granite	Fractured Coarse Grained Granite with lenses of Pegmatite from 674 to 678	Silc, Feldspar Cr, Sericite M,	Py 1/2% Tetra Cpy. [illegible]
[illegible]	[illegible]	90%	"	Fractured Coarse Grained Granite with lenses of Pegmatite and Schist Tourmaline lenses of Schist to 690	Silc, Feldspar Cr, Sericite P, Feox P	[illegible]
[illegible]	700	100%	"	Fractured Coarse Grained Granite with Aleos of Schist 694 to 700	Silc, Feldspar Cr, Sericite, Feox P.	[illegible]
700	710	100%	"	Fractured Coarse Grained Granite with lenses of Pegmatite and Porphyritic Schist	Silc, Feldspar Cr, Sericite, Feox P	[illegible]
710	720	100%	"	Fractured Coarse Grained Granite with lenses of Pegmatite and Schist	Silc, Feldspar Cr, Sericite	[illegible]
722	729	100%	"	Coarse Grained Granite with lenses of Pegmatite	Silc, Feldspar Cr, Sericite	[illegible]
[illegible]	[illegible]	100%	"	Schist [illegible] Pegmatite [illegible]	Silc, Feldspar Cr, Sericite P	Py 1/2% Tetra Cpy
[illegible]	[illegible]	100%	Schist	Schist with lenses of Pegmatite [illegible]	Silc, Feldspar M, Sericite P	Py 1/2% Tetra Cpy

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

SHEET NO. 7
150W
BIT SIZE 4X
26, 1962

Alteration Grades
P. Poor
F. Fair
M. Moderate
G. Good

GEOLOGIC LOG

Project Sugar Mountain

Sil. - Silicification
Feld. - Feldspars
Py. - Pyrite
Chl. - Chlorite
Mos. - Molybdenite

COLLAR ELEVATION 3076
TOTAL FOOTAGE
LOGGED BY Cuta
DATE COMPLETED
C - Line Inclined Black - Fracture - Green
C - Line Inclined Red - Fracture Filled
Line Inclined Red - Mineralized

Rock Type	Rock Description	Alteration	Metallization	Graphic Log
Pegmatite	Pegmatite	Silic, Feldspar G, Sericite M, Feld P	Py 1-2% Cpy 1/2% Trace Tom. Chalcopyrite Disseminated Trace Sulfides 1-2%	45°
Granite	Fractured Coarse Grained Granite with lenses of Pegmatite from 674 to 678	Silic, Feldspar G, Sericite M,	Py 1/2% Trace Cpy.	45° 45°
"	Fractured Coarse Grained Granite with lenses of Pegmatite from 681 to 684 and lenses of Schist to 690	Silic, Feldspar G, Sericite M, Feld P	Py 1/2% Trace Cpy Some Fracture Chlorite and Disseminated Py in Biotite and Sulfides Trace	Fract. 45° 45°
"	Fractured Coarse Grained Granite with Lenses of Schist 694 to 700	Silic, Feldspar G, Sericite M, Feld P.	Py 1-2% Trace Cpy Chlorite and Py in Fracture Trace Disseminated Sulfides	45°
"	Fractured Coarse Grained Granite with lenses of Pegmatite and Peripheritic Schist	Silic, Feldspar G, Sericite M, Feld P	Py 1-2% Trace Cpy Disseminated Sulfides Trace Sulfides	45°
"	Fractured Coarse Grained Granite with lenses of Pegmatite and Schist	Silic, Feldspar G, Sericite	Py 1-2% Trace Cpy Sulfides Trace Sulfides	45°
"	Fine Grained Granite with lenses of Pegmatite	Silic, Feldspar G, Sericite	Py 1-2% Trace Cpy Chlorite Trace Sulfides	45°
"	Fine Grained Granite with Pegmatite Lenses Dip of Lines = 70-75°	Silic, Feldspar G, Sericite Silic, Feldspar M, Sericite	Py 1-2% Trace Cpy Py 1-2% Trace Cpy	45°
"				
"				

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Sheet-1

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Sheep Mountain

HOLE NO. SM-6 SHEET NO. 1
COORDINATES 3100N 4600E
TYPE DRILL [illegible] DIT SIZE NX
DATE STARTED Sept. 17, 1963

COLLAR ELEVATION 288
TOTAL FOOTAGE
LOGGED BY C.D.
DATE COMPLETED

FROM	TO	CORE RECOVERY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION
0	10	No core				
10	40	100%	Tuff	Banded Tuff with Rhyolite Inclusions		
60	29	100%	"	Shattered from 24' to 28' "		
29	40	100%	Andesite	Dense Andesite with Water Course at 32 Some Fractures 34 to 37'		
40	53	100%	"	Fractured Andesite.		
53	60	100%	Tuff	Yellow Gray Tuff		
60	70	100%	"	" " ", Broken.		
[illegible]	[illegible]	[illegible]	"	" " " "		
	90	[illegible]	"	" " " " Red Stringers Schistose @ 86		
[illegible]	100	95%	"	" " " " " " " Throughout		
[illegible]	110	100%	"	" " " " " " "		

SM-6 P. 2 of 2

Sheet - 1

3-3-1

PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Sheep Mountain

SHEET NO. 1

A600E

BIT SIZE NX

7, 1963

COLLAR ELEVATION 2889

TOTAL FOOTAGE

LOGGED BY C.D.

DATE COMPLETED

	ROCK DESCRIPTION	ALTERATION	METALLIZATION	GRAPHIC LOG
FF	Banded Tuff with Rhyolite Inclusions			
	Shattered From 24' to 28'			
site	Dense Andesite with Water Course at 32 Some Fractures 34 to 37'			45° (S)
	Fractured Andesite.			45 (S) 60 (S)
FF	Yellow Gray Tuff			60° (S)
	" " ", Green.			60° (S) 60° (S)
	" " " "			Green
	" " " " Red Stains Schistose @ 46			Green
	" " " " " " " Throughout			Green
	" " " " " " "			Green

SM-6 P. 1 of 2 3-3-2

Sheet-2

PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Sheep Mountain

HOLE NO. SM-6 SHEET NO. 2

COORDINATES 3100N 1600E

TYPE DRILL [illegible] BIT SIZE N/X

DATE STARTED Sept. 17, 1963

COLLAR ELEVATION 2829

TOTAL FOOTAGE

LOGGED BY [illegible]

DATE COMPLETED

FROM	TO	CORE RECOVERY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION
110	120	95%	Tuff	White-Gray Tuff with [illegible] Gouge @ 113 [illegible]		
120	130	95%	"	" " " to 125.5 Then Tuff Agglomerate		
130	134	95%	"	Tuff Agglomerate		
134	140	100%	Andesite	[illegible] Andesite With Inclusions Of Porphyrite		
140	150	100%	"	" " " " " "		
150	160	100%	"	Deep Red-Maroon Andesite, Specks Of Calcite		
160	170	100%	"	" " " " With Streaks & Specks Calcite		
170	180	100%	"	" " " " " " " " "		
180	190	100%	"	" " " " " " " " "		
190	200	100%	"	" " " " " " " " "		
200	210	100%	"	" " " " " " " " "		
210	220	100%	"	" " " " " " " " "		

SM-6
Sheet-2

P. 2 of 2

3-3-2

PHELPS DODGE CORPORATION
GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Sheep Mountain

[illegible]EET NO. 2
16005
[illegible]IT SIZE NX
1963

COLLAR ELEVATION 2829'
TOTAL FOOTAGE
LOGGED BY C.W.L.
DATE COMPLETED

ROCK DESCRIPTION	ALTERATION	METALLIZATION	GRAPHIC LOG
White-Grey Tuff With Red Streaks? Gouge @ 118.5'			60° S
" " " to 125.5 Then Tuff Agglomerate			
Tuff Agglomerate			60°
[illegible] Augite With Inclusions Of Rhyolite			60° S
" " " " "			70° S
Red Brecciated Rhyolite, Specks Of Calcite			30° S
" " " " With Streaks & Specks Calcite			60°
" " "			60°
" " " " " " " " "			20° S
" " " " " " " " "			60° / 10° S / 60°
" " " " " " " " "			60°
" " " " " " " " "			50°
" " " " " " " " "			[illegible]

SM-6 Plotz 3-3-3

Sheet-3

PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

HOLE NO. SM-6 SHEET NO. 3

COORDINATES 2100 N 4000 E

TYPE DRILL [illegible] BIT SIZE NX

DATE STARTED [illegible] 14 1962

ALTERATION GRADES
P - POOR
F - FAIR
M - MODERATE
G - GOOD

Project Sheep Mtn.

SIL - SILICIFICATION
IRON OXIDES
Py - PYRITE
CPY - CHALCOPYRITE
CUO - COPPER OXIDES

COLLAR ELEVATION 28[illegible]

TOTAL FOOTAGE

LOGGED BY [illegible]

DATE COMPLETED

LINE INCLINED RIGHT
LINE INCLINED RIGHT
LINE INCLINED LEFT

FROM	TO	CORE RECOVERY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION
220	230	100%	Andesite	Red-Maroon Andesite Broken With Calcite Stks.		
230	240	"	"	" " " " " "	"	
240	247	"	"	" " " " " "	"	
247	260	100%	Arkose	Light Pink-Red Arkose With Small Granite Inclusions.		
260	270	100%	"	Dul Red Arkose With Small Granite And Schist Inclusions		
270	280	100%	"	Light Pink Arkose Sparse Granite Inclusions Becoming Tuffaceous Starting At 275.		
280	289	90%	"	Gray Tuffaceous Arkose With Sparse Granite Inclusions. Fairly Weathered Schist	Fair, Fractured, Sil. Patches	Poor
289	296	80%	Schist	Fairly Weathered Schist	Poor, Fractured, No Sil.	Poor, Poor
296	299	90%	Schist	Fractured Quartz Veins	Poor, Fractured, No Sil.	Poor
299	309	95%	"	Fractured, Weathered Coarse Grained Granite Tuffaceous Zone 299.5-305 (About 30% Pebble Size) Pink Color All Interspersed Quartz Veins Some Chlorite Green Color, Fractured Zone 304	Poor, Fractured, Sil. Patches Cu O	Poor, Specks Of Green
309	310	100%	"	Fractured Weathered Coarse Grained Granite Heavily Cemented With Iron Oxide. Zone 309-310 Fractured Coarse Grained Granite To 309 Then Fine Grained With Inclusions Of Schist	Poor, Fractured, Sil., Iron Oxide, Cu O	Poor, Specks Of Green
310	318.5	40%	"	Fine Grained Granite To 313 Wide Schist To 314 Then Coarse Grained Granite To 318, Then Coarse Arkose Fractured With Some Sand Pebble Size In Places. Green Copper Oxide	Poor, Fractured, Sil., Schist 314, Cu O	Poor, Green Copper
318.5	320	40%	Schist	Gray Schist With Lenses Of Feldspathic Fault Slip Fragments Turbulent Green Copper Oxide In Some Fractures Other Fractures Contain Iron Oxide	Poor, Fractured, Sil., Schisted, Cu O	Poor, Green Copper

SM-6 P. 2 of 2

Sheet-3

3-3-3

PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

SHEET NO. 3

BIT SIZE NX

Alteration Codes
P - Poor
F - Fair
M - Moderate
G - Good

GEOLOGIC LOG

Project Sheep Mtn.

Sil - Silicification
Fe-Iron Oxides
Py - Pyrite
Cpy - Chalcopyrite
Cuo - Copper Oxides

COLLAR ELEVATION 2889

TOTAL FOOTAGE

LOGGED BY

DATE COMPLETED

Line Inclined Right
Line Inclined Right
Line Inclined Left

Broken Feature
Fractures
Mineralized

	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION	GRAPHIC LOG
6	Andesite	Red-Maroon Andesite Broken With Calcite Stks.			Broken
	"	" " " " " "	"		20° S
	"	" " " " " "	"		60° S
5	Arkose	Light Pink-Red Arkose With Small Granite Inclusions.			60° S
7	"	Pink-Red Arkose With Small Granite And Schist Inclusions			20° S 60° S 45°
	"	Light Pink Arkose Sparce Granite Inclusions Becoming Tuffaceous Starting At 270.			45° S
	"	Very Tuffaceous Arkose With Sparce Granite Inclusions [illegible] Weathered Schist.	Fe, Sericite, Sil. Possibly	Fe	
	Arkose	Tuffaceous Andesite With Green Copper And [illegible] Sericite	Fe, Sericite, Sil. Possibly	Green Copper, Fe	
	"	Fractured, Weathered Arkose Sparce Granite Inclusions Approx 3/8 (Appr 50% Fract Possibly) Most Fract All Fractures Contain Iron Oxide, Some Of Some Fract. Brecciated Zone 300'	Fe, Sericite, Sil. Possibly Cuo	Fe, Some Spots Of Green Cu.	0° Fe
	"	Fractures Brecciated Zone Is Weathered Some Many Fractures With Iron Oxide, 40 300' Sericite Arkose Grained Granite To 300' Then Fine Grained With Inclusions Of Schist	Fe, Sericite, Sil. Possibly Sericite, Cuo	Fe, Some Green Cu.	Fe
	"	Fine Grained Arkose To 310 Wide Schist To 312 Then Coarse Grained Granite To 315, Then Crushed Granite Zone With Many Fractures Dip [illegible]	Fe, Sericite, Sil. Sericite, Cuo	Fe, Green Copper	Cuo
	Schist	Gray Schist With Lenses Of Feldspathic Fault Gouge Fractures Thru Green Copper Oxides In Some Fractures Other Fractures Contain Iron Oxide	Fe, Sericite, Sil. Sericite, Cuo	Fe, Green Copper	

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sheet-4

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

HOLE NO. SM-6 SHEET NO. 4
COORDINATES [illegible] [illegible]
TYPE DRILL [illegible] BIT SIZE [illegible]
DATE STARTED Sept. 17, 1962

Abbreviation Key
P - Poor
F - Fair
M - Moderate
G - Good

GEOLOGIC LOG

Project Sugar Mt.

Sil - Silicification
Fe Ox - Iron Oxides
Py - Pyrite
Cpy - Chalcopyrite
Cu O. - Copper Oxides
Mos - Molybdenum

COLLAR ELEVATION 2829
TOTAL FOOTAGE
LOGGED BY C.R.
DATE COMPLETED
LINE INCLINING RIGHT
LINE INCLINING DOWN ⊖
LINE INCLINING LEFT

FROM	TO	CORE RECOVERY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION
340	341	70%	Pegmatite	Fractured Pegmatite with lenses of Schist	Fe Ox G, Fe Sulfide G, Sil. P, Sericite M, Cu O F	Fe Ox Stains, Green Copper
341	350	100%	Granite	Broken Fractured Coarse Grained Granite Beginning from 341 to 350 well cemented with Iron Oxides	Fe Ox G, Fe Sulfide G, Sil. P, Sericite M, Cu O F.	Fe Ox Stains Green Cu
350	353	100%	"	Broken Fractured Coarse Grained Granite with water channels and vugs	Fe Ox G, Feldspar G, Sil. F, Sericite M, Cu O F.	Fe Ox, Green Copper
353	367	100%	Pegmatite	Broken Pegmatite with lenses of Schist. Seams of Pyrite Oxs contain Pyrite vugs 5' to 356	Fe Ox G, Feldspar G, Sil. F, Sericite F Cu O F	Fe Ox, Green Copper, Cu O, Molybdenite, Pyrite, Fe Sulfides [illegible]
367	370	100%	Granite	Fractured Coarse Grained Granite with minor lenses of Schist, Porphyritic texture. Fr. to 370, Gradual to Porphyry from 370' Fractured Core	Fe Ox G, Fe Sulfide G, Sil. F, Sericite F, Cu O F	Fe Ox, Green Copper
370	390	95%	Porphyry	Strongly Fractured & broken Porphyry Sericitized to 387, Breccia zone with numerous water channels and vugs. Broken Core	Fe Ox G, Feldspar G, Sil. F, Sericite G, Cu O P.	Fe Ox, Green Copper
390	400	95%	"	Strongly Fractured & Sericitized Porphyry Water channels and vugs 390 to 400	Fe Ox G, Feldspar G, Sil. F, Sericite G, Cu O P.	Fe Ox, Green Copper
400	410	100%	"	Fractured Porphyry with water channels. Fr. to 407. Sulfides Spray up to 408.5' Pieces layered in Cores of Py with Chalcopyrite finishing Py.	Fe Ox G, Feldspar G, Sil. F, Sericite F Cu O G.	Fe Ox, Cu, Py, Cu O, Molybdenite [illegible]
[illegible]	420	95%	"	Fractured vuggy Porphyry, Pyrite [illegible] vuggy [illegible] [illegible]	Fe Ox G, Feldspar G, Sil. F, Sericite F Cu O G.	Fe Ox, [illegible]
[illegible]	[illegible]	[illegible]	"	Fractured Porphyry	Fe Ox G, Feldspar G, Sil. F, Sericite P, Cu O P	Fe Ox, Green Copper
[illegible]	[illegible]	[illegible]	Granite	Fractured Quartz Sericized Granite, Sulfides from 420 to 430	Fe Ox G, Feldspar G, Sil. F, Sericite P.	Fe Ox, Py, Cu O, Cu O, Molybdenite
430	440	100%	"	Fractured Quartz Sericized Granite, Sulfides from 430' to 437' Vuggy with water channels to 440' Sulfides Spray to 5' in [illegible]	Fe Ox G, Feldspar G, Sil. F, Sericite F, Cu O P.	Fe Ox, Py 2-3%, Cu O, Green Copper, Molybdenite

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Sheet-4

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Silver Mt.

SHEET NO. 4
BIT SIZE
Feb 17, 1962

Notation
P - Poor
F - Fair
M - Moderate
G - Good

SIL - Silicification
Fe Ox - Iron Oxides
Py - Pyrite
Cpy - Chalcopyrite
Cu O. - Copper Oxides
Mos - Molybdenum

COLLAR ELEVATION 2829
TOTAL FOOTAGE
LOGGED BY C.L.R.
DATE COMPLETED
LINE INCLINED RIGHT ⊃ FRACTURE - BARREN
LINE INCLINED RIGHT ⊃ FRACTURE W/ PYRITE
LINE INCLINED LEFT MINERALIZED

FROM	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION	GRAPHIC LOG
0	Pegmatite	Fractured Pegmatite with lenses of Schist	Fe Ox G, Fuchsite G, Sil. P, Sericite M, Cu O F	Fe Ox Stains; Green Copper	
10	Granite	Broken Fractured Coarse Grained Granite Dominated from 247 to 350 well Cemented with Iron Oxides	Fe Ox G, Feldspar G, Sil. P, Sericite M, Cu O F	Fe Ox Stains; Green Copper	
20	"	Broken Fractured Coarse Grained Granite with White Quartz and Veins	Fe Ox G, Feldspar, Sil F, Sericite M, Cu O F	Fe Ox, Green Copper	
30	Pegmatite	Broken Pegmatite with Lenses of Schist and Pyrite Gets Contain Pyrite 465.5 to 466	Fe Ox G, Feldspar, Sil F, Sericite F Cu O P	Fe, Green Copper, Py, Cu O, Intermittent Fe Ox, Fe Ox Stains, Sil G	
40	Granite	Fractured Coarse Grained Granite with Minor Veins of Schist, Porphyrite Texture, Fe to 377, Changing to Porphyry from 377'	Fe Ox G, Feldspar G, Sil F, Sericite F, Cu O F	Fe Ox, Green Copper	
50	Porphyry	Strongly Fractured & Broken Porphyry Brecciated to 381, Breccia Zone not Qualified Water Quartz and Veins.	Fe Ox G, Feldspar G, Sil F, Sericite G, Cu O P	Fe Ox, Green Copper	
60	"	Strongly Fractured & Sericite Porphyry, Water Quartz and Veins 381 to 400'	Fe Ox G, Feldspar G, Sil F, Sericite G, Cu O P	Fe Ox, Green Copper	
70	"	Fractured Porphyry with Water Quartz and Veins, Sulfides Show up Nicely, Veins Inclined Core of 70 with Chalcopyrite Finding 70.	Fe Ox G, Feldspar G, Sil F, Sericite F Cu O F,	Fe Ox, Cu, Py, Chalcopyrite Disseminated Fe Ox Stains on Surface Along Fracture Planes	
80	"	Fractured Veins Porphyry, Pyrite Disseminated Veins Completely Mineralized	Fe Ox G, Feldspar G, Sil F, Sericite F Cu O F,	Fe, Cu, Py Disseminated Fe Ox Along Fracture Surfaces Fe Ox Stains on Surface Along Fracture Planes	
90	"	Fractured Porphyry	Fe Ox G, Feldspar G, Sil F, Sericite F Cu O F	Fe Ox, Green Copper, Fe Ox Stains Along Fracture Planes	
100	Granite	Fractured Coarse Grained Granite, Sulfides Show Up in 485	Fe Ox G, Feldspar G, Sil M, Sericite F,	Fe Ox, Green Copper, Fe Ox Stains Along Fracture Planes	
110	"	Fractured Coarse Grained Granite, Shattered from 485' to 487' Veins with Water Quartz to 498; Sulfides Appear to be Disseminated	Fe Ox F, Feldspar G, Sil M, Sericite F, Cu O P	Fe Ox, Py 2-3%, Cu 1-4%, Fe Ox Along Fracture Planes, Mos Along Fracture Planes	

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

HOLE NO. SM-6 SHEET NO. 5

COORDINATES 3100N 4600E

TYPE DRILL Diamond Wl BIT SIZE NX to 445 - BX

DATE STARTED Sept. 17, 1963

Alteration Grade
P - Poor
F - Fair
M - Moderate
G - Good

Project Sheep Mt.

Sil - Silicification
Feox - Iron Oxides
Py - Pyrite
Cpy - Chalcopyrite
CuO - Copper Oxides
Mos - Molybdenum

COLLAR ELEVATION 2389

TOTAL FOOTAGE

LOGGED BY [illegible]

DATE COMPLETED

Line Inclined Right S
Line Inclined Right (S)
Line Inclined Left

FROM	TO	CORE RECOVERY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION
440	450	95%	Granite	Fractured Coarse Grained Granite With A Water Course At 440.5 And At 444.5 - Lost All Circulation. Strong Sulfide Mineralization	Feox, M, Feldspar G, Sil F, Sericite P, CuO P.	Feox, Py 2-3% Cpy <1% Trace Bornite, Trace Chalcocite Species Green Copper Total Oxidation Of Sulfides 50-60% Total Sulfides [illegible]
450	460	100%	"	Strongly Fractured, Coarse Grained Granite, Breccia And Gouge 455 to 459 With Open Water Courses. Nearly All Sulfides Oxidized	Feox G, Feldspar G, Sil P Sericite G	Feox Py 1-2% Cpy Trace, Trace Bornite, Trace Chalcocite. Total Oxidation Of Sulfides 90-95% Total Sulfides 1-2%
460	471	100%	"	Strongly Fractured Coarse Grained Granite Open Water Courses 461 to 465' Oxidation Of Sulfides Decreasing	Feox G, Feldspar G, Sil F Sericite G, CuO P.	Feox, Py 2-3% Cpy <1% Trace Bornite, Traces Chalcocite Species Green Copper Total Oxidation Of Sulfides 40-50% Total Sulfides [illegible]
471	480	100%	Porphyry	Strongly Fractured Granite Porphyry With Bands Of Sil - A Vuggy With Numerous Py And Cpy Casts Sulfides Strongly Oxidized	Feox G, Feldspar G, Sil F Sericite F, CuO P.	Feox Py 1-2% Trace Cpy, Trace Bornite, Trace Mos Trace Chalcocite Species Green Copper Total Oxidation Of Sulfides 60-70% Total Sulfides 1-2%
480	490	100%	"	Fractured Granite Porphyry, Vuggy With Water Courses 486 to 490 Py & Cpy Casts Throughout. Sulfides Strongly Oxidized	Feox G, Feldspar G, Sil F, Sericite F, CuO P.	Feox, Py 1-2%, Traces Cpy, Trace Bornite, Traces Chalcocite, Trace Mos. Sparse Species Green Copper Total Oxidation Of Sulfides 60-70% Total Sulfides 1-2%
490	500	100%	"	Fractured Granite Porphyry, Vuggy Water Water Courses to 497.5 Oxidation Of Sulfides Decreasing.	Feox M, Feldspar G, Sil F, Sericite F	Feox Py 2-3% Cpy <1% Trace Bornite Traces Chalcocite Total Oxidation Of Sulfides 40-50% Total Sulfides 2-3%
500	510	100%	"	Fractured Granite Porphyry, Bands Of Silica Starting At 505 Py Cpy, Bornite And Chalcocite Mineralization Increasing.	Feox F, Feldspar G, Sil M. Sericite F, CuO P.	Feox, Py 3-4% Cpy <1% Bornite <1% Filming Of Chalcocite Total Oxidation Of Sulfides 10-20% Total Sulfides 3-4%
510	520	100%	"	Fractured Siliceous Granite, Porphyry, Vuggy With Water Courses 510 to 520. Minor Oxidation Of Sulfides.	Feox F, Feldspar G, Sil G, Sericite P	Feox Py 3-4% Cpy <1% Bornite <1% Filming Of Chalcocite Total Oxidation Of Sulfides 5-10% Total Sulfides 3-4%
520	530	100%	"	Fractured Siliceous Granite Porphyry		
530	540	95%	Granite	Fractured Broken Coarse Grained Granite With A Fault Gouge Zone 532 to 534 Schist 534 to 534.5	Feox M, Feldspar G, Sil G, Sericite P CuO P.	Feox Py 1-2% Traces Cpy Traces Bornite Traces Chalcocite Species Green Copper Total Oxidation Of Sulfides 60-70% Total Sulfides [illegible]
530	540	95%	"	Fractured Broken Coarse Grained Granite. Schist Lens 530 to 532. Nearly All Sulfides Have Been Stripped Out Of Casts.	Feox M, Feldspar G, Sil G, Sericite P	Feox Py <1% Traces Cpy Traces Bornite, Trace Chalcocite Total Oxidation Of Sulfides 90% Total Sulfides <1%
530	550	80%	"	Fractured Coarse Grained Granite To 545 When Severely Broken, Brecciated With Gouge Granite To 550 Feldspar Intensely Altered, Nearly All Sulfides Oxidized	Feox G, Feldspar G Sil. F, Sericite F	Feox Py <1% Traces Cpy, Trace Bornite, Trace Chalcocite Total Oxidation Of Sulfides [illegible]

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Sheet - 5

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

SHEET NO. 5
4600 E
BIT SIZE NX to 4416 - BX
1963

Alteration Grade
P - Poor
F - Fair
M - Moderate
G - Good

GEOLOGIC LOG

Project Stacey Site

SIL - Silicification
FeOx - Iron Oxides
Py - Pyrite
Cpy - Chalcopyrite
CuO - Copper Oxides
Mos - Molybdenite

COLLAR ELEVATION 2289'
TOTAL FOOTAGE
LOGGED BY
DATE COMPLETED

Line Inclined Right 5 Fracture - Barren
Line Inclined Right 5 Fractures >1 Per Foot Mineralized
Line Inclined Left

ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION	GRAPHIC LOG
Granite	Fractured Coarse Grained Granite - With A Water Course At 4940.5 And At 4944.5 - Lost. All Circulation. Strong Sulfide Mineralization	FeOx M, Feldspar G, Sil F, Sericite P, CuO P.	FeOx, Py 2-3% Cpy <1% Trace Bornite Trace Chalcocite Specks Seen Coarse Total Oxidation of Sulfides 50-75 Total Sulfides 2-3%	
"	Strongly Fractured, Coarse Grained Granite, Breccia And Gouge 4552 to 4557 With Open Water Courses. Nearly All Sulfides Oxidized	FeOx G, Feldspar G, Sil P, Sericite	FeOx Py 1-2% Cpy Trace, Trace Bornite, Trace Chalcocite. Total Oxidation of Sulfides 70-80% Total Sulfides 1-2%	
"	Strongly Fractured Coarse Grained Granite Open Water Courses 4561 to 4565' Oxidation Of Sulfides Decreasing	FeOx G, Feldspar G, Sil F, Sericite, CuO P.	FeOx, Py 2-3% Cpy <1% Trace Bornite, Traces Chalcocite Specks Seen Coarse Total Oxidation Of Sulfides 40-50% Total Sulfides 2-3%	
Porphyry	Strongly Fractured Granite Porphyry With Bands Of Sil - A Vuggy With Numerous Py And Cpy Casts Sulfides Strongly Oxidized	FeOx G, Feldspar G, Sil F, Sericite, CuO P.	FeOx Py 1-2% Cpy, Trace Bornite, Trace Acc Trace Chalc Specks Seen Coarse Total Oxidation Of Sulfides 60-70% Total Sulfides 1-2%	
"	Fractured Granite Porphyry, Vuggy With Water Courses 4590 to 4590 Py & Cpy Casts Throughout. Sulfides Strongly Oxidized.	FeOx G, Feldspar G, Sil F, Sericite F, CuO P.	FeOx, Py 1-2%, Traces Cpy, Trace Bornite, Trace Chalcocite, Trace Acc. Specks Seen Coarse Total Oxidation Of Sulfides 60-70% Total Sulfides 1-2%	
	Fractured Granite Porphyry, Vuggy With Water Courses to 4995 Oxidation Of Sulfides Decreasing.	FeOx M, Feldspar G, Sil F, Sericite F	FeOx Py 2-3% Cpy <1% Trace Bornite Trace Chalcocite Total Oxidation Of Sulfides 40-50% Total Sulfides 2-3%	
"	Fractured Granite Porphyry, Bands Of Silica Starting At 5055 Py Cpy, Bornite And Chalcocite Mineralization Increasing.	FeOx F, Feldspar G, Sil M, Sericite P, CuO P.	FeOx, Py 3-4% Cpy <1% Bornite <1% Fleming Or Chalcocite Total Oxidation Of Sulfides 10-20% Total Sulfides 3-4%	
"	Fractured Siliceous Granite Porphyry, Vuggy With Water Courses 5115 to 5120. Minor Oxidation Of Sulfides.	FeOx F, Feldspar G, Sil G, Sericite P	FeOx Py 3-4% Cpy <1% Bornite <1% Fleming Or Chalcocite Total Oxidation Of Sulfides 5-10% Total Sulfides 3-4%	
"	Fractured Siliceous Granite Porphyry			
Granite	Fractured Coarse Grained Granite With A Few Small Zones Of Sericite Sulfides	FeOx M, Feldspar G, Sil G, Sericite P, CuO P.	FeOx Py <1% Traces Cpy Trace Bornite Traces Chalcocite Total Oxidation Of Sulfides 60-70%	
"	Fractured Broken Coarse Grained Granite With Sericite Zones 5570 to 5572. Largely All Sulfides Have Been Stripped Out Of Rock.	FeOx, Feldspar G, Sil, Sericite P	FeOx Py <1% Traces Cpy Traces Bornite, Trace Chalcocite Total Oxidation Of Sulfides 90% Total Sulfides <1%	
"	Fractured Coarse Grained Granite To Quartz Monzonite Strongly Altered, Brecciated With Gouge. Granite To 5610 Feldspar Intensely Altered, Nearly All Sulfides Oxidized	FeOx, Feldspar G, Sil, Sericite	FeOx Py <1% Traces Cpy Bornite, Trace Chalcocite Total Oxidation Of Sulfides 90%	

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sheet - 6

PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

HOLE NO. SM-1 SHEET NO. 6

COORDINATES 41000N 1600E

TYPE DRILL [illegible] BIT SIZE 3X

DATE STARTED [illegible]

Alteration Grade: P- Poor, F- Fair, M- Moderate, G- Good

Project Silver Mt.

Sil. Silicification, FeOx. Iron Oxides, Py. Pyrite, Cpy. Chalcopyrite, CuO. Copper Oxides, MoS. Molybdenum

COLLAR ELEVATION [illegible]

TOTAL FOOTAGE

LOGGED BY [illegible]

DATE COMPLETED

LINE INCLINED [illegible]

LINE INCLINED [illegible]

LINE INCLINED LEFT

FROM	TO	CORE RECOVERY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION
520	560	95%	Granite	Fractured and severely broken coarse grained granite, schist lenses from 551 through 557. Feldspar intensely altered, sulfides oxidized. Remainder [illegible]	FeOxG, Feldspar G, SilF, Sericite F	FeOx, Traces Py
560	570	95%	"	Fractured, broken coarse grained granite with a lens of pegmatite from 561 to 566 then severely broken coarse grained granite to 575 then schist. Feldspar intensely altered, sulfides [illegible]	FeOxG, Feldspar G, SilM, Sericite F	FeOx, Traces Py
570	590	60%	"	Severely fractured, broken coarse grained granite, fault zone 571 to 590 with lenses schist and breccia cemented with gouge and iron oxides. Feldspar intensely altered, sulfides [illegible]	FeOxG, Feldspar G, SilP, Sericite F	FeOx, Traces Py, Cpy and Bornite, Few Traces Green Copper.
590	590	90%	"	Severely fractured, broken coarse grained granite with fault zone continuing to 594 then lenses of schist. Silicia in fault zone. Feldspar intensely altered. Sulfides increase from 595.	FeOxG, Feldspar G, SilP, Sericite F	FeOx, Traces Py, Cpy and Bornite.
590	601	95%	"	Fractured and broken coarse grained granite with lenses of schist vugs with water & quartz. Feldspar alteration decreasing, sulfides increasing	FeOxG, Feldspar G, SilF, Sericite F	FeOx Py 1-2%, Cpy <1%, Bornite <1%, Traces [illegible]
601	606	100%	Pegmatite	Fractured pegmatite, all fractures contain sulfides. Grading to granite at 605.	FeOxP, Feldspar P, SilG, Sericite P	Py 2-3%, Cpy <1%, Covellite <1%, Traces [illegible]
606	610	100%	Granite	Fractured medium grained granite	FeOxF, Feldspar F, SilG, Sericite P	Py [illegible], Cpy [illegible], Traces [illegible]
610	620	100%	"	Fractured medium to coarse grained granite with lenses of schist from 617.	FeOxF, Feldspar M, SilG, Sericite M	Py 2-3%, Cpy [illegible], Covellite <1%, Traces of [illegible] on surfaces, Total oxidation of sulfides [illegible]
620	630	100%	"	Fractured medium to coarse grained granite with lenses of schist and pegmatite. Fault zone at 625 to 628. Alteration of feldspar intense 620 to 630.	FeOxF, Feldspar M, SilG, Sericite M	Py 3%, Covellite <1%, Cpy <1%, Traces of [illegible] on surfaces, Total oxidation of sulfides [illegible]
630	634	100%	"	Fractured medium grained granite with lenses of schist.	FeOxM, Feldspar M, SilG, Sericite M	[illegible]
634	640	100%	Pegmatite	Fractured pegmatite with intense alteration of feldspar from 637 with intense alteration of feldspar and a [illegible] in quantity of sulfides.	FeOxM, Feldspar G, SilG, Sericite P	[illegible]
640	644	100%	"	Fractured, broken, severely altered, [illegible] to 643. Fault zone [illegible]	FeOxF, Feldspar G, SilM, Sericite P	Py 2-3%, [illegible]
644	650	95%	Granite	Fractured severely altered coarse grained granite with lenses of schist and pegmatite	FeOxP, Feldspar G, SilM, Sericite F	Py 2-3%, [illegible]
650	660	90%	"	Feldspar severely altered coarse grained granite with lenses of schist and pegmatite. *Double fault 0.10 [illegible]	FeOxP, Feldspar G, SilG, Sericite F	Py 2-3%, Covellite <1%, Cpy <1%, Concentration of sulfides from oxidation of sulfides [illegible]

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Sheet-6

P. 2 of 2

3-3-6

PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

SHEET NO. 6
[illegible] 1600E
[illegible] BIT SIZE 8X
[illegible] 12

Alteration Grade
P- Poor
F- Fair
M- Moderate
G- Good

Project Santa Rita

Sil. Silicification
FeOx. Iron Oxides
Py - Pyrite
Cpy - Chalcopyrite
CuO - Copper Oxides
MoS. Molybdenum

COLLAR ELEVATION 2959
TOTAL FOOTAGE
LOGGED BY [illegible]
DATE COMPLETED
LINE INCLINED RIGHT 5 - Fellman Barrels
LINE INCLINED RIGHT (5) - Fenders 7/8 Rock Bit
LINE INCLINED LEFT Mineralized

ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION	GRAPHIC LOG
Granite	Fractured and Severely Broken Coarse Grained Granite, Schist Lenses. From 551 through 557' Feldspar Intensely Altered, Sulfides Oxidized Almost Completely.	FeOxG, Feldspar G, SilF, Sericite F.	FeOx, Traces Py	45° (5) 70° (5) 70° (5) Bedding
"	Fractured, Broken Coarse Grained Granite With A Lens Of Pegmatite From 561 to 566 then Slightly Broken Coarse Grained Granite to 573 and Schist. Intense Alteration, Sulfides Almost Completely Oxidized.	FeOxG, Feldspar G, SilM, Sericite F.	FeOx, Traces Py	60° (Fest) 50° (Fest) 30° FeOx
"	Severely Fractured & Broken Coarse Grained Granite, Fault Zone 571' to 580' With Lenses Schist And Breccia Cemented With Gouge And Iron Oxides. Feldspar Intensely Altered, Sulfides Almost Completely Oxidized.	FeOxG, Feldspar G, SilF, Sericite F	FeOx, Traces Py, Cpy and Bornite, Few Specs Green Copper.	Fault Zone
"	Severely Fractured & Broken Coarse Grained Granite Fault Zone Continues to 592 and then Lenses of Schist. Silicia in Fault Zone. Feldspar Intensely Sericite. Sulfides Increase From 585.	FeOxG, Feldspar G, SilF, Sericite F	FeOx, Traces Py, Cpy and Bornite.	60° (S) 60° (Fest)
"	Fractured and Broken Coarse Grained Granite With Lenses Of Schist Vuggy With Water & Quartz. Feldspar Alteration Decreasing, Sulfides Increasing.	FeOxG, Feldspar G, SilF, Sericite F	FeOx Py 1-2%, Cpy <1%, Bornite <1%, Traces Chalcocite. Total Oxidation Of Sulfides 50-60%. Total Sulfides 1-2%	5° Fee 60° (S) 60° 10° (Fest) 15° (Fest)
Granite	Fractured Pegmatite, All Fractures Contain Sulfides Grading To Granite At 605'.	FeOxP, Feldspar P, SilG, Sericite P.	Py 2-3%, Cpy <1%, Covellite <1%, Traces Chalcocite. Total Oxidation Of Sulfides 2-3%.	50° Fest
Granite	Fractured Medium Grained Granite.	FeOxF, Feldspar F, SilG, Sericite F	Py 2-3%, Cpy <1%, Covellite <1%, Traces Chalcocite. Total Oxidation Of Sulfides 5-10%.	5° Fee
"	Fractured Medium to Coarse Grained Granite With Lenses Of Schist From 617.	FeOxF, Feldspar M, SilG, Sericite M	Py 2-3%, Cpy <1%, Covellite <1%, Traces Of Chalcocite. Total Oxidation Of Sulfides 5-10%.	45° 10°
"	Fractured Medium to Coarse Grained Granite With Lenses Of Schist And Pegmatite. Fault Zone at 625 to 635. Intensive Alteration Of Feldspar Intense 630 to 650.	FeOxF, Feldspar G, SilG, Sericite M	Py 3-5%, Covellite <1%, Chalcocite <1%, Traces Of Chalcocite. Total Oxidation Of Sulfides 5-10%.	70° 10°
"	Fractured Medium Grained Granite With Lenses Of Schist. Fault Zone 655 to 664.	FeOxM, Feldspar G, SilG, Sericite M	Py 2-3%, Covellite <1%, Chalcocite <1%, Traces Chalcocite.	
Pegmatite	Fractured Pegmatite With Occasional Coarse Grained Granite From 681 With Intense Alteration Of Feldspar and Quartz Leaving Large Amounts Of Sulfides.	FeOxM, Feldspar G, SilG, Sericite P.	Py 2-3%, Covellite <1%, Chalcocite <1%, Traces Chalcocite. Total Oxidation Of Sulfides 5-10%.	10°
"	Fractured, Broken Pegmatite, Severely Brecciated to 693. Fault Zone Granite Then Well Cemented Pegmatite.	FeOxF, Feldspar G, SilM, Sericite P	Py 2-3%, Chalcocite <1%, Traces Of Chalcocite. Total Oxidation Of Sulfides 5-10%.	60°
Granite	Fractured Severely Altered Coarse Grained Granite With Lenses Of Schist And Pegmatite.	FeOxF, Feldspar G, SilM, Sericite F	Py 2-3%, Covellite <1%, Chalcocite <1%, Traces Chalcocite.	
"	Fractured Severely Altered Coarse Grained Granite With Lenses Of Schist And Pegmatite. Double Fault Zone to 737 Good Sulfide Zone.	FeOxP, Feldspar G, SilG, Sericite F	Py 2-3%, Covellite <1%, Chalcocite <1%, Traces Chalcocite. Total Oxidation Of Sulfides 5-10%.	

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Sheet-7

PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

HOLE NO. SM-6 SHEET NO. 7

COORDINATES 2100 N 1400 E

TYPE DRILL [illegible] BIT SIZE BX

DATE STARTED [illegible] 17, 1963

Alteration Grades
P - Poor
F - Fair
M - Moderate
G - Good

Project Sheep Mt.

Sil. - Silicification
Flox. - Iron Oxides
Py. - Pyrite
Cpy. - Chalcopyrite
CuO - Copper Oxides
Mos. - Molybdenum

COLLAR ELEVATION 2889

TOTAL FOOTAGE

LOGGED BY C. Y.

DATE COMPLETED

LINE INCLINED S - Fra[illegible]
LINE INCLINED (S) - Frac[illegible]
LINE INCLINED - M[illegible]

FROM	TO	CORE RECOVERY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION
660	667		—	No Core to 667 - Driller failed to get core barrel lock to engage - Ground 7' of core on night shift	Flox G, Feldspar G, Sil M, Sericite F	Py 2-3%, Bornite <1%, Cpy <1%, Chalcocite Film. Total Oxidation of Sulfides [illegible]
667	670	100%	Granite	Fractured Broken Oxidized Granite - Vuggy [illegible]		
670	680	100%	"	Fractured, Oxidized, Granite Brecciated 675 to 677 Cemented with Flox. Vuggy with open water courses throughout	Flox G, Feldspar G, Sil M, Sericite F	Py 2-3%, Bornite <1%, Cpy <1%, Chalcocite Film. Total Oxidation of Sulfides 30-40%. Total Sulfides 2-3%
680	692	100%	"	Fractured, Oxidized, Granite Vuggy Water Courses Throughout	Flox G, Feldspar G, Sil M, Sericite F	Py 2-3%, Bornite <1%, Cpy <1%, Chalcocite Film. Total Oxidation of Sulfides [illegible] Total Sulfides [illegible]
692	703	96%	Granite	Granite Breccia Cemented with Iron Oxides and Fault Gouge Throughout.	Flox G, Feldspar G, Sil M, Sericite F	Py 2-3%, Bornite <1%, Cpy <1%, Chalcocite Film. Total Oxidation of Sulfides [illegible] Total Sulfides [illegible]
703	710	90%	Schistos Gouge	Dioritic Gouge Fault Material with a Very Sharp Increase in Sulfides - Oxidation Sharply Decreased. Silica Streaks Throughout	Flox P, Feldspar G, Sil F Sericite M.	Py 4-5%, Cpy <1%, Bornite <1%, Some Chalcocite Film. Total Oxidation of Sulfides [illegible] Total Sulfides 4-5%
710	720	95%	"	Dioritic Gouge Fault Material	Flox P, Feldspar G, Sil F Sericite M	Py 4-5%, Cpy <1%, Bornite <1%, Some Chalcocite Film. Total Oxidation of Sulfides 5-7% Total Sulfides 4-5%
720	729	90%	"	" " " " Brecciated from 725' to 729'	Flox P, Feldspar G, Sil F, Sericite M	Py 4-5%, Cpy <1%, Bornite <1%, Some Chalcocite. Total Oxidation of Sulfides 3-5% Total Sulfides 4-5%
729	740	100%	Granite	Fractured Oxidized Granite Vuggy with Water Courses to 738. Then Basic Diorite to 740'	Flox P, Feldspar G, Sil F, Sericite M.	Py 1-2%, Cpy <1%, Trace [illegible] Some Chalcocite Film, Mos. Total Oxidation of Sulfides [illegible] Total Sulfides [illegible]
740	750	100%	"	Fractured, Oxidized, Granite "	Flox P, Feldspar G, Sil F, Sericite M	Py 2-3%, Cpy <1%, Traces [illegible], Some Chalcocite & Mos. Total Oxidation of Sulfides [illegible] Total Sulfides [illegible]
750	760	90%	"	Fractured, Broken Oxidized Granite, Severly Broken from 756 to 760	Flox F, Feldspar G, Sil F, Sericite P	Py 2-3%, Cpy <1%, Traces [illegible] and Mos. Some Chalcocite. Total Oxidation of Sulfides [illegible] Total Sulfides [illegible]
760	770	100%	"	Fractured Oxidized Fine Grained Granite Greenish Gray Color	Flox P, Feldspar G, Sil F, Sericite P.	Py 2-3%, Cpy <1%, Traces [illegible]

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Sheet-7

PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

SHEET NO. 7

BIT SIZE BX

1, 1963

ALTERATION GRADES
P - POOR
F - FAIR
M - MODERATE
G - GOOD

Project SHEEP MT.

SIL. - SILICIFICATION
FLOX. - IRON OXIDES
PY. - PYRITE
CPY. - CHALCOPYRITE
CuO - COPPER OXIDES
MOS. - MOLYBDENUM

COLLAR ELEVATION 2889'
TOTAL FOOTAGE
LOGGED BY C. Y.
DATE COMPLETED
LINE INCLINED S - FRACTURE, BARREN
LINE INCLINED (S) - FRACTURES >1 PER FOOT
LINE INCLINED - MINERALIZED

ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION	GRAPHIC LOG
	NO CORE TO 667 - DRILLER FAILED TO GET CORE BARREL LOCK TO ENGAGE - GROUND 7' OF CORE ON NIGHT SHIFT	FLOX G, FELDSPAR G, SIL M, SERICITE P	Py 2-3% BORNITE <1% CPY <1% CHALCOCITE FILM. TOTAL OXIDATION OF SULFIDES 30-40% TOTAL SULFIDES [illegible]	10° FLOX PY
GRANITE	FRACTURED BROKEN OXIDIZED GRANITE - VUGGY [illegible]	FLOX G, FELDSPAR G, SIL M, SERICITE F	Py 2-3% BORNITE <1% CPY <1% CHALCOCITE FILM TOTAL OXIDATION OF SULFIDES 30-40% TOTAL SULFIDES 2-3%	60° C 10° FLOX PY
"	FRACTURED, OXIDIZED, GRANITE BRECCIATED 675-[illegible] 672 CEMENTED WITH FLOX. VUGGY WITH OPEN WATER COURSES THROUGHOUT	FLOX G, FELDSPAR G, SIL M, SERICITE F	Py 2-3%, BORNITE <1%, CPY <1%, CHALCOCITE FILM. TOTAL OXIDATION OF SULFIDES 30-40% TOTAL SULFIDES 2-3%	10° FLOX PY 30° FLOX [illegible]
"	FRACTURED, OXIDIZED, GRANITE VUGGY WATER COURSES THROUGHOUT -	FLOX G, FELDSPAR G, SIL M, SERICITE F	Py 2-3%, BORNITE <1%, CPY <1%, CHALCOCITE FILM. TOTAL OXIDATION OF SULFIDES 30-40% TOTAL SULFIDES 2-3%	
GRANITE	GRANITE BRECCIA CEMENTED WITH IRON OXIDES AND FAULT GOUGE THROUGHOUT.	FLOX G, FELDSPAR G, SIL M, SERICITE F	Py 2-3%, BORNITE <1% CPY <1% CHALCOCITE FILM. TOTAL OXIDATION OF SULFIDES 40-50% TOTAL SULFIDES 2-3%	
SCHISTOS GOUGE	DIORITIC GOUGE FAULT MATERIAL WITH A VERY SHARP INCREASE IN SULFIDES - OXIDATION SHARPLY DECREASED. SILICA STREAKS THROUGHOUT	FLOX P, FELDSPAR G, SIL F SERICITE M.	Py 4-5%, CPY <1%, BORNITE <1% SOME CHALCOCITE FILM. TOTAL OXIDATION OF SULFIDES 30-40% TOTAL SULFIDES 4-5%	
"	DIORITIC GOUGE FAULT MATERIAL	FLOX P, FELDSPAR G, SIL F SERICITE M	Py 4-5% CPY <1% BORNITE <1% SOME CHALCOCITE FILM. TOTAL OXIDATION OF SULFIDES 5-7% TOTAL SULFIDES 4-5%	
"	" " " " BRECCIATED FROM 725' to 729'	FLOX P, FELDSPAR G, SIL F, SERICITE M	Py 4-5%, CPY <1%, BORNITE <1% SOME CHALCOCITE TOTAL OXIDATION OF SULFIDES 3-5% TOTAL SULFIDES 4-5%	
GRANITE	FRACTURED OXIDIZED GRANITE VUGGY WITH WATER COURSES TO 738 THEN BASIC DIORITE TO 740'	FLOX P, FELDSPAR G, SIL F, SERICITE M.	Py 1-2% CPY <1% TRACES SOME CHALCOCITE FILM, MOS. TOTAL OXIDATION OF SULFIDES 10-15% TOTAL SULFIDES 1-2%	45° PY FLOX 45° PY FLOX
"	FRACTURED, OXIDIZED, GRANITE "	FLOX P, FELDSPAR G, SIL F, SERICITE M	Py 2-3% CPY <1% TRACES CHALCOCITE, SOME CHALCOCITE FILM. TOTAL OXIDATION OF SULFIDES [illegible] TOTAL SULFIDES [illegible]	10° PY 60° PY FLOX 45° PY
"	FRACTURED, BROKEN OXIDIZED GRANITE, SEVERLY BROKEN FROM 756 to 760	FLOX F, FELDSPAR G, SIL F, SERICITE P	Py 2-3% CPY <1% TRACES COVELLITE AND MOS SOME CHALCOCITE TOTAL OXIDATION OF SULFIDES [illegible] TOTAL SULFIDES [illegible]	[illegible]
"	FRACTURED OXIDIZED FINE GRAINED GRANITE GREENISH GRAY COLOR -	FLOX P, FELDSPAR G, SIL F, SERICITE P.	Py 2-3% CPY <1% TRACES COVELLITE AND MOS AND [illegible] TOTAL OXIDATION OF SULFIDES [illegible]	[illegible]

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Sheet - 8

PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Sacep Mountain

HOLE NO. SM-6 SHEET NO. 8

COORDINATES 3100 N 11600 E

TYPE DRILL [illegible] BIT SIZE [illegible]

DATE STARTED Sept 17, 1963

Alteration Grades
P - Poor
F - Fair
M - Moderate
G - Good

Sil - Silicification
Py - Pyrite
Prox - Iron Oxides
Mos - Molybdenum
Cpy - Chalcopyrite

COLLAR ELEVATION 2889

TOTAL FOOTAGE

LOGGED BY Cwh

DATE COMPLETED

Line Inclined Right S - Fra[illegible]
Line Inclined Right ⊙ - Fra[illegible]
Line Inclined Left - M[illegible]

FROM	TO	CORE RECOVERY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION
770	780	100%	Granite	Fractured Oxidized Fine Grained Granite to 777' then Fault Breccia and Gouge to 779 then Cemented Breccia	Feox P, Feldspar G, Sil F, Sericite P	Py 2-3% Cpy <1% Traces Covellite Bornite, Mos, and Chalcocite. Total Oxidation of Sulfides 5-[illegible]% Total Sulfides 2-3%
780	790	100%	"	Fault Breccia and Gouge to 782 then Oxidized Fine Grained Gray-White Granite to 788 then Severely Broken Highly Altered Feldspar in Medium Grained Granite	Feox P, Feldspar G, Sil F, Sericite F	Py 2-3%, Cpy <1% Traces Covellite Mos and Chalcocite Total Oxidation of Sulfides 3-5% Total Sulfides 2-3%
790	800	100%	"	Fine Grained Gray-White Granite to 798 then Broken with Gouge Probable Fault. Feldspar Severely Altered.	Feox P, Feldspar G, Sil F Sericite P	Py 1-2% Trace Cpy Traces Covellite Mos and Chalcocite. Total Oxidation of Sulfides 5-8% Total Sulfides 1-2%
800	810	100%	"	Broken Gouge Fine Grained Granite with Calcite Cementing Material. Feldspars Are Severely Altered.	Feldspar G, Sil P, Sericite F	Py 1-2% Cpy <1% Traces Covellite Mos and Chalcocite. Total Sulfides 1-2%
810	820	100%	"	Fault Gouge to 812 then Siliceous, Pyritic Medium Grained Fractured Granite. Intense Alteration of Feldspar.	Feox P, Feldspar G, Sil M, Sericite P.	Py 3-4% Cpy <1% Traces Covellite Mos and Chalcocite. Total Oxidation of Sulfides 5-8% Total Sulfides 3-4%
820	830	100%	"	Fractured Medium Grained Granite. Feldspar Alteration Intense. Breccia from 828 to 830'	Feldspar G, Sil M, Sericite P.	Py 3-4% Cpy <1% Traces Covellite Mos and Chalcocite Total Sulfides 3-4%
830	840	100%	"	Fractured Medium Grained Granite, Feldspar Alteration Intense,	Feldspar G, Sil M, Sericite P.	Py 3-4% Cpy <1% Covellite <1% Traces Bornite and Chalcocite. Total Sulfides 3-4%
840	850	100%	"	Fractured Medium Grained Granite, Feldspar Alteration Intense.	Feldspar G, Sil M, Sericite P.	Py 2-3%, Cpy <1% Traces of Covellite, and Chalcocite Total Sulfides 2-3%
850	860	100%	"	Fractured Medium Grained Granite, Feldspar Alteration Intense	Feldspar G, Sil M, Sericite P	Py 2-3% Cpy <1% Traces of Covellite and Chalcocite. Total Sulfides 2-3%
860	870	100%	"	Fractured Medium Grained Granite, Feldspar Alteration Intense.	Feldspar G, Sil M, Sericite F	Py 2-3% Cpy <1% Traces of Covellite and Chalcocite Total Sulfides 2-3%
870	879	100%	"	Fractured Medium to Coarse Grained Granite Feldspar Intensely Altered, Silicification Increasing Breccia [illegible]	Feldspar G, Sil G, Sericite F	Py 1-2%, Cpy <1% Traces of Covellite and Chalcocite [illegible]

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Sheet-6

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3-3-8

PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Sheep Mountain

SHEET NO. 8
11600 E
BIT SIZE BX
7, 1963

Alteration Grades
P - Poor
F - Fair
M - Moderate
G - Good

Sil - Silicification
Py - Pyrite
Fox - Iron Oxides
Mos - Molybdenum
Cpy - Chalcopyrite

COLLAR ELEVATION 2889
TOTAL FOOTAGE
LOGGED BY Cash
DATE COMPLETED
Line Inclined Right S - Fracture Barren
Line Inclined Right (S) - Fractures >1 Per Foot
Line Inclined Left - Mineralized

ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION	GRAPHIC LOG
Granite	Fractured Oxidized Fine Grained Granite to 777' then Fault Breccia and Gouge to 779 then Cemented Breccia	Fox P, Feldspar G, Sil F, Sericite P	Py 2-3% Cpy <1% Traces Covellite Bornite, Mos, and Chalcocite. Total Oxidation of Sulfides 5-8% Total Sulfides 2-3%	45° Py Cpy 10° Py Fox 45° Py Cpy 10° (Py)
"	Fault Breccia and Gouge to 782 then Oxidized Fine Grained Gray-White Granite to 788 then Severely Broken Highly Altered Feldspar in Medium Grained Granite	Fox P, Feldspar G, Sil F, Sericite P	Py 2-3%, Cpy <1% Traces Covellite Mos and Chalcocite Total Oxidation of Sulfides 3-5% Total Sulfides 2-3%	10° (Py Cpy Fox) 60° S
"	Fine Grained Gray-White Granite to 798 then Broken with Gouge Probable Fault. Feldspar Severely Altered.	Fox P, Feldspar G, Sil F Sericite P	Py 1-2% Trace Cpy, Traces Covellite Mos and Chalcocite. Total Oxidation of Sulfides 5-8% Total Sulfides 1-2%	10° S 30° S 45° Py
"	Broken Gouge Fine Grained Granite with Calcite Cementing Material. Feldspars are Severely Altered.	Feldspar G, Sil P, Sericite F	Py 1-2% Cpy <1% Traces Covellite Mos and Chalcocite. Total Sulfides 1-2%	10° (S)
"	Fault Gouge to 812 then Siliceous, Pyritic Medium Grained Fractured Granite. Intense Alteration of Feldspar.	Fox P, Feldspar G, Sil M, Sericite P.	Py 3-4% Cpy <1% Traces Covellite Mos and Chalcocite. Total Oxidation of Sulfides 5-8% Total Sulfides 3-4%	45° (Py Cpy) 45° Py Cpy Mos 60° (Py Cpy) 60°
"	Fractured Medium Grained Granite. Feldspar Alteration Intense. Breccia from 828 to 830'	Feldspar G, Sil M, Sericite P.	Py 3-4% Cpy <1% Traces Covellite Mos and Chalcocite Total Sulfides 3-4%	10° S 45° (S) 45° (Py Cpy)
"	Fractured Medium Grained Granite, Feldspar Alteration Intense.	Feldspar G, Sil M, Sericite P.	Py 3-4% Cpy <1% Covellite <1% Traces Bornite and Chalcocite. Total Sulfides 3-4%	45° (Py Cpy) 30° (Py Cpy) 45° (Py Cpy)
"	Fractured Medium Grained Granite, Feldspar Alteration Intense.	Feldspar G, Sil M, Sericite P.	Py 2-3%, Cpy <1% Traces Covellite, and Chalcocite Total Sulfides 2-3%	60° Py Cpy 15° Py 15° (Py Cpy)
"	Fractured Medium Grained Granite, Feldspar Alteration Intense	Feldspar G, Sil M, Sericite P	Py 2-3% Cpy <1% Traces Covellite and Chalcocite. Total Sulfides 2-3%	60° Py Cpy 30° Py 10° S 10° (Py Cpy)
"	Fractured Medium Grained Granite, Feldspar Alteration Intense.	Feldspar G, Sil M, Sericite P	Py 2-3% Cpy <1% Traces Covellite and Chalcocite Total Sulfides 2-3%	15° (Py Cpy) 15° (Py Cpy) 10° (Py) 15° (Py Cpy)
"	Fractured Medium to Coarse Grained Granite Feldspar Intensely Altered. Silicification Increasing Breccia [illegible]	Feldspar G, Sil G, Sericite P	Py 1-2%, Cpy <1% Traces of Covellite and Chalcocite [illegible]	45° (Py Cpy) 45° (Py Cpy)

SM-6 Sheet-9 P 1 of 2 3-3-9

PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

HOLE NO. SM-6 SHEET NO. 9
COORDINATES 3100 N 4600 E
TYPE DRILL Diamond Lit BIT SIZE BX
DATE STARTED Sep-17, 1963

Alteration Grades
P- Poor
F- Fair
M- Moderate
G- Good

Project Sunset Mountain

Sil - Silicification
Py - Pyrite
Feox - Iron Oxides
Mos - Molybdenum
Cpy - Chalcopyrite

COLLAR ELEVATION 29.4
TOTAL FOOTAGE
LOGGED BY [illegible]
DATE COMPLETED
Line Inclined Right S - Fra
Line Inclined Right (S) - Fra
Line Inclined Left . Mi

FROM	TO	CORE RECOVERY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION
879	890	75%	Diabase & Fault Material	Crushed, Diabase, Gougy Fault Material With Minor Quartz Veinlets Feldspar Intensely Altered, Sulfides Oxidized Moderately	Feldspar G, Sil P, Feox P	Py 2-3% Trace Cpy And Chalcocite. Some Feox Total Oxidation Of Sulfides 10-15% Total Sulfides [illegible]
890	900	80%	Diabase & Fault Material	Crushed, Diabasic Gougy Fault Material With A Pyritic Quartz Lens From 893 to 895.5. Feldspar Intensely Altered, Some Sulfides Oxidized Moderately	Feldspar G, Sil M, Feox P.	Py 2-3%, Cpy <1%, Traces Cpy Chalcocite Total Oxidation Of Sulfides 10-[illegible] Total Sulfides 2-3%
900	910	75%	Diabase & Fault Material	Fractured Broken Diabase Some Epidote	Feldspar G, Sil M, Feox P	Py 3-4% Cpy <1% Trace Cpy Chalcocite. Total Oxidation Of Sulfides 10-[illegible] Total Sulfides 3-4%
910	920	95%	Diabase & Fault Material	Fractured, Broken, Diabase, Fault Gouge 912 to 917' Calcite In Fractures. Some Epidote	Feldspar G, Sil F Feox P.	Py 3-4% Traces Cpy, Bornite And Chalcocite Total Oxidation Of Sulfides 5-8% Total Sulfides 3-4%
920	930	90%	Diabase & Fault Material	Fractured, Broken Diabase, Fault Gouge Intermittant Throughout.	Feldspar G, Sil P, Feox P.	Py 3-4% Traces Cpy And Chalcocite: Total Oxidation Of Sulfides 5-8% Total Sulfides 3-4%
930	940	95%	Diabase	Fractured Diabase With Lens Of Granite 734.5 to 736.	Feldspar G, Sil F, Feox P	Py 2-3% Cpy <1% Traces Bornite Covellite Mos & Chalcocite Total Oxidation Of Sulfides 5-8% Total Sulfides 2-3%
940	950	95%	"	Fractured Diabase	Feldspar G, Sil P,	Py 2-3% Cpy <1% Traces Bornite, Mos & Chalcocite Total Sulfides 2-3%
950	960	100%	"	" "	Feldspar M, Sil P	Py 2-3% Cpy <1%, Traces Mos. And Chalcocite
960	970	100%	"	" " Fault 969 to 970'	Feldspar M, Sil P.	Py 2-3%, Cpy <1% Traces Mos And Chalcocite Total Sulfides 2-3%
970	981	80%	"	" "	Feldspar M, Sil P.	Py 2-3%, Cpy <1% Traces Mos And Chalcocite Total Sulfides 2-3%
				End Of Hole 981 Oct. 23, 1961		

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Sheet-9

PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

SHEET NO. 9

BIT SIZE BX

-17, 1963

Alteration Grades
P - Poor
F - Fair
M - Moderate
G - Good

Project Sunny Mountain

Sil - Silicification
Py - Pyrite
Fcox - Iron Oxides
Mos - Molybdenum
Cpy - Chalcopyrite

COLLAR ELEVATION 29.4.9
TOTAL FOOTAGE
LOGGED BY Cole
DATE COMPLETED

Line Inclined Right S - Fracture - Barren
Line Inclined Right (S) - Fractures 7: Per Foot
Line Inclined Left . Mineralized

...RY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION	GRAPHIC LOG
%	Diabase & Fault Material	Crushed Diabase, Gougy Fault Material With Minor Quartz Veinlets. Feldspar Intensely Altered, Sulfides Oxidized Moderately	Feldspar G, Sil P, Fcox F	Py 2-3% Trace Cpy And Chalcocite. Some Fcox Total Oxidation Of Sulfides 10-15% Total Sulfides 2-3%	Broken 45° Py Cpy Fcox 60° Py Cpy Fcox
%	Diabase & Fault Material	Crushed Diabase Gougy Fault Material With A Pyritic Quartz Lens From 893 to 895.5. Feldspar Intensely Altered, Some Sulfides Oxidized Moderately	Feldspar G, Sil M, Fcox P.	Py 2-3%, Cpy <1%, Traces Of Chalcocite Total Oxidation Of Sulfides 10-15% Total Sulfides 2-3%	Crushed Zone 10° Py Cpy Fcox 20° Py Cpy Mos
%	Diabase & Fault Material	Fractured Broken Diabase Some Epidote	Feldspar G, Sil M, Fcox P	Py 3-4% Cpy <1% Trace Of Chalcocite. Total Oxidation Of Sulfides 10-15% Total Sulfides 3-4%	45° Py Cpy Fcox 45° Py Cpy Fcox
%	Diabase & Fault Material	Fractured, Broken, Diabase, Fault Gouge 912 to 917' Calcite In Fractures. Some Epidote	Feldspar G, Sil F Fcox P.	Py 3-4% Traces Cpy, Bornite And Chalcocite Total Oxidation Of Sulfides 5-8% Total Sulfides 3-4%	20° Py Cpy 60° (S)
%	Diabase & Fault Material	Fractured, Broken Diabase, Fault Gouge Intermittant Throughout.	Feldspar G, Sil P, Fcox P.	Py 3-4% Traces Cpy And Chalcocite: Total Oxidation Of Sulfides 5-8% Total Sulfides 3-4%	Broken 20° (S) 20° (Py) 45° (Py)
%	Diabase	Fractured Diabase With Lens Of Granite 734.5 to 736.	Feldspar G, Sil F, Fcox P	Py 2-3% Cpy <1% Traces Bornite Covellite Mos And Chalcocite Total Oxidation Of Sulfides 5-8% Total Sulfides 2-3%	45° (Py) 60° Py Cpy
%	"	Fractured Diabase	Feldspar G, Sil P,	Py 2-3% Cpy <1% Traces Bornite, Mos & Chalcocite Total Sulfides 2-3%	45° S
%	"	" "	Feldspar M, Sil P	Py 2-3% Cpy <1%, Traces Mos. And Chalcocite	60° Py 30° Py
%	"	" " Fault 969 to 970'	Feldspar M, Sil P.	Py 2-3%, Cpy <1% Traces Mos And Chalcocite Total Sulfides 2-3%	30° (S)
%	"	" "	Feldspar M, Sil P.	Py 2-3%, Cpy <1% Traces Mos And Chalcocite Total Sulfides 2-3%	30° Py 45° Py 60° Py
		End Of Hole 981 Oct. 23, 1961			

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Sugar Mountain

HOLE NO. SM-6 SHEET NO. 10

COORDINATES 5100N 1600E

TYPE DRILL Diamond Core BIT SIZE AX WL

DATE STARTED Sept. 17, 1963

Resumed Dec. 29, 1963

Alteration Grades
P - Poor
F - Fair
M - Moderate
G - Good
I - Intense

Py - Pyrite
Cpy - Chalcopyrite
FeOx - Iron Pyrite
Sil - Silicification
CO3 - Bornite & Covellite
Mos - Molybdenum

COLLAR ELEVATION 288

TOTAL FOOTAGE

LOGGED BY Chris

DATE COMPLETED

Line Inclined Right -
Line Inclined Right -
Line Inclined Left

FROM	TO	CORE RECOVERY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION
981	991	90%	Diabase	Fractured Diabase with Bands of Sil	Feldspar G, Sil G, Sericite F, Chlorite F, FeOx G.	Py 3-4%, Cpy <1%, FeOx 1-2% Total Oxidation of Sulfides 50-75% Total Sulfides 3-4%
991	1000	70%	Granite	Medium to Coarse Grained Granite With Bands of Sil.	Feldspar I Sil G, Sericite P. Chlorite P.	Py 2-2% Cpy <1% Trace Mos
1000	1006	90%	"	Medium to Coarse Grained Granite	Feldspar I Sil G, Sericite P Chlorite P.	Py 2-3% Cpy <1% Trace Mos Total Sulfides 2-3%
1006	1010	10%	Diabase	Fractured Diabase With a Lenses of Granite Broken Material Lost in Drill	Feldspar I Sil G, Sericite P Chlorite F	Py 2-3% Trace Cpy Total Sulfides 2-3%
1010	1020	96%	Granite	Fractured Medium to Coarse Grained Granite With Sil. Bands. Water Courses Intermittently. Losing Water.	Feldspar I, Sil G, Sericite P, Chlorite P, FeOx P	Py 1-2% Mos <1% Trace Cpy Total Oxidation of Sulfides 10% 15% Total Sulfides 1-2%
1020	1030	98%	"	Fractured Medium to Coarse Grained Granite With Bands of Sil. Water Courses Intermittently. Losing Water	Feldspar I, Sil G, Sericite P, Chlorite P, FeOx P.	Py 1-2% Mos <1% Tr Cpy FeOx Total Oxidation of Sulfides 10-15% Total Sulfides 1-2%
1030	1035	100%	"	Fractured Medium to Coarse Grained Granite With Bands of Sil.	Feldspar I, Sil G, Sericite P Chlorite P FeOx P.	Py 2-3% Mos <1% Tr Cpy Trace Oxidation of Sulfides 10-15% Total Sulfides 2-3%
1035	1038	100%	Pegmatite	Fractured Siliceous Pegmatite	Feldspar I Sil G, Sericite P Chlorite P.	Py Tr% Mos Tr% Tr Cpy Total Sulfides 1-2%
1038	1050	96%	Granite	Fractured Medium to Coarse Grained Granite With Sil. Bands.	Feldspar I Sil G, Sericite M, Chlorite P	Py 2-3% Cpy <1% Mos <1% Tr Bornite & Covellite Total Sulfides 2-3%
1050	1060	100%	"	Fractured Medium to Coarse Grained Granite With Bands of Silicification	Feldspar I, Sil G, Sericite M, Chlorite P, FeOx P	Py 2-3% Cpy <1% Mos <1% FeOx Total Oxidation of Sulfides Total Sulfides 2-3%
1060	1070	100%	"	Medium to Coarse Grained Granite With Bands of Silicification and Pegmatite Lenses	Feldspar I, Sil G, Sericite M, Chlorite P, FeOx P	Py 2-3% Cpy <1% Mos <1% Tr FeOx Total Oxidation of Sulfides Total Sulfides 2-3%
1070	1080	95%	"	Medium to Coarse Grained Granite With Bands of Silicification	Feldspar I Sil G, Sericite P Chlorite P	Py 2-3% Cpy <1% Mos <1% Total Sulfides 2-3%
1080	1090	95%	"	Medium to Coarse Grained Granite, Sparsely Banded With Silicification	Feldspar I Sil G, Sericite M, Chlorite M.	Py 2-3% Cpy <1% Trace Mos Total Sulfides 2-3%

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3-3-10

PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

SHEET NO. 10
N ABOVE
BIT SIZE AXWL
17, 1963
29, 1963

Alteration Grades
P - Poor
F - Fair
M - Moderate
G - Good
I - Intense

Py - Pyrite
Cpy - Chalcopyrite
Fe ox - Iron Pyrite
Sil - Silicification
Co3 - Bornite & Covellite
Mos - Molybdenum

Project Silver Mountain

COLLAR ELEVATION 2889
TOTAL FOOTAGE
LOGGED BY Clair
DATE COMPLETED
LINE INCLINED RIGHT - 5 - Fractures, Bleeding
LINE INCLINED RIGHT - (3) - Fractures 7 Tr Fe Ox
LINE INCLINED LEFT Mineralized.

ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION	GRAPHIC LOG
Diabase	Fractured Diabase With Zones Of Sil	Feldspar G, Sil G, Sericite P. Chlorite F, Fe ox G.	Py 3-4%, Cpy <1%, Fe ox 1-2% Trace Oxidation Of Sulfides 50-75% Total Sulfides 3-4%	
Granite	Medium to Coarse Grained Granite With Zones Of Sil.	Feldspar I Sil G, Sericite P. Chlorite P.	Py 2-3% Cpy <1% Trace Mos	
"	Medium to Coarse Grained Granite	Feldspar I Sil G, Sericite P Chlorite P.	Py 2-3% Cpy <1% Trace Mos Total Sulfides 2-3%	
Diabase	Fractured Diabase With A Lenses Of Granite Zones Mineralized Leaning To Left	Feldspar I Sil G, Sericite P Chlorite F	Py 2-3% Trace Cpy Total Sulfides 2-3%	
Granite	Fractured Medium to Coarse Grained Granite With Sil. Bands. Water Courses Intermittently. Losing Water.	Feldspar I, Sil G, Sericite P, Chlorite P, Fe ox P	Py 1-2% Mos <1% Trace Cpy Fe ox Total Oxidation Of Sulfides 10% 15% Total Sulfides 1-2%	
"	Fractured Medium to Coarse Grained Granite With Bands Of Sil. Water Courses Intermittently. Losing Water	Feldspar I, Sil G, Sericite P, Chlorite P, Fe ox P,	Py 1-2% Mos <1% Tr Cpy Fe ox Total Oxidation Of Sulfides 10-15% Total Sulfides 1-2%	
"	Fractured Medium to Coarse Grained Granite With Bands Of Sil.	Feldspar I, Sil G, Sericite P Chlorite Fe ox P.	Py 2-3% Mos <1% Tr Cpy & Fe ox Total Oxidation Of Sulfides 10-15% Total Sulfides 2-3%	
Pegmatite	Fractured Siliceous Pegmatite	Feldspar I Sil G, Sericite P Chlorite P.	Py Fe 2% Mos <1% Trace Cpy Total Sulfides 1-2%	
Granite	Fractured Medium to Coarse Grained Granite With Sil. Bands.	Feldspar I Sil G, Sericite M, Chlorite P	Py 2-3% Cpy <1% Mos <1% Tr Bornite & Covellite Total Sulfides 2-3%	
"	Fractured Medium to Coarse Grained Granite With Bands Of Silicification	Feldspar I, Sil G, Sericite M, Chlorite P, Fe ox P	Py 2-3% Cpy <1% Mos <1% Fe ox Total Oxidation Of Sulfides 10% Total Sulfides 2-3%	
"	Medium to Coarse Grained Granite With Bands Of Silicification And Pegmatite Lenses	Feldspar G, Sil G, Sericite M, Chlorite P, Fe ox P	Py 2-3% Cpy <1% Mos <1% Tr Fe ox Total Oxidation Of Sulfides 10% Total Sulfides 2-3%	
"	Medium to Coarse Grained Granite With Bands Of Silicification	Feldspar I Sil G, Sericite M Chlorite P	Py 2-3% Cpy <1% Mos <1% Total Sulfides 2-3%	
"	Medium to Coarse Grained Granite Sparsely Banded With Silicification	Feldspar I Sil G, Sericite M Chlorite M.	Py 2-3% Cpy <1% Trace Mos Total Sulfides 2-3%	

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

HOLE NO. SM-6 SHEET NO. 11
COORDINATES 3100N 4600E
TYPE DRILL [illegible] W1 BIT SIZE AXWL
DATE STARTED Sept 17, 1963
Resumed Dec. 29, 1963

Alteration Grades
P - Poor
F - Fair
M - Moderate
G - Good
I - Intense

Project Sheep Mountain

Py - Pyrite
Cpy - Chalcopyrite
Feox - Iron Oxides
Sil - Silicification
Cus - Bornite & Chlorite
Mos - Molybdenite

COLLAR ELEVATION 29.[illegible]
TOTAL FOOTAGE
LOGGED BY [illegible]
DATE COMPLETED
Line Inclined Right - S
Line Inclined Right
Line Inclined Left

FROM	TO	CORE RECOVERY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION
1090	1100	90%	Granite	Medium to Coarse Grained Highly Altered Granite Strongly Banded With Silicification, Fault Material 1093 to 1094. Mulz Increasing.	Feldspar I, Sil G, Sericite M, Chlorite M.	Py 2-3%, Cpy <1%, Mos <1% Total Sulfides 2-3%
1100	1110	70%	"	Medium to Coarse Grained Highly Altered And Fractured Granite.	Feldspar I, Sil G, Sericite M Chlorite M Feox P	Py 2-3% Cpy <1% Traces Mos. Feox. Total Oxidation Of Sulfides 5-10 Total Sulfides 2-3%
1110	1119	96%	"	Medium to Coarse Grained Highly Altered And Fractured Granite. Fault Material 1112 to 1119	Feldspar I, Sil G, Sericite M, Chlorite M, Feox F.	Py 2-3% Cpy <1% Traces Mos Feox. Total Oxidation Of Sulfides 10-15 Total Sulfides 2-3%
1119	1130	95%	"	Medium to Coarse Grained Highly Altered And Fractured Granite With Bands Of Silicification	Feldspar I, Sil G, Sericite F, Chlorite M Feox P	Py 2-3% Cpy <1% Traces Mos Feox Total Oxidation Of Sulfides 5-10 Total Sulfides 2-3%
1130	1139	95%	"	Medium to Coarse Grained Fractured Granite With Bands Of Silica	Feldspar I Sil G, Sericite F Chlorite F Feox P.	Py 1-2% Trace Cpy & Mos Total Oxidation Of Sulfides 5-10 Total Sulfides 1-2%
1139	1147	95%	Pegmatite	Hard Siliceous Pegmatite With Lenses Of Granite.	Feldspar G, Sil G, Sericite P Chlorite F	Py <1% Traces Cpy & Mos.
1147	1150	90%	Granite	Fractured Medium Grained Granite	Feldspar M Sil G Sericite P	Py 1-2% Traces Cpy & Mos
1150	1160	100%	"	Medium to Fine Grained Granite With Bands Of Silicification And Lenses Of Pegmatite	Feldspar G, Sil G, Sericite P, Chlorite P Feox P	Py 1-2% Traces Cpy & Mos Traces Of Feox Total Sulfides 1-2%
1160	1170	96%	"	Medium Grained Granite With Lenses Of Pegmatite And Bands Of Silicification	Feldspar I, Sil G, Sericite P, Chlorite P, Feox P.	Py 2-3% Cpy <1% Trace Mos & Feox Traces Feox Total Sulfides 2-3%
1170	1177	96%	"	Medium Grained Granite With Bands Of Sil.	Feldspar I Sil G, Sericite P, Chlorite P Feox P	Py 2-3% Cpy <1% Tr Mos & Feox Traces Feox Total Sulfides 2-3%
1177	1180	100%	Pegmatite	Pegmatite With Lenses Of Granite	Feldspar G, Sil G Sericite P	Py 1-2% Traces Cpy & Mos
1180	1183	100%	"	Pegmatite With Lenses Of Granite	Feldspar G, Sil G, Sericite P	Py 1-2% Traces Cpy & Mos.
1183	1191	100%	Granite	Medium Grained Siliceous Granite	Feldspar G, Sil G, Sericite P Chlorite P	Py 2-3% Cpy <1% Tr Mos Total Sulfides 2-3%
1191	1197	100%	Pegmatite	Pegmatite	Feldspar G, Sil G.	Py 1-2% Tr Cpy & Mos
1197	1200	100%	Granite	Medium Grained Granite With Lenses Of Pegmatite	Feldspar I, Sil G Sericite P Chlorite P	Py 2-3% Cpy <1% Mos <1%

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Sierrita Mountain

NO. 11
2600 C
SIZE AXWL
63
3

Alteration Grades
S - Poor
F - Fair
M - Moderate
G - Good
I - Intense

Py - Pyrite
Cpy - Chalcopyrite
Fox - Iron Oxides
Sil - Silicification
Cov - Bornite & Covellite
Mos - Molybdenite

COLLAR ELEVATION 2989
TOTAL FOOTAGE
LOGGED BY
DATE COMPLETED

LINE INCLINED RIGHT
LINE INCLINED FORM
LINE INCLINED LEFT

S - FRACTURE, SHADED
FRACTURES & POSITIONS MINERALIZED.

ROCK DESCRIPTION	ALTERATION	METALLIZATION	GRAPHIC LOG
Medium to Coarse Grained Highly Altered Granite Stringers Banded With Silicification, Fault Material 1093 to 1094. Mole Increasing.	Feldspar I, Sil G, Sericite M, Chlorite M.	Py 2-3%, Cpy 1/2%, Mos <1%. Total Sulfides 2-3%	
Medium to Coarse Grained Highly Altered And Fractured Granite.	Feldspar I, Sil G, Sericite M, Chlorite M Fox P	Py 2-3% Cpy 1/2% Traces Mos. Fox. Total Oxidation Of Sulfides 5-10%. Total Sulfides 2-3%	
Medium to Coarse Grained Highly Altered And Fractured Granite. Fault Material 1112 to 1119	Feldspar I, Sil G, Sericite M, Chlorite M, Fox F.	Py 2-3% Cpy 1/2% Traces Mos Fox. Total Oxidation Of Sulfides 10-15% Total Sulfides 2-3%	
Medium to Coarse Grained Highly Altered And Fractured Granite With Bands Of Silicification	Feldspar I, Sil G, Sericite F, Chlorite M Fox P	Py 2-3% Cpy 1/2% Traces Mos Fox. Total Oxidation Of Sulfides 5-10% Total Sulfides 2-3%	
Medium to Coarse Grained Fractured Granite With Bands Of Silica	Feldspar I Sil G, Sericite F Chlorite F Fox P.	Py 1-2% Traces Cpy & Mos Total Oxidation Of Sulfides 5-10% Total Sulfides 1-2%	
[illegible] Siliceous Pegmatite With Lenses Of [illegible]nite.	Feldspar G, Sil G, Sericite [illegible] Chlorite F	Py <1% Traces Cpy & Mos.	
Fractured Medium Grained Granite	Feldspar M Sil G Sericite P	Py 1-2% Traces Cpy & Mos	
Medium to Fine Grained Granite With Bands Of Silicification And Lenses Of Pegmatite	Feldspar G, Sil G, Sericite P. Chlorite F Fox P	Py 1-2%. Traces Cpy & Mos Traces Of Fox Total Sulfides 1-2%	
Medium Grained Granite With Lenses Of Pegmatite And Bands Of Silicification	Feldspar I, Sil G, Sericite M, Chlorite F, Fox F.	Py 2-3% Cpy <1% Trace Mos & Fox Traces Fox Total Sulfides 2-3%	
Medium Grained Granite With Bands Of Sil.	Feldspar I Sil G, Sericite P. Chlorite P Fox P	Py 2-3% Cpy <1% Traces Mos Fox. Total Oxidation 5-10% Total Sulfides 2-3%	
Pegmatite With Lenses Of Granite.	Feldspar G, Sil G Sericite F	Py 1-2% Traces Cpy & Mos	
Pegmatite With Lenses Of Granite Medium Grained Siliceous Granite	Feldspar G, Sil G, Sericite P. Feldspar G, Sil G, Sericite P. Chlorite F	Py 1-2% Traces Cpy & Mos. Py 2-3% Cpy <1% To Mos Total Sulfides 2-3%	
Pegmatite	Feldspar G, Sil G.	Py 1-2% Tr Cpy & Mos	
Medium Grained Granite With Lenses Of Pegmatite	Feldspar I, Sil G Sericite Pegmatite	Py 2-3%, Cpy <1%, Mos <1%	

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Sheet-12

P lot 2

3-3-12

PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

HOLE NO. SM-6 SHEET NO. 12
COORDINATES 3100 N 4600 E
TYPE DRILL Diamond WL BIT SIZE AX WL
DATE STARTED Sept 17, 1963
Resumed Dec, 29, 1963

Alteration Grades
P- Poor
F- Fair
M- Moderate
G- Good
I- Intense

Project Sheep Mountain

Py - Pyrite
Cpy - Chalcopyrite
Feox - Iron Oxides
Sil - Silicification
Cus - Bornite & Covellite
Mos - Molybdenite

COLLAR ELEVATION 22.2
TOTAL FOOTAGE
LOGGED BY C.D.
DATE COMPLETED
Line Inclined Right S
Line Inclined Right S
Line Inclined Left

FROM	TO	CORE RECOVERY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION
1200	1210	96%	Granite	Medium Grained Granite With Biotite Increasing Fault Material 1209 to 1210	Feldspar I, Sil G, Sericite P, Chlorite P	Py 2-3% Cpy <1% Mos <1% Total Sulfides 2-3%
1210	1220	95%	"	Medium Grained Granite With Lenses Pegmatite Silicification Increases From 1215	Feldspar I, Sil G, Sericite P, Chlorite P, Feox P.	Py 2-3% Cpy <1% Mos <1% Traces Of Feox Total Sulfides 2-3%
1220	1225	95%	"	Medium Grained Granite With Lenses Of Pegmatite Highly Silicified	Feldspar I, Sil G, Sericite P, Chlorite P, Feox P	Py 2-3% Cpy <1% Mos <1% Traces Feox Total Sulfides 2-3%
1225	1229	100%	Pegmatite	Pegmatite	Feldspar G, Sil G.	Py 1-2% Cpy <1% Mos <1% Traces Feox
1229	1230	100%	Granite	Fine Grained Silicious Granite	Feldspar M, Sil G, Sericite F, Chlorite M. Feox P	Py 2-3% Cpy <1% Mos <1% Traces Feox Total Sulfides 2-3%
1230	1241	100%	"	Fine Grained Silicious Granite With Lenses Of Pegmatite	Feldspar M, Sil G, Sericite F, Chlorite F, Feox P	Py 1-2% Cpy <1% Tr. Mos Traces Feox Total Sulfides 1-2%
1241	1249	100%	Pegmatite	Pegmatite With Blotches Of Biotite	Feldspar I, Sil G, Sericite G	Py 1-2% Cpy <1% Tr Mos. Total Sulfides 1-2%
1249	1260	90%	Granite	Fractured Medium Grained Granite With A Pegmatite Lense From 1255 to 1257. Granite From 1249 to 1255 Has A Porphyritic Texture [illegible]	Feldspar I, Sil G, Sericite F Chlorite P Feox M.	Py 2-3% Cpy <1% Tr Mos Feox Total Oxidation Of Sulfides 10-20% Total Sulfides 2-3%
1260	1270	95%	"	Medium to Fine Grained Silicious Granite	Feldspar M, Sil G Sericite F Chlorite F Feox P.	Py 2-3% Cpy <1% Tr Mos Traces Feox Total Sulfides 2-3%
1270	1280	100%	"	Medium to Fine Grained Silicious Granite With Lenses Of Pegmatite	Feldspar M, Sil G, Sericite F Chlorite P.	Py 2-3% Cpy <1% Tr Mos Total Sulfides 2-3%
1280	1290	100%	"	Medium to Fine Grained Silicious Granite	Feldspar G. Sil G, Sericite F Chlorite P.	Py 2-3% Cpy <1% Tr Mos. Total Sulfides 2-3%
1290	1300	100%	"	Medium to Fine Grained Silicious Granite	Feldspar G, Sil G, Sericite F Chlorite P.	Py 2-3% Cpy <1% Mos <1% Total Sulfides 2-3%

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Sugar Mountain

EET NO. 12
HOLE NO.
IT SIZE AX WL
963

Alteration Grades
P- Poor
F- Fair
M- Moderate
G- Good
I- Intense

Py- Pyrite
Cpy- Chalcopyrite
FeOx- Iron Oxides
Sil- Silicification
Cbn- Bornite & Covellite
Mos- Molybdenite

COLLAR ELEVATION 2229
TOTAL FOOTAGE
LOGGED BY C.D.
DATE COMPLETED

Line Inclined Right (R) Fracture, Barren
Line Inclined Left (L) Fracture, Mineralized

	ROCK DESCRIPTION	ALTERATION	METALLIZATION	GRAPHIC LOG
ite	Medium Grained Granite With Biotite Increasing Fair Mineral 1209 to 1210	Feldspar I, Sil G, Sericite P, Chlorite P	Py 2-3% Cpy <1% Mos <1% Total Sulfides 2-3%	60° 60°
	Medium Grained Granite With Lenses Forming Silicification Increases From 1215	Feldspar I, Sil G, Sericite P, Chlorite P, FeOx P	Py 2-3% Cpy <1% Mos <1% Traces Of FeOx Total Sulfides 2-3%	60° Py Cpy Mos
	Medium Grained Granite With Lenses Of Pegmatite Highly Silicified	Feldspar I, Sil G, Sericite P, Chlorite P FeOx P	Py 2-3% Cpy <1% Mos <1% Total Sulfides 2-3%	60° Py Cpy FeOx
ite	Pegmatite	Feldspar G, Sil G.	Py 2% Cpy <1% Mos <1% Traces FeOx	10° Py Cpy FeOx
ite	Fine Grained Siliceous Granite	Feldspar M, Sil G, Sericite P, Chlorite M. FeOx P	Py 2-3% Cpy <1% Mos <1% Traces FeOx Total Sulfides 2-3%	30° Py FeOx 30° Py 10° Cpy
	Fine Grained Siliceous Granite With Lenses Of Pegmatite	Feldspar M, Sil G, Sericite Chlorite F, FeOx P	Py 1-2% Cpy <1% Tr. Mos Traces FeOx Total Sulfides 1-2%	45° S
	Pegmatite With Blotches Of Biotite	Feldspar I, Sil G, Sericite G	Py 1-2% Cpy <1% Tr Mos. Total Sulfides 1-2%	60° S.
ite	Fractured Medium Grained Granite With A Pegmatite Lense From 1255 to 1257. Granite From 1249 to 1255 Has A Porphyritic Texture Because Of Phenocrysts Of Quartz	Feldspar I, Sil G, Sericite Chlorite P FeOx M.	Py 2-3% Cpy <1% Tr Mos FeOx Total Oxidation Of Sulfides 10-20% Total Sulfides 2-3%	45° 10° 10° 20°
	Medium to Fine Grained Siliceous Granite	Feldspar M, Sil G Sericite F Chlorite F FeOx P.	Py 2-3% Cpy <1% Tr Mos Traces FeOx Total Sulfides 2-3%	60° Py Cpy 30° Py FeOx 30° S
	Medium to Fine Grained Siliceous Granite With Lenses Of Pegmatite	Feldspar M, Sil G Sericite Chlorite P.	Py 2-3% Cpy <1% Tr Mos Total Sulfides 2-3%	60° Py Cpy 40° Py Cp
	Medium to Fine Grained Siliceous Granite	Feldspar G. Sil G, Sericite Chlorite P.	Py 2-3% Cpy <1% Tr Mos. Total Sulfides 2-3%	50° Py 30° Py Cpy 30° Py Cpy
	Medium to Fine Grained Siliceous Granite	Feldspar G, Sil G, Sericite Chlorite P.	Py 2-3% Cpy <1% Mos <1% Total Sulfides 2-3%	

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Sheet - 13

PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Sheep Mountain

HOLE NO. SM-6 SHEET NO. 13
COORDINATES 3100 N 4600 E
TYPE DRILL Diamond Core BIT SIZE AXWL
DATE STARTED Sept. 17, 1963
Resumed Dec 29, 1963

Alteration Codes.
P - Poor
F - Fair
M - Moderate
G - Good
I - Intense

Py - Pyrite
Cpy - Chalcopyrite
FeOx - Iron Oxides
Sil - Silicification
Bns - Bornite & Covellite
Mos - Molybdenite

COLLAR ELEVATION 2389
TOTAL FOOTAGE
LOGGED BY
DATE COMPLETED
Line Inclined Right - 5 -
Line Inclined Right - 3 -
Line Inclined Left

FROM	TO	CORE RECOVERY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION
1300	1303	100%	Granite	Fine Grained Silicious Granite	Feldspar G, Sil G. Sericite P	Py 2-3% Cpy 4% Mos <1%
1303	1310	100%	Porphyry	Medium Grained Silicious Granite Porphyry Pyrite Content Increases Sharply	Feldspar G, Sil G, Sericite F	Py 3-4% Traces Cpy & Mos Total Sulfides 3-4%
1310	1320	95%	"	Medium Grained Silicious Granite Porphyry	Feldspar I, Sil G Sericite F Chlorite P.	Py 3-4% Traces Cpy & Mos. Total Sulfides 3-4%
1320	1330	96%	"	Medium Grained Silicious Granite Porphyry	Feldspar I, Sil G, Sericite P, Chlorite F	Py 3-4% Cpy <1% Tr. Mos Total Sulfides 3-4%
1330	1340	96%	"	Medium Grained Silicious Granite Porphyry With Bands Of Silicification	Feldspar I, Sil G, Sericite F Chlorite F	Py 3-4% Cpy <1% Tr Mos Total Sulfides 3-4%
1340	1350	90%	"	Medium Grained Silicious Granite Porphyry With Fault Material 1344½ to 1344'	Feldspar I, Sil G, Sericite F. Chlorite M FeOx P	Py 3-4% Cpy <1% Tr. Mos Traces FeOx Total Sulfides 3-4%
1350	1360	96%	"	Medium Grained Silicious Granite Porphyry With Fault Breccia 1351 to 1356.	Feldspar I Sil G, Sericite P Chlorite G FeOx P	Py 3-4% Cpy <1% Mos <1% Traces FeOx Total Sulfides 3-4%
1360	1366	96%	"	Medium Grained Silicious Granite Porphyry	Feldspar I, Sil G, Sericite F, Chlorite G, FeOx P.	Py 3-4% Cpy <1% Mos <1% Traces FeOx Total Sulfides 3-4%
1366	1370	95%	Granite	Medium to Fine Grained Granite.	Feldspar G, Sil G, Sericite P	Py 2-3% Cpy <1% Tr Mos.
1370	1376	96%	"	Medium to Fine Grained Granite With Lenses Pegmatite	Feldspar G, Sil G, Sericite F	Py 2-3% Tr Cpy <1% Tr Mos.
1376	1380	96%	Pegmatite	Fractured Pegmatite With Lenses Of Granite	Feldspar M, Sil G FeOx P	Py 2-3% Tr Cpy & Mos FeOx Total Sulfides 2-3%
1380	1386	95%	"	Fractured Pegmatite With Lenses Of Granite	Feldspar M Sil G. FeOx F	Py 2-3% Tr Cpy & Mos. FeOx Total Sulfides 2-3%
1386	1390	95%	Granite	Medium to Fine Grained Granite	Feldspar G, Sil G Sericite P	Py 2-3% Cpy <1% Mos <1% Total Sulfides 2-3%
1390	1400	98%	"	Medium to Fine Grained Granite With Lenses Of Pegmatite	Feldspar G, Sil G Sericite F Chlorite F FeOx P.	Py 2-3% Cpy <1% Mos <1% Total Sulfides 2-3%
1400	1410	95%	"	Medium to Fine Grained Granite With Lenses Of Pegmatite.	Feldspar G, Sil G, Sericite F, Chlorite F FeOx P.	Py 2-3% Cpy <1% Mos <1% Traces FeOx Total Sulfides 2-3%

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Sheep Mountain

SHEET NO. 13

4600E

T SIZE AXWL

63

23

Alteration Grades.
P - Poor
F - Fair
M - Moderate
G - Good
I - Intense

Py - Pyrite
Cpy - Chalcopyrite
Feox - Iron Oxides
Sil - Silicification
Cus - Bornite & Covellite
Mos - Molybdenite

COLLAR ELEVATION 2889
TOTAL FOOTAGE
LOGGED BY C.R.
DATE COMPLETED

Line Inclined Right - S - Fracture - Barren
Line Inclined Right - S - Fractures >1 Per Foot
Line Inclined Left Mineralized

	ROCK DESCRIPTION	ALTERATION	METALLIZATION	GRAPHIC LOG
	Fine Grained Silicious Granite	Feldspar G, Sil G, Sericite P	Py 2-3% Cpy <1% Mos <1%	45° Py Cpy
	Medium Grained Silicious Granite Porphyry Pyrite Content Increases Sharply	Feldspar G, Sil G, Sericite F	Py 3-4% Traces Cpy & Mos Total Sulfides 3-4%	60° Py 45° Py
	Medium Grained Silicious Granite Porphyry	Feldspar I, Sil G Sericite F Chlorite P.	Py 3-4% Traces Cpy & Mos. Total Sulfides 3-4%	45° Py 45° Py Cpy 30° S
	Medium Grained Silicious Granite Porphyry	Feldspar I, Sil G, Sericite P, Chlorite F	Py 3-4% Cpy <1% Tr. Mos Total Sulfides 3-4%	45° Py Cpy 30° Py 30° S
	Medium Grained Silicious Granite Porphyry With Bands Of Silicification	Feldspar I, Sil G, Sericite F Chlorite F	Py 3-4% Cpy <1% Tr Mos Total Sulfides 3-4%	45° Py 45° Py Cpy 60° Py
	Medium Grained Silicious Granite Porphyry With Fault Material 1343 to 1344'	Feldspar I, Sil G, Sericite F. Chlorite M Feox P	Py 3-4% Cpy <1% Tr. Mos Traces Feox Total Sulfides 3-4%	45° Py 30° S 10° Py Cpy Feox
	Medium Grained Silicious Granite Porphyry With Fault Breccia 1351 to 1356.	Feldspar I Sil G, Sericite P Chlorite G Feox P	Py 3-4% Cpy <1% Mos <1% Traces Feox Total Sulfides 3-4%	60° Py Cpy 60° Py Cpy 45° Py Cpy
	Medium Grained Silicious Granite Porphyry	Feldspar I, Sil G, Sericite F, Chlorite G, Feox P.	Py 3-4% Cpy <1% Mos <1% Traces Feox Total Sulfides 3-4%	45° Py Cpy 10° Py Cpy
	Medium to Fine Grained Granite	Feldspar G, Sil G, Sericite P	Py 1-2% Cpy <1% Tr Mos.	45° Py Cpy
	Medium to Fine Grained Granite With Lens Pegmatite	Feldspar G, Sil G, Sericite F	Py 1-2% Cpy <1% Tr Mos.	10° Py Cpy
	Fractured Pegmatite With Lenses Of Granite	Feldspar M, Sil G Feox P	Py 1-2% Tr Cpy & Mos & Feox Total Sulfides 1-2%	60° Py Cpy 45° Py Cpy
	Fractured Pegmatite With Lenses Of Granite	Feldspar M Sil G, Feox F	Py 1-2% Tr Cpy & Mos. Feox Total Oxidation Of Sulfides 5-10% Total Sulfides 1-2%	100° Py Feox 20° Py Feox 15° Py Feox
	Medium to Fine Grained Granite	Feldspar G, Sil G Sericite P Chlorite F Feox P	Py 1-2% Cpy <1% Tr. Mos Total Sulfides 1-2%	10° Py 15° Py
	Medium to Fine Grained Granite With Lenses Of Pegmatite	Feldspar G, Sil G Sericite F Chlorite F Feox P.	Py 1-2% Cpy <1% Mos <1% Feox Total Oxidation Of Sulfides 5-10% Total Sulfides 1-2%	60° Py
	Medium to Fine Grained Granite With Lenses Of Pegmatite	Feldspar G, Sil G, Sericite F, Chlorite F Feox P.	Py 1-2% Cpy <1% Mos <1% Traces Feox Total Sulfides 1-2%	60° Py Cpy 60° Py Cpy 60° Py Cpy Mos

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Silver Mountain

HOLE NO. SM-9 SHEET NO. 1
COORDINATES 16600N 19800E
TYPE DRILL [illegible] BIT SIZE [illegible]
DATE STARTED Jan 28, 1964

COLLAR ELEVATION 288[illegible]
TOTAL FOOTAGE [illegible]
LOGGED BY [illegible]
DATE COMPLETED
Line Inclined Right
Line Inclined Right
Line Inclined Left

FROM	TO	CORE RE-COVERY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION
0	10	–	No Core			
10	20		Andesite	Gray Red Andesite to 15' then Red Porous Andesite		
20	26		"	Porous Red Andesite with specks of calcite to 26 [illegible] Red Andesite [illegible]		
[illegible]	[illegible]			Porous at 29		
30	40		"	Porous Red Andesite with calcite in broken surfaces		
40	50		"	Andesite Breccia with fragments of buff & Red Andesite well healed.		
50	57		"	Andesite Breccia with fragments of buff & Red Andesite well healed		
57	[illegible]		"	Sandy conglomeratic Andesite fine grained		
60	67		"	with angular fragments of Andesite		
67	70			Porous Red Andesite with calcite specks		
[illegible]	80		"	Porous Red Andesite with calcite specks to 78 then Buff Tuffaceous Andesite to 76 then Porous Red Andesite with angular fragments of Red Andesite		
[illegible]	90		"	Porous Red Andesite with specks of calcite		
[illegible]	96		"	Porous Light Red Andesite to 96 then Fine-grained Red Andesite with silica inclusions.		
[illegible]	100			Dense Red Andesite with silica inclusions		
100	110		"	Dense Red Andesite with silica inclusions		

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Sheep Mountain

ET NO. 1
198005
SIZE NX CAL

COLLAR ELEVATION 2885
TOTAL FOOTAGE
LOGGED BY [illegible]
DATE COMPLETED

Line Inclined Right - S - Fracture, Barren
Line Inclined Right (S) Fractures 71 Per Foot
Line Inclined Left Mineralized

ROCK DESCRIPTION	ALTERATION	METALLIZATION	GRAPHIC LOG
Gray Red Andesite to 15' Then Red Porous Andesite			
Porous Red Andesite With Specks Of Calcite ~~to 26 Then Fractured Red Andesite Becoming~~ Porous At 29			
Porous Red Andesite With Calcite In Broken Surfaces			
Andesite Breccia With Fragments Of Buff & Red Andesite Well Healed.			
Andesite Breccia With Fragments Of Buff & Red Andesite Well Healed			
Sandy Conglomeratic Andesite Fine Grained			
" " " " With Angular Fragments Of Andesite			
Porous Red Andesite With Calcite Specks			
Porous Red Andesite With Calcite Specks to 78 Then Buff Tuffaceous Andesite to 76 Then Porous Red Andesite With Angular Fragments Of Red Andesite			
Porous Red Andesite With Specks Of Calcite			
Porous Light Red Andesite to 96 Then Dense Red Andesite With Silica Inclusions.			
Dense Red Andesite With Silica Inclusions			
Dense Red Andesite With Silica Inclusions.			

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Sheet - #2

PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Sheep Mountain

HOLE NO. SM-9 SHEET NO. 2

COORDINATES 16600N 19800E

TYPE DRILL Diamond WL BIT SIZE N/X

DATE STARTED Jan 28, 1964

COLLAR ELEVATION 2885

TOTAL FOOTAGE

LOGGED BY WSL

DATE COMPLETED

LINE INCLINED RIGHT - S

LINE INCLINED RIGHT (S)

LINE INCLINED LEFT

FROM	TO	CORE RE-COVERY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION
110	120		Andesite	Red Andesite With Siliceous Inclusions And Laths Of Feldspar		
120	130		"	Fractured Red Andesite With Siliceous Inclusions And Laths Of Feldspar		
130	140		"	Ditto		
140	148		"	"		
148	150		Andesite	Light Red Andesite With Bentonite Gouge		
150	160		"	" " " " " "		
160	167		"	" " " " " "		
167	170		Andesite	Red Porous Andesite With Laths Of Feldspar		
170	180		"	" " " " " " "		
180	190		"	" " " " " " "		
190	202		"	" " " " " " "		
202	210		Andesite	Fractured Dense Gray Andesite		
210	220		"	" " " "		

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Sheet 2

PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Sheep Mountain

T NO. 2
19800E
SIZE NX
LEG

COLLAR ELEVATION 2885'
TOTAL FOOTAGE
LOGGED BY [illegible]
DATE COMPLETED

LINE INCLINED RIGHT - S - FRACTURE BARREN
LINE INCLINED RIGHT (S) FRACTURES 71 PER FT
LINE INCLINED LEFT MINERALIZED.

ROCK DESCRIPTION	ALTERATION	METALLIZATION	GRAPHIC LOG
Red Andesite With Siliceous Inclusions And Laths Of Feldspar			
Fractured Red Andesite With Siliceous Inclusions And Laths Of Feldspar			
Ditto			
Light Red Andesite With Bentonite Galls			
" " " " " "			
" " " " " "			
Red Porous Andesite With Laths Of Feldspar			
" " " " " " "			
" " " " " " "			
" " " " " " "			
Fractured Dense Gray Andesite			
" " " "			

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PHELPS DODGE CORPORATION

GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Sugar Mountain

HOLE NO. SM-9 SHEET NO. 3
COORDINATES 16600N 19800E
TYPE DRILL Diamond Drill BIT SIZE NXWL
DATE STARTED Jan 29, 1961

COLLAR ELEVATION 2885
TOTAL FOOTAGE
LOGGED BY
DATE COMPLETED
LINE INCLINED RIGHT -
LINE INCLINED RIGHT
LINE INCLINED LEFT

FROM	TO	CORE RE-COVERY	ROCK TYPE	ROCK DESCRIPTION	ALTERATION	METALLIZATION
220	231		Andesite	Fractured Gray Andesite		
231	240		Andesite	Hard Dense Red Maroon Andesite With Crystal Lined Growth In Vugs And Fractures		
240	250		"	Hard Red Maroon Andesite With Quartz In Fractures		
250	260		"	✓ ✓ ✓ ✓ ✓ ✓		
260	270		"	✓ ✓ ✓ ✓ ✓ ✓		
270	280		"	✓ ✓ ✓ ✓ ✓ ✓		
280	287		"	✓ ✓ ✓ ✓ ✓ ✓		
287	290		Andesite	Gray Pink Andesite Porphyry		
290	301		"	" " " "		
301	310		Andesite	Light Pink to Buff Andesite		
310	320		"	" " " "		
320	330		"	" " " "		

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Sheet 3

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PHELPS DODGE CORPORATION
GEOPHYSICAL RESEARCH AND EXPLORATION DEPARTMENT

GEOLOGIC LOG

Project Sheep Mountain

ET NO. 3
198DDE
SIZE NXWL
1964

COLLAR ELEVATION 2885'
TOTAL FOOTAGE
LOGGED BY [illegible]
DATE COMPLETED
LINE INCLINED RIGHT - 3 - FRACTURE, BARREN
LINE INCLINED RIGHT (5) FRACTURES 71 PER FOOT.
LINE INCLINED LEFT MINERALIZED

	ROCK DESCRIPTION	ALTERATION	METALLIZATION	GRAPHIC LOG
ITE	FRACTURED GRAY ANDESITE			
ITE	HARD DENSE RED MAROON ANDESITE WITH CRYSTAL INNER GROTH IN VUGS AND FRACTURES			
	HARD RED MAROON ANDESITE WITH QUARTZ IN FRACTURES			
	✓ ✓ ✓ ✓ ✓ ✓			
	✓ ✓ ✓ ✓ ✓ ✓			
	✓ ✓ ✓ ✓ ✓ ✓			
	✓ ✓ ✓ ✓ ✓ ✓			
ITE	GRAY BLACK ANDESITE PORPHYRY			
	" " " "			
	LIGHT PINK TO BUFF ANDESITE			
	" " " "			
	" " " "			