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0070

Volume 5 ; Book 5

TOMBSTONE

Mining District

Cochise County

ARIZONA

Charleston Drilling - #2
DDH's #4 - #10 ; CHS's #1 - #3
(1969 to 1982)

Southwestern Exploration Associates

Mineral Exploration & Natural Resource Consultants

Tucson, Arizona

V5 #1
V5 B5
Box 11

D.D. #4 A065

Bear Creek

146

THIN SECTION REPORT OF SPECIMENS

FROM CHARLESTON MINE

September 24, 1969

No. C-69-3977

Location: U.S.A.; Charleston Mine; Hole #4 @ 1,481'; H. L. Jones, Albuquerque, N. Mexico; Assay No. E-7853.

Classification: Highly altered rhyodacitic volcanic. Strongly carbonatized and saussuritized. Contains about 5% euhedral pyrite, minor v.f.g. disseminated sphalerite, and a trace of chalcopyrite. No molybdenite is present.

No. C-69-3978

Location: Ditto -3977; @ 1,500'; Assay No. E-7854.

Classification: Sample consists of small fragments up to 1/2" in size. Mineralogy as follows:

pale golden yellow sphalerite	60%
galena	10%
pyrite	5%
chalcopyrite	15%
gangue	10%

The sulphides are c.g. except for pyrite which is almost invariably surrounded and corroded by chalcopyrite. No molybdenite.

P.S. enriched in sulphide relative to sample.

No. C-69-3979

Location: Ditto -3977; @ 1,546'; Assay No. E-7855.

Classification: Porphyritic rhyodacite. Consists of rounded and corroded phenocrysts of quartz, phenocrysts of plagioclase and a rhyodacitic matrix. Sulphide mineralization is restricted to minor, f.g., disseminated pyrite.

EFP/lk

.....

GEOLOGICAL SAMPLE RECORD

No: E 7853-785
Per: COP
C693977-37

Name & Address: A. L. JONES
ALBUQUERQUE
NEW MEXICO

Sample Location: U.S.A.
CHARLESTON MINE (80 mi SE Tombstone, Arizona
HOLE #1 "

Correspondence Rec'ed

Samples Received: 9-19-69

Description

C693977 @ 1001' Alt'd rhyolite porp py

C693978 @ 1500' See P.S. Description

C693979 @ 1546' Flow porphyritic rhyolite

See attached sheet.

Analysis Requested

E 7853	Cu	MoS2	S	
7854	"	"	"	Pb Zn
7855	"	"	"	

Sample Sent For Preparation: 9-19-69

Pulp Submitted For Assay: 9-22-69

Assays Rec'd

	Cu	MoS2	S	Pb	Zn
E 7853	.02	<.05	3.65	—	—
E 7854	.50	<.05	11.46	5.81	19.37
E 7855	.02	<.05	.55	—	—

— no sample left
Too dry assay

Interim Letter

Final Reply

Remarks: Not at all similar to porphyry copper deposits but rather, has a close resemblance to massive Cu Pb Zn Ag deposits associated with acid volcanics, eg Texas Gulf, Noranda Area, etc. [illegible] 9-25-69 [illegible]

FORM 225-A
11-66

PROPERTY Charleston Mine Area

Wager's log

Inco.

SHEET NO.

CO-ORDINATES

HOLE NO. 4 DEPTH ANGLE STRIKE ELEVATION

DEPTH FEET	FORMATION	SAMPLE NO.	LENGTH FT.	ANALYSIS COPPER %	ANALYSIS NICKEL %	ANALYSIS CU. & NI. %	LENGTH FEET	PROGRESSIVE TOTALS FEET X PER CENT COPPER	PROGRESSIVE TOTALS NICKEL	PROGRESSIVE TOTALS CU.
1424'	Core seen from 1424'. Reported to be bray, arkosic quartzite for most of upper portion.									
1477'	Quartzite, gry med g mass, no apparent bedding local bxtd zones w/rare sulp mnly py. Enty becomes grayer and less uniform as next unit is approached-bx zone more common									
1487'	(Pb 1-3%) (split zone) arkosic qutzite rubbly and alt'd w/much soft serrcite sulp mnly py and galena									
1499'	(Pb + Cu 1-2%) Latite pale gy green varigated w/purple zones abundant py as diss cubes loc structure zones w/bleached, alt'd and broken core. Heavier Cu & Pb in shr'd sects grade est?? no sphalerite observed.									
1501'	(Pb-Cu 1-2%) Shr'd zone rock prob as pre but strongly alt'd and bleached Chip Sample 1479-1501'									
1510'	Bx Zone - poorly cemented bx, rock mainly green porphyry (leucite?) light green phenos in dk mx. no imp't sulph									
1522'	Ditto, but less shr'd and bxt'd bot of enty is good mass green porphyry									

RECEIVED
MAR 30 1970
JAMES STEWART COMPANY
PHOENIX, ARIZONA

FORM 225-A
11-68

PROPERTY Charleston Mine Area

SHEET NO. 2

HOLE NO. 4 DEPTH ANGLE STRIKE ELEVATION

CO-ORDINATES

DEPTH FEET	FORMATION	SAMPLE NO.	LENGTH FT.	ANALYSIS COPPER %	ANALYSIS NICKEL %	ANALYSIS CU. & NI. %	LENGTH FEET	PROGRESSIVE TOTALS FEET X PER CENT COPPER	PROGRESSIVE TOTALS NICKEL	PROGRESSIVE TOTALS CU. & NI.
1592'	Ditto-unitmuch fresher,									
	phenos def. plag with occ									
	alt'd cores									
1600'	Latite-gy greento purple									
	varigated contact w/pre									
	enty abrupt and shr'd -									
	w/development of py and									
	minor sphalinte enty									
	strongly shr'd andbroken									
	1594-1598'									
1611'	Ditto-last 2' strongly									
	shr'd and broken @ 30°									
	End of Nx core									
1762'	Latite - gy green - prple									
	varigated poss flow bx or									
	tuff - shr'd 1611' to									
	1616' split and smpld									
	rubble w/occ stringers									
	galena, cpy grade est??									
	looking back over core from									
	1600, could be tuff sect w/									
	vuggy to elongate frags in									
	fg mx. Dk diss patches									
	poss Pb or Zn spec for Ps and									
	assay 1729' enty strongly									
	shr'd, alt'd and bxt'd									
	1745'-1762'									
1791	Green porphyry - as enty									
	to 1510 and 1592 - bot of unit									
	strongly shr'd									
1796	(Cu-5%) shr'd porphyry									
	as pre hvy diss and xline									
	Cpy (Sample 1791'-1796')									
1824.5	Shr'd zone - tuff and									
	porphyry as pre heavy diss									
	much sericite overall sample									

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PHOENIX, ARIZONA

FORM 225-A
11-66

PROPERTY Charleston Mine Area

SHEET NO. 3

HOLE NO. 4 DEPTH _____ ANGLE _____ STRIKE _____ ELEVATION _____

CO-ORDINATES _____ _____

DEPTH FEET	FORMATION	SAMPLE NO.	LENGTH FT.	ANALYSIS COPPER %	NICKEL %	CU. & NI. %	LENGTH FEET	PROGRESSIVE TOTALS FEET X PER CENT COPPER	NICKEL	CU. & NI
	1762' - 1830'									
1896	Quartzite - gry to pk variable appears to be interbedded w/varigated tuff suspect sphal last several feet and poss Ag sulp salts - spec for P.S and assay @ 1890'									
1903'	(Cu-2%, Zn-10%, Pb-2%??) metased as pre with hvy diss and xline sphal, galena, Cpy Sample 1896-1903'									
1941'	Tuff, pale gy grn varigated occ dk gy "slaty" zones									
1965'	Quartzite-bot of enty shr'd and broken contact obscure									
1999'	Tuff-gry green varigated									
2002	Dike-dk gy felsite good upper contact @ 45° w/ frags of tuff lower contact gradational into qtzite									
2025	Quartzite-pyritic zone last 4' typical spec @ 2424 for Ps and assay									
2041	Latite? gy green poss amydg flow not like pre tuffs, more granular contains irregular incls.									
2097	Interbedded sediments and volcanics									
2099	(Zn-10%, Cu-2%) Porphyry hvy sphalinte in porphy 45° contacts in pre enty									
2104'	(Zn-2%, Cu-1%) mineralized									

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PHOENIX, ARIZONA

FORM 225-A
11-66

PROPERTY Charleston Mine Area

SHEET NO. 4

HOLE NO. 4 DEPTH _____ ANGLE _____ STRIKE _____ ELEVATION _____

CO-ORDINATES _____ _____

DEPTH FEET	FORMATION	SAMPLE NO.	LENGTH FT.	ANALYSIS COPPER %	ANALYSIS NICKEL %	ANALYSIS CU. & NI. %	LENGTH FEET	PROGRESSIVE TOTALS FEET X PER CENT COPPER	NICKEL	CU. & N
	gray quartzite									
2129'	Volcanics-fg tuff-flows									
	varigated bands of purple									
	andisite									
2183	Volcanics-sht runs w/much									
	broken core									
2241'	Volcanics - includes runs									
	of purple andisite									
2290	Green porphyry									
2314	Gray quartzite									
2384	Seds and volcanics - runs									
	of purple andisite									
2430	Ditto-last core shows traces									
	of cpy.									

RECEIVED
MAR 30 1970
JAMES STEWART COMPANY
PHOENIX, ARIZONA

FORM 223.5
11-66

PROPERTY Charleston Mine

Inco

SHEET NO. 7

HOLE NO. #4 DEPTH _____ ANGLE V STRIKE _____ ELEVATION _____

CO-ORDINATES _____

DEPTH FEET	FORMATION	SAMPLE NO.	LENGTH FT.	ANALYSIS COPPER %	ANALYSIS NICKEL %	ANALYSIS CU. & NI. %	LENGTH FEET	PROGRESSIVE TOTALS FEET X PER CENT COPPER	PROGRESSIVE TOTALS FEET X PER CENT NICKEL	PROGRESSIVE TOTALS FEET X PER CENT CU. & NI.
	relationships are complex but overall enty is a thick repetitous sequence.									

Hewitt Enterprises Box 978 A Sandy, Utah 84070 801-571-0157

6 file - 303

CHARLESTON MINE AREA
DRILL HOLE NO. 4

0	- 852	Meta andesite
852	- 941	Meta andesite, with calcite stringers.
941	- 948	Fault gouge.
948	-1080	Meta andesite breccia; fragments of andesite, quartzite, red silstone and arkose. Arkose contains minor disseminated pyrite.
1080	-1106	Arkose with less than 1% finely desseminated pyrite (minor epidote stringers at 1100-1104).
1106	-1130	Fault gouge - epidote on fractures.
1130	-1133	Siltstone.
1133	-1134	Arkose, banding 50° to core axis, possibly bedding.
1134	-1137	Red siltstone.
1137	-1156	White quartzite, very minor disseminated fine grained pyrite.
1156	-1159	Quartzite breccia, gougy with inclusions of porphyritic rock.
1159	-1162	Quartzite.
1162	-1167	Quartzite breccia with angular fragment of prophyry, gougy material with sericite.
1167	-1210	Porphyry, highly altered with much sericite and clay, 1167 to 1185 broken with much gouge, pyrite more abundant in gouge zones.
1210	-1222	Arkose, .5% pyrite, crushed zone.
1222	-1229	Porphyry, 1% pyrite altered with some sericite.
1229	-1277	Fine ground white quartzite with very minor disseminated pyrite, 1% banding 50° to core axis.
1277	-1307	Fine grained gray hornfels, very little quartz. Rock mottled 1284 to 1292, fine grained pyrite disseminated throughout, approximately 2%, grades into quartzite.
1307	-1326	White quartzite, fine grained, very minor disseminated pyrite, .1% or less.
1326	-1391	Arkose, crushed zone 1331 to 1336, healed fault zone 30° to core axis at 1332, mottled and fine grained 1357-1359, mottled and fine grained 1388-1391. Disseminated pyrite-.5%.
1391	-1398	Arkose, minor disseminated pyrite - .5%.
1398	-1402	Crushed zone with clay and sericite, disseminated sulphides, minor sphalerite - 3% total sulphide.
1402	-1424	Arkose, grades to quartzite at 1424.
1424	-1455	Quartzite, grades to arkose at 1455.
1455	-1487	Arkose, 1478-pyrite, galena, sphalerite and chalcopyrite disseminated throughout the rock, sphalerite 20%, lead [illegible], cpy 1%. 1479 1" solid galena and sphalerite; 1480-1481 gouge with sericite; 1483-1484 gouge with sericite; 1480-1481 disseminated sphalerite and pyrite, 5% sulphides.
1487	-1494	Stony arkose or hornfels, strong silicification, disseminated pyrite - 5%.
1494	-1496	Same

1496 -1498.5	Mottled arkose mineralized 5% - 10% pyrite some chlorite.
1498.5-1501	Porphyry highly altered some sericite with chlorite and sulphides 5% pyrite 3% lead 5% sphalerite.
1501 -1590	Porphyry broken and altered but less sericite, more chlorite sulphide, mostly pyrite - 1% mineralized plus 3% sulphides, some sphalerite and lead 190-191, several 1/2 inch stringers, minerals 10° to core axis.
1590 -1688	Greenish grey arkose, 3% sulphide 1590-1591; badly broken and gougy 1594-1598; fractures 10° to core axis, calcite filling on fractures. Some epidote and chlorite? Mottled, 1611-1612 no core, 1612-1616 60% core, 1612-1616 chlorite with 2% pyrite 1% galena 2% sphalerite .5% cpy; 1626-1631 grades to silstone, 1631-1636 highly silicified, quartz and epidote stringers 10° to core axis. 1636-1643 badly broken with some sericite. 1626-1688 silicified pink colored arkose some introduce fine grained pink K feldspar. 1663-1665 gouge and broken, badly broken and gouge 1672-1713.
1688 -1726	Coarse grey arkose, some chlorite, pyrite 2% sericite and clay in gouge zone. 1727-1730 minor disseminated sphalerite, galena.
1726 -1745	Grades back into silicified pink arkose.
1746 -1747	White quartzite.
1747 -1762	White quartz ground to powder.
1762 -1773	Grades from arkose to prophyry, very soft and highly altered, some chlorite, 5% pyrite, .5% cpy.
1773 -1791.5	Porphyry, green altered feldspars, some introduced pink K feldspar.
1791.5-1802	Mineralized zone originally arkosic quartzite, primarily cpy 10-15% average. Minor galena and sphalerite.
1802 -1812	Arkose, 1802-1803 20% core recovery, gouge 1806-1810 60% core recovery, 3% sulphides mostly pyrite, 3% disseminated cpy 1810-1812.
1812 -1822	Arkose with disseminated 5% cpy, minor galena and sphalerite 1820-1822.
1822 -1824	Arkose with numerous calcite stringers 2% sulphides mostly pyrite.
1824 -1831	Quartzite 2% sulphides, mostly pyrite.
1831 -1833	Quartzite, light grey 1-2% pyrite, silicified vein 6" width sphalerite and lead, 5% sulphides.
1833 -1854	Silicified arkose, purple and coarse grained with disseminated galena and sphalerite, 1852.5-1853.5, 6% sulphides.
1854 -1871	Arkose, light gray to light purple, pyrite .5%.
1871 -1874	Broken fine grained gray quartzite with 1% pyrite, minor sphalerite specks, some chlorite blebs.
1874 -1882	Light gray arkose, pyrite filled fracture 45° to core at 1875 sulphides -.5%.
1882 -1895.5	Grey arkosic quartzite, disseminated pyrite and sphalerite 1% sulphides, chlorite in last one foot.
1895.5-1903	Mineralized arkose which appears to be almost porphrytic with introduce pink K feldspar and chlorite (cpy, sphalerite, pyrite) 5-6% sulphides.
1903 -1906	Dark gray very fine grained arkose with blebs of olivine, disseminated sulphides, mostly pyrite 3-5%.

1906	-1929	Brecciated and cemented arkose very much mottled with chlorite, olivine and introduce K feldspar present. Rock appears pink, pyrite -.5%. 1920-1925 very dark gray siltstone silicified with 2% pyrite. Very highly altered and bleached.
1929	-1957	Light gray arkose, 1938-1940 similar to previous section, sulphides .5%, blebs of olivine surrounded by chlorite.
1957	-1969	Highly altered arkose? with much sericite and minor chlorite highly bleached, banding 50° to core axis, disseminated sphalerite at 1963, 6" minor pyrite in section -.5%.
1969	-2001	Very similar to section from 1906-1929, broken with sericite 1978-1979, 1" sphalerite vein 15° to core axis at 1993, pyrite approximately 1%.
2001	-2003	Very dark arkose, .5% pyrite, minor specks of cpy.
2003	-2072	Light grey arkose, pyrite -.5%, 10% pyrite 2023-2026, 2034-2041 finer grained with more pyrite and more highly altered, 1% pyrite, fault zone with sericite, 2044-2046. Fault gouge 2053-2054. Strong alteration 50° to core axis 2057-2058, bleached bedding or banding 50° to core axis at 2071.
2072	-2196	Hornfels or siltstone, strong silicification with olivine blebs and minor chlorite patches, some sericite, arkose 2090.5-2094; 2097.5-2104 healed breccia, mineralized zone with introduce quartz phenocrysts. 1.5' core lost, 10% sphalerite, 2% cpy, 5% pyrite, 2101-2104 30% core recovery 2123-2124 core is deep purple colored with white splotches, 2161-2181 core badly broken with much sericite. Mineralized arkose, sphalerite 6%, cpy 2%, pyrite 8%, 2183-2190, one foot core missing. 2190-2196 broken with sericite.
2196	-2225	Purple siltstone, bleached and broken with sericite 2198-2206, very dark purple 2214-2223.
2225	-2242	Arkose, light gray becomes porphyritic 2241 some sericite development near porphyry contact. Mineralized zone 2230.5-2236, sphalerite 4%, cpy 1%.
2242	-2290	Porphyry, 2249-2250 test for sphalerite. Mineralized porphyry silicified altered with gouge and cpy 2% sphalerite 3% pyrite 5%, sericite 30% core recovery, 2276-2283. 2277-2283 only 2 feet core recovered.
2290	-2313	Arkose 2290-2291 2" salmon colored igneous veinlet 10° to core axis at 2290 looks aplitic, quartzitic 2300-2309.
2213	-2334	Very fine grained gray silicified hornfels with minute angular quartz crystals as eyes look slightly oplitic from 2329-2334, becomes arkosic about 2330.
2334	-2336	Dark purple arkose, white splotches.

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GENERALIZED DESCRIPTIVE LOG

Charleston Lead Mine | Cochise County | James Stewart Construction Co.

HORNE(STEWART) #4 DRILL HOLE

0-15	No core
15-32	Fraglomerate, coarse, angular, sedimentary rock fragments in fine-milled matrix. 26-32: Fracture zone, broken core
32-46	Volcanic, Latitic-andesitic flow, argillic along fractures; feldspar phenocrysts 1-2 mm slightly altered, fresh hornblende 44-46: Fracture zone, highly argillized, no mineralization, 25°
46-79	Fraglomerate, volcanic rock fragments up to 1 1/2" diam., matrix locally serpentinized. Fractures: at 54', quartz vein 20°; 58-60' shear zone with quartz-calcite vein, 5°-15°; 65-70, broken core, gouge, fracture zone minor Fe oxide.
79-99	Graywacke, composed of reworked volcanic fragments; 87-89' fracture zone 15°; 95-98' fractures, fresh core, high angle shears with minor argillization; calcite stringers throughout; minor Fe oxide along shears
99-100	Fracture zone with strong argillization and possible alunization; weak Fe oxide staining; some calcite veining; shear directions diverse
128-256	Graywacke, reworked volcanic material, chloritic, argillic with alteration decreasing away from fracture zone. Color changes from green-gray to maroon 152+156: 6" fractures with calcite stringers, minor pyrolusite, high angle 161-163: Bleached zone, minor Fe oxide fracture controlled, 30° color variegated maroon to green 195-203: Bleaching, fracturing <1% pyrite mostly oxidized, 60° 210-215: Crushed core, minor calcite veining, gouge, no sulfides. 215-230: Core irregularly broken, argillic 238-246: Broken core
256-273	Graywacke, fine-grained, gray, conglomeratic, similar to above, 1-5% disseminated pyrite.
273-559	Reworked volcanics, chloritic, argillic 292-295: Fracture zone, gouge, no sulfides 323-327: Fracture zone, irregular calcite stringers 357-359: Fracture zone, 30°, minor pyrite 373-387: Disseminated pyrite 1-3%, bleached, color mottled green to maroon 380-381: Quartz vein with pyrite 30°, 3" gouge at top 474-476: Fracture zone, 15°, chloritized, pyritized, kaolinized

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	512-518: Fracture zone with pyrite 1%, slight bleaching
	530-537: 1% disseminated pyrite, slight bleaching, quartz-calcite vein 10° rock becomes grayer and finer grained.
559-564	Volcanic, gray, porphyritic, feldspars slightly altered, 1% magnetite in clumps.
564-587	Graywacke, fine-grained, gray similar to 530-559
	567: Bleached with disseminated pyrite
	567-569: <1/2% pyrite disseminated, weak bleaching, fracture control
587-617	Breccia, matrix same as above, volcanic and sediment fragments up to 4" diam.
617-721	Graywacke, of reworked volcanics, gray to maroon, abundant calcite stringers
	720: 1-1/2" calcite vein
721-803	Gradational contact of graywacke as above with graywacke, with calcite stringers, trace of disseminated pyrite
	779-781: Fe oxide on fractures 5-30°
803-1133	Arkosic graywacke, red, abundant calcite stringers, no pyrite
	828-835: Broken core, abundant calcite and clay stringers
	982-1017: Highly broken core, no alteration
	1017-1036: Red arkosic breccia, clasts of shales and volcanics
	1036-1042: Graywacke gray volcanoclastic sediment
	1042-1060: Broken core, minor Fe oxide, no pyrite
	1060-1085: Breccia with fine, arkosic matrix, fragments up to 1" diam.
	1085-1104: Graywacke of sandy breccia, fragments up to 2" diam.; strongly fractured drusy quartz and calcite on fracture surface; minor Fe oxide staining
	1104-1133: Major fracture zone; gouge, broken core, sandy to arkosic, no alteration
1133-1167	Sandstone, light gray, very thin contorted bedding; trace pyrite on fracture, core highly broken
	1143-1162: Massive beds
	1162-1166: Conglomeratic with sandstone and volcanic clasts, highly broken
	1166-1167: Barren quartzite
1167-1175	Gouge, barren
1175-1229	Volcanics; hornblende dacite porphyry, light gray, phenocrysts of hornblende and feldspar, argillized, traces of pyrite locally, epidotized, highly broken throughout
	1180-1184: Gouge
	1185-1199: Possible K-spar phenocrysts
	1207-1209: Gouge
	1220-1222: Gouge
	1222-1229: Brecciated picking up quartzite fragments from below; 0.5% pyrite

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1229-1488	Quartzite, white, fine-grained, clay cement, massive, locally broken
	1277-1292: Broken zone, argillic, locally conglomeratic, quartzite clasts.
	1331-1335: Gouge
	1335-1351: Broken core
	1374-1376: Bedding 25°
	1470 Pyrite content small but increasing with depth
	1478 Altered quartzite, blebs of sphalerite with accessory pyrite, chalcopyrite; stringers of sphalerite and galena; highly fractured with chlorite in seams. Chlorite in matrix increases with depth
	1480-1481: Gouge
	1481 Argillized quartzite, pyrite, chloritic, epidote, highly broken
1488-1496	Shale, green, highly broken, mineralized
1496-1591	Gradational fault contact to gray hornblende dacite, highly broken
	1499-1520: Highly broken, epidotized, trace pyr., all hornblende and most feldspar altered to epidote, 15% phenocrysts, hornblende decreasing with depth
1591-1721	Shale, gray, mottled: broken core to 1630; disseminated pyrite 0.1-0.2% calcite stringers
	1630 and below: Epidote-chlorite-calcite-pyrite nodules with epidote-chlorite alteration in rock
	1662-1665: Gouge
	1670 Disseminated pyrite $>$0.2%
	1688-1696: Gouge
	1696-1709: Broken core and gouge, grain size increases with depth
1721-1762	Gradational contact with fine-grained, white-gray, quartzite, 0.1-0.5% pyrite; epidotization, silicification
	1730-1762: Crush core, transitional fault contact with volcanics below, gouge near bottom
1762-1822	Gray dacite, porphyritic, epidotized plagoclase phenocrysts; 1% pyrite with disseminated galena and chalcopyrite; gouged and broken up to 1774
	1783-1822: Highly broken with local gouge
	1794-1795: Chalcopyrite-quartz vein, chalcopyrite 15%, trace galena, possible tetraledrite, no pyrite
	1795 Vein quartz or highly silicified volcanics
	1810 Minor chalcopyrite
	1818-1820: Quartz-chalcopyrite vein, 8% chalcopyrite
1822-2027	White quartzite, local shaley zones, 2% disseminated pyrite
	1894-1899: Sphalerite-chalcopyrite stringers, minerals become disseminated after 1896: 0.5% chalcopyrite, 2% sphalerite, minor pyrite

1904-1911: Epidotized quartzite, fine-grained
1912: Black shale, trace pyrite, epidote stringers
1924-1930: Bleached, epidotized, pink shaley quartzite
1930: White quartzite, epidotized <0.1% pyrite
1950: Quartzite becomes argillic and crushed; abundant vertical fractures
1959-1967: Vertical fractures, epidote stringers and nodules
1978-1982: Quartz-pyrite-sphalerite stringers
1989-1992: Epidote tactite with disseminated epidote-sphalerite-galena
1990-1994: Quartz-sphalerite-chalcopyrite veins
1992-1996: Quartz-pyrite-sphalerite stringers
Epidotization disappears at 2001
2001-2024: Trace pyrite
2024-2025: 1% coarse euhedral pyrite, 0.1% chalcopyrite
2025: Quartzite with epidote stringers and nodules

2027-2087 Very fine-grained, gray quartzite; 0.1% disseminated pyrite, pyrite on fractures, epidote-chlorite-calcite nodules, hornfelsic

2087-2105 Medium to fine-grained quartzite, 0.1% pyrite
2095: Epidote-garnet tactite; disseminated sphalerite-pyrite-chalcopyrite
2097-2105: 15-20% sphalerite, 0.5-1% pyrite

2105-2243 Hornfelsic quartzite, epidotized; epidote-chalcopyrite-pyrite nodules
2115: Sulfides disappear, alteration continues but weakens with depth to 2170
2161-2206: Broken core
2184-2190: Epidote tactite, sphalerite, chalcopyrite, quartz. Sphalerite 15-20% in nodules, 0.3-0.4% chalcopyrite over interval increase to 1% with depth
2190-2214: Shaley quartzite, epidotic; some arkosic sediments
2214: Maroon mudstone becoming coarser grained and grayer with depth, at 2224 passes into gray quartzite
2224: Disseminated euhedral pyrite, epidote
2230-2236: Sphalerite and chalcopyrite in stringers; 0.5% pyrite disseminated

2243-2290 Dark gray hornfelsic quartzite or volcanic rock, epidote blebs, trace pyrite
2277-2283: Fracture zone, broken rock, quartz-chalcopyrite stringers. Host pyritized 4' on both sides of fracture; 2% pyrite
2290: Silicified hornfelsic quartzite, 1% pyrite

2293-2487 Arkosic quartzite, hornfelsic, epidotic, argillic; epidote in stringers and nodules white to gray, medium-to fine-grained; local pyritic zones up to 0.5% pyrite local maroon arkosic zones.
2364-2388: Maroon mudstone becomes coarser with depth
2388: Fined-grained shaley gray quartzite, trace pyrite

2398-2408: Maroon mudstone
2408: Fine-grained gray quartzite, 0.2-0.4% pyrite, epidote nodules
2413-2473: Epidotic, hornfelsic, shaley, very fine-grained quartzite. Top and bottom strongly mottled with epidote stringers-intensity decreased toward middle, epidote nodules throughout, disseminated pyrite and chalcopyrite
2429-2430: Sphalerite stringers 1/8" wide
2434-2438: Sphalerite stringers
2438-2473: 1% disseminated pyrite

2487-2501 Medium-grained argillic quartzite, thin beds, 70°, varying epidote, no pyrite
2490: Pyrite increases to 3% with depth, epidote
2497: Sphalerite veins

2501-2510 Shaley hornfels, epidote and clay stringers, 0.5% disseminated pyrite grain size increases downward.

2510-2765 Fine grained, white quartzite, locally argillic, clear, variable disseminated pyrite
2560-2578: Shaley quartzite, epidotic, hornfelsic, epidote nodules, trace pyrite
2597-2605: Disseminated pyrite, chalcopyrite, galena, sphalerite, epidotic
2611-2642: Fine-grained argillic quartzite, epidotic, local pyrite, trace chalcopyrite
2642-2674: Fine-grained quartzite, 0.1-0.2% pyrite, a few sphalerite-galena-chalcopyrite-pyrite stringers
2674: Argillic quartzite, epidote nodules, 0.5% pyrite
2699-2706: Quartz-epidote-chlorite tactite and veins, trace pyrite and chalcopyrite
2706-2709: Very fine-grained white argillic quartzite, trace pyrite
2709-2758: Very fine-grained, highly epidotized, argillic quartzite, 0.5% pyrite
2758-2765: Red arkosic quartzite, no pyrite

2765-2881 Alternating gray quartzite and maroon mudstone, no pyrite or epidote
2765-2789: Quartzite
2789-2791: Mudstone
2791-2797: Quartzite
2797-2802: Mudstone
2802-2809: Quartzite
2809-2810: Mudstone , some epidote
2810-2881: Quartzite, some epidote

2881-3415 Alternating hornfelsic shales and gray quartzites, both epidotized
2881-2884: Hornfelsic shale, 1% pyrite, trace chalcopyrite
2884-2895: Quartzite
2895-2961: Hornfelsic shale, no pyrite, pink, bedding 60°
2961-2982: Quartzite, heavy epidote below 2975, trace galena, sphalerite, very vuggy

2982-3002:	Hornfelsic shale	no disseminated pyrite
3002-3019:	Quartzite	
3019-3044:	Hornfelsic shale	
3044-3059:	Mudstone, pyrite on fractures	
3059-3080:	Bleached hornfelsic shale, abundant epidote nodules	
3080-3140:	Quartzite, trace of pyrite and chalcopyrite, minor epidote, locally arkosic	
3140-3145:	Bleached epidotic hornfelsic shale	no disseminated pyrite
3145-3177:	Quartzite, spotty epidote	
3177-3209:	Bleached epidotic hornfelsic shale	
3207-3230:	Quartzite, spotty epidote	
3230-3240:	Epidotic hornfelsic shale 3231-3234 bornite and chaclopyrite along seams	
3240-3267:	Quartzite, minor epidote	
3267-3278:	Epidotic hornfelsic shale	
3278-3291:	Quartzite	
3291-3312:	Epidote hornfelsic shale	
3312-3337:	Quartzite	
3337-3357:	Epidote hornfelsic shale 0.5% pyrite, trace chalcopyrite	
3357-3362:	Quartzite, no pyrite	
3362-3367:	Epidote hornfelsic shale	
3367-3415:	Quartzite, some pyrite on fractures	
3415	End of hole	

THIN SECTION REPORT

ON CHARLESTON PROPERTY

November 5, 1969

Preliminary thin section work was done on fifty-four diamond drill core specimens from borehole #4, Charleston Property. The specimen classification with brief explanatory notes is presented below:

Sample	Footage	Classification	Remarks
S69-920	1435'	Quartzite	Consists to over 90% of quartz grains with overgrowth in fg cementing quartz-chlorite matrix. Minor carbonate, feldspar. Well sorted.
S69-921	1460'	Quartzite	Ditto S69-920
S69-922	1477'	Quartzite	Ditto S69-920
S69-923	1488'	Quartzite	Ditto S69-920
S69-924	1506'	Quartz-andesite porphyry	Fg plagioclase-chlorite-(hornblende) matrix with phenocryst of quartz, partly saussuritized plagioclase and hornblende. Minor carbonate replacement. Green colour of phenocrysts in hand specimen is due to epidote replacing plagioclase.
S69-925	1520'	Quartz-andesite porphyry	Ditto S69-924
S69-926	1535'	Quartz-andesite porphyry	Ditto S69-924
S69-927	1570'	Quartz-andesite porphyry	Ditto S69-924

Sample	Footage	Classification	Remarks
S69-928	1604'	Lapilli tuff	Aphanitic quartz-chlorite rich matrix, holds strongly altered fragments of silicates, now largely consisting of epidote and carbonate. Some admixed clastic material.
S69-929	1630'	Tuffaceous sandstone, possibly brecciated	Very fragmental; partly a poorly sorted quartzite, but mostly a fg chlorite carbonate rock with particles of angular quartzite. Strong carbonate metasomatism.
S69-930	1640'	Tuffaceous sandstone to greywacke	A fg quartz-chlorite matrix holds abundant angular grains of quartz and some volcanic rock fragments.
S69-931	1650'	Quartzite, poorly sorted	Abundant angular quartz cemented by fg quartz matrix, partly replaced by carbonate with epidote. Some sericite.
S69-932	1670'	Arkosic quartzite	Poorly sorted, more plagioclase grains than in S69-931.
S69-933	1700'	Quartzite, poorly sorted	Mostly quartz cemented by quartz-sericite-chlorite. Some zeolites.
S69-934	1704'	Quartzite, poorly sorted	As S69-933
S69-935	1747'	Quartzite	As S69-920; quartz shows overgrowth.
69=936	1768'	Quartz-andesite porphyry	Ditto S69-924
S69-937	1788'	Andesite porphyry	Ditto S69-924, no quartz phenocrysts
69-938	1800'	Recrystallized greywacke?	Fragmental. A matrix of lathy quartz contains fragments of tuff, chloritic volcanics. Abundant disseminated pyrite cubes. True nature of this rock remains doubtful.

Sample	Footage	Classification	Remarks
S69-939	1812'	Arkosic quartzite	Ditto S69-932
S69-940	1817'	Recrystallized quartzite	Consists essentially of lathy quartz, some carbon metasomatism.
S69-941	1830'	Quartzite	Ditto S69-920
S69-942	1840'	Altered intermed. volcanic	Basically an altered andesite without phenocrysts
S69-943	1860'	Arkosic quartzite	Poorly sorted, as S69-932
S69-944	1880'	Arkosic quartzite	Poorly sorted.
S69-945	1890'	Quartzite	Ditto S69-920
S69-946	1898'	Quartzite	A somewhat pebbly appearance, otherwise as entry above.
S69-947	1900'	Quartzite	Ditto S69-920
S69-948	1902'	Tuffaceous sandstone?	Very fg matrix with clastic quartz grains, disseminated pyrite. Border case between a type of mudstone and tuffaceous sandstone.
S69-949	1930'	Quartzite	Ditto S69-920, but more interstitial fg matrix with much epidote and carbonate. Minor feldspar.
S69-950	1950'	Quartzite	Poorly sorted, ditto S69-931
S69-951	1975'	Quartzite	Poorly sorted, ditto S69-931
S69-952	1994'	Altered tuff	Much replacement by carbonate in coarse particles, and by epidote-amphibole in an interlocking intergrowth.
S69-953	2002'	Greywacke	Contains abundant clastic quartz and lithic fragments in a very fg interstial quartz-chlorite-carbonate matrix.

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Sample	Footage	Classification	Remarks
S69-954	2007'	Arkosic quartzite	Ditto S69-932, with abundant clastic feldspar.
S69-955	2045'	Dacite porphyry	Basically a quartz-feldspar porphyry, strong carbonate-epidote alteration. In general more sodic and silica rich than the quartz-andesite porphyries
S69-956	2070'	Arkosic quartzite	Ditto S69-954
S69-957	2090'	Arkosic quartzite	Ditto S69-954, transitional to a greywacke.
S69-958	2115'	Tuffaceous sandstone	Mixture of clastic quartz and lithic fragments in very fg matrix; similar to S69-930.
S69-959	2125'	Tuffaceous sandstone	As above entry, less coarse particles, much matrix of ashy nature.
S69-960	2140'	Quartzite	Poorly sorted, ditto S69-931
S69-961	2150'	Quartzite	As above entry
S69-962	2180'	Quartzite	Ditto S69-920; well sorted with overgrowth of quartz.
S69-963	2210'	Greywacke	Similar to S69-953. Mixture of clastic particles in an interstial fg quartz-chlorite-sericite-carbonate matrix.
S69-964	2240'	Arkosic quartzite	Transitional to a greywacke and a quartzite. Similar to S69-956
S69-965	2256'	Andesite porphyry	Ditto S69-937
S69-966	2276'	Andesite porphyry	Ditto S69-937
S69-967	2290'	Andesite porphyry	Ditto S69-937
S69-968	2300'	Quartzite	Poorly sorted, angular quartz, as S69-931

Sample	Footage	Classification	Remarks
S69-969	2330'	Tuff	A tuff with minor quartz sand; some lapilli; minor epidote.
S69-970	2340'	Tuffaceous sandstone	Mixture of quartz and lithic fragments in an ashy matrix; similar to S69-958
S69-971	2364'	Tuff to tuffaceous sandstone	Similar to above entry, finer grained.
S69-972	2374'	Tuff	Similar to S69-969
S69-973	2386'	Tuff	Similar to S69-969

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POLISHED SECTION REPORT

ON CHARLESTON MINE

October 28, 1969

Three chips of diamond drill core from borehole #4, Charleston Property, Arizona, were received for polished section examination. The footages of the three specimens are given as: 1729' (S69-915); 1890' (S69-916) and 2424' (S69-917).

Specimen S69-915 @ 1729': A fine grained quartz-feldspar rich rock (latite?) carries about 5% disseminated sulfides. These are major pyrite, minor sphalerite, some galena and a very few specks of chalcopyrite. Pyrite occurs as euhedral cubes measuring up to 400 microns in diameter. Sphalerite forms very ragged, amoeba-like particles (figure 1) ranging in size up to one millimeter across. Smaller and more euhedral sphalerite grains are scattered throughout the rock matrix in minor amounts. Galena is present in trace amounts, usually in close association with sphalerite. Figure 1 shows a typical occurrence of galena as inclusions in sphalerite and as an intermittent rim around the sphalerite particle. In other places galena occurs as small isolated grains in the rock matrix. Small specks of chalcopyrite are found as inclusions in sphalerite.

Pyrite does not contain any visible inclusions of sphalerite, galena or chalcopyrite, but carries numerous inclusions of gangue constituents. A rough estimate of the relative sulfide proportion in the rock is about 85% pyrite, 10% sphalerite, $\leq$5% galena and $<<$1% chalcopyrite.

Specimen S69-916 @ 1890': A fine grained quartz rich rock with about 12 to 15% sulfides. Again the bulk of the sulfides is pyrite, here forming coarse grained lensoid to stringery aggregates. A small proportion of pyrite occurs as small disseminated euhedral grains in the rock matrix. Sphalerite and galena are present in minor amounts and form

angular disseminated grains, again showing a close affinity for each other (figure 2). Chalcopyrite occurs as small inclusions in sphalerite and also as minute grains disseminated throughout the matrix.

Sphalerite in this specimen lacks the ragged, amoeba shaped grain boundaries. It may contain inclusions of galena and chalcopyrite. Pyrite is full of inclusions of gangue constituents but free of other sulfide components. The relative sulfide proportions are estimated at 90% pyrite, 5% sphalerite and galena each and a trace of chalcopyrite. Silver minerals and lead sulfosalts were not observed.

Specimen S69-917 @ 2424': A fine grained volcanic (?) containing about 7% disseminated sulfides. These are mainly coarse grains of pyrite, small particles of sphalerite and a few specks of chalcopyrite. Galena was not observed.

Pyrite tends to form stringery aggregates measuring up to five millimeter in length. The individual euhedral pyrite grains measure up to half a millimeter across. Gangue inclusions in pyrite are less common than in the other two specimens, but a few minute specks of chalcopyrite were seen in some of the pyrites. Sphalerite is present as disseminated grains measuring up to 100 microns across. The relative sulfide proportions are roughly 95% pyrite, >3% sphalerite and <2% chalcopyrite.

The specimens were submitted for chemical analysis; the assay data will be reported when they become available.

Figure 1: Specimen S69-915 @ 1729';
Polished Section;
magnification 90X.

A ragged grain of sphalerite (medium grey) contains abundant inclusions of gangue (dark grey), some pyrite (bright, relief), galena and chalcopyrite (light grey). Along the outside of the sphalerite a thin rim of galena occurs intermittently.

Figure 2: Specimen S69-916 @ 1890';
Polished Section;
magnification 120X.

Sphalerite (medium grey, left) and galena (bright, right). The sphalerite contains a few inclusions of galena (central area, slight relief) and chalcopyrite (bottom area) in addition to some particles of gangue. Another particle of sphalerite is seen in the upper right corner.

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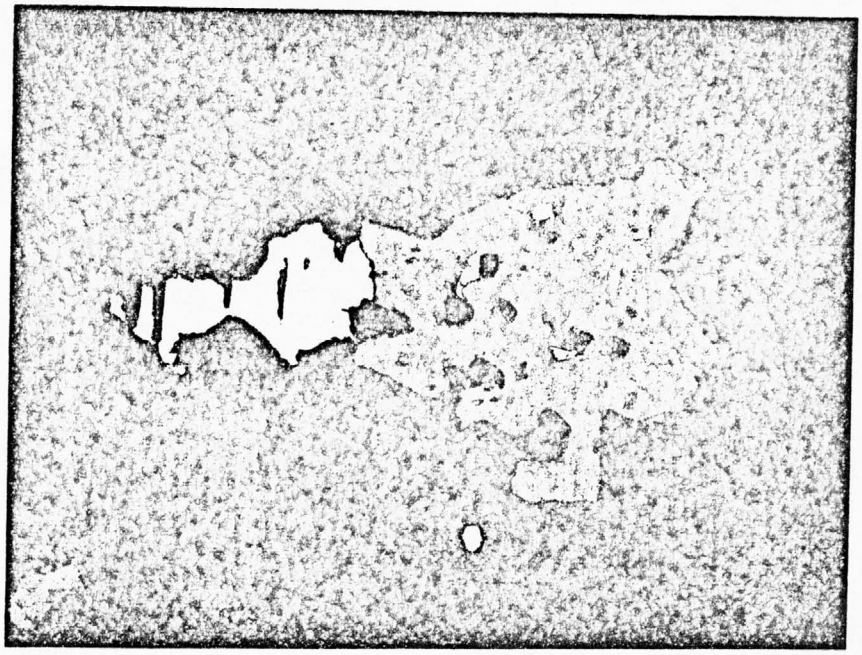

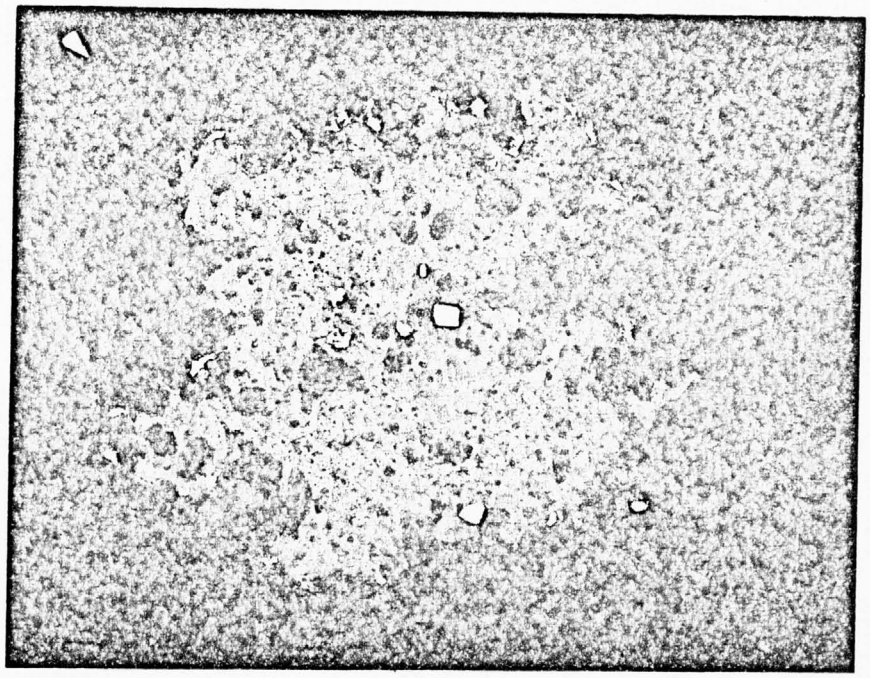

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Charleston Project
Cochise County Arizona

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Page 1
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Core Recovery	Alteration	Chalcopyrite	Sphalerite	Galena	Ag	Pyrite	Rock Type	
								0-S52 Meta andesite
								50
								100
								150
								200
								250

Alteration

	Sericite		Garnet
	Kaolin		Serpentine
	Silica		Biotite
	Chlorite		K Feldspar

Drill Hole No. 4
Collar Elevation
Coordinates
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Inclination 90°

Charleston Project
Cochise County Arizona
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Core Recovery	Alteration	Chalcopyrite	Sphalerite	Galena	Ag	Pyrite	Rock Type	
								300
								350
								400
								450
								500

Alteration

	Sericite		Garnet
	Kaolin		Serpentine
	Silica		Biotite
	Chlorite		K Feldspar

Drill Hole No. 4
Collar Elevation
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Inclination 90°

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Cochise County Arizona

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Core Recovery	Alteration	Chalcopyrite	Sphalerite	Galena	Ag	Pyrite	Rock Type	
								550
								600
								650
								700
								750

Alteration

	Sericite		Garnet
	Kaolin		Serpentine
	Silica		Biotite
	Chlorite		K Feldspar

Drill Hole No. 4
Collar Elevation
Coordinates
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Cochise County Arizona
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Core Recovery	Alteration	Chalcopyrite	Sphalerite	Galena	Ag	Pyrite	Rock Type	
								800
								850
								900
								950
								1000

Alteration

	Sericite		Garnet
	Kaolin		Serpentine
	Silica		Biotite
	Chlorite		K Feldspar

852-941 Meta andesite, with calcite stringers

941-948 Fault gouge

948-1080 Meta andesite breccia; fragments of andesite, quartzite, red siltstone and arkose. Arkose contains minor diss py.

Drill Hole No. 4
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Bearing
Depth
Inclination 90°

Charleston Project
Cochise County Arizona

Scale
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Completed

By

Core Recovery	Alteration	Chalcopyrite	Sphalerite	Galena	Ag	Pyrite	Rock Type

Alteration

	Sericite		Garnet
	Kaolin		Serpentine
	Silica		Biotite
	Chlorite		K Feldspar

1050

1080-1106 Arkose with less than 1% finely diss py (minor epidote stringers at 1100-1104)

1106-1130 Fault gouge - epidote on fractures

1100

1130-1133 Siltstone
1133-1134 Arkose, banding 50° to core axis, possibly bedding
1134-1137 Red siltstone
1137-1156 White quartzite, very minor diss fine grained py

1150

1156-1159 Quartzite breccia, gougy with inclusions of porphyritic rock
1159-1162 Quartzite
1162-1167 Quartzite breccia with angular fragment of porphyry, gougy material with sericite
1200 1167-1210 Porphyry, highly altered with much sericite and clay, 1167 to 1185 brokern with much gouge, py more abundant in gouge zones
1210-1222 Arkose, .5% py, crushed zone
1222-1229 Porphyry, 1% py altered with some sericite
1229-1277 Fine ground white quartzite with very minor diss py, 1% banding 50° to core axis
1250

Drill Hole No. 4
Collar Elevation
Coordinates
Bearing
Depth
Inclination 90°

Charleston Project
Cochise County Arizona

Scale
Started
Completed

By

Core Recovery | Alteration | Chalcopyrite | Sphalerite | Galena | Ag | Pyrite | Rock Type

Alteration

	Sericite		Garnet
	Kaolin		Serpentine
	Silica		Biotite
	Chlorite	K	K Feldspar

1277-1307 Fine grained gray hornfels, very little quartz. Rock mottled 1284-1292, fine grained py diss throughout, approx 2%, grades into quartzite

1300

1307-1326 White qtzt, fine grained, very minor diss py, 1% or le
1326-1391 Arkose, crushed zone 1331-1336, healed fault zone 30° to core axis at 1332, mottled and fine grained 1357-1359, mottled and fine grained 1388-1391, Diss py-.5%

1350

1391-1398 Arkose, minor diss py -.5%
1398-1402 Crushed zone with clay and sericite, diss sulphides, minor sphalerite - 3% total sulphide

1400

1402-1424 Arkose, grades to qtzt at 1424
1424-1455 Qtzt, grades to arkose at 1455

1455-1487 Arkose qtzt, 1478-py, galena, sphal and cpy diss through the rock, spal 20%, galena 2%, cpy 1%. 1479 1" solid galena and sphal; 1480-1481 gouge with sericite; 1483-1484 gouge with sericite; 1480-1481 diss sphal and py, 5% sulphides

1450

1487-1494 Stony arkose or qtz, strong silicification, diss py-5%
1494-1496 Same
1500 1496-1498.5 Mottled arkosic qtzt mineralized 5%-10% py some chlorite

Drill Hole No. 4
Collar Elevation
Coordinates
Bearing
Depth
Inclination 90°

Charleston Project
Cochise County Arizona

Scale
Started
Completed

By

Core Recovery	Alteration	Chalcopyrite	Sphalerite	Galena	Ag	Pyrite	Rock Type

Alteration

	Sericite		Garnet
	Kaolin		Serpentine
	Silica		Biotite
	Chlorite		K Feldspar

1498.5-1501 Qtz andesite - porphyry highly altered some sericite w/chlorite and sulphides 5% py 3% gal. 5% sphal

1501-1590 Porphyry broken and altered but less sericite, more chlorite, sulphide, mostly py-1% mineralized plus 3% sulphides some sphal and gal 190-191, several ½" stringers, minerals 10° to core axis

1550

1590-1688 Greenish grey tuffaceous qtzt, 3% sulphide 1590-1591; badly broken and gougy 1594-1598; fractures 10° to core axis calcite filling on fractures. Some epidote and chlorite? Mottled, 1611-1612 no core, 1612-1616 60% core, 1612-1616 chlorite with 2% py 1% galena 2% sphal .5% cpy; 1626-1631 grades to siltstone, 1631-1636 highly silicified, quarts and epidote stringers 10° to core axis. 1636-1643 badly broken with some sericite. 1626-1688 silicified pink colored tuff. 1663-1665 gouge and broken, badly broken and gouge 1672-1713

1600

1650

1688-1726 Coarse grey qtzt, some chlorite, py 2%, sericite and clay in gouge zone. 1727-1730 minor diss sphal, galena

1726-1745 Grades back into silicified pink arkose

1700

1746-1747 White quartzite

1747-1762 White qtzt ground to powder

1750

Drill Hole No. 4
Collar Elevation
Coordinates
Bearing
Depth
Inclination 90°

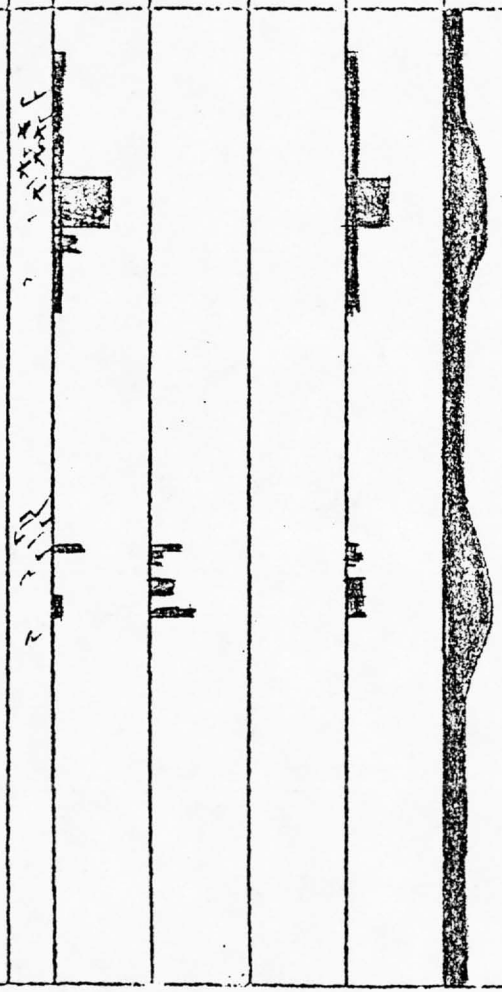
Charleston Project
Cochise County Arizona

Scale
Started
Completed

By

Core Recovery | Alteration | Chalcopyrite | Sphalerite | Galena | Ag | Pyrite | Rock Type

Alteration: Sericite, Kaolin, Silica, Chlorite, Garnet, Serpentine, Biotite, K Feldspar



1762-1773 Grades from quartzite to andesite porphyry, very soft and highly altered, some chlorite, 5% py, .5% cpy.

1773-1791.5 Andesite porphyry, green altered feldspars, some introduced pink K feldspar?

1791.5-1802 Mineralized zone, originally arkosic quartzite or greywacke primarily cpy 10-15% average. Minor galena and sphalerite

1800

1802-1812 Arkosic quartzite, 1802-1803 20% core recovery, gouge 1806-1810 60% core recovery, 3% sulphides mostly py, 3% dis cpy 1810-1812

1812-1822 Quartzite with diss 5% cpy, minor galena and sphal

1850 1822-1824 Arkose with numerous calcite stringers 2% sulphides mostly py

1824-1831 Quartzite, 2% sulphides, mostly py

1831-1833 Quartzite, light grey, 1-2% py, silicified vein 6" wid sphalerite and lead, 5% sulphides

1833-1854 Silicified arkose, purple and coarse grained with diss galena and sphal, 1852.5-1853.5, 6% sulphides

1900

1854-1871 Arkosic quartzite, light gray to light purple, py .5%

1871-1874 Broken fine grained gray qtzt, with 1% py, minor sphal specks, some chlorite blebs

1874-1882 Light gray qtzt, py filled fracture 45° to core at 18 sulphides -.5%

1950 1882-1895.5 Gray quartzite, diss py and sphal 1% sulphides, chlorite in last one foot.

1895.5-1903 Mineralized arkosic qtz which appears to be almost porphrytic with introduce chlorite (cpy, sphal, py) 5-6% sulphides

1903-1906 Dark gray very fine grained tuffaceous sandstone with blebs of olivine, diss sulphides, mostly py 3-5%

2000

Drill Hole No. 4
Collar Elevation
Coordinates
Bearing
Depth
Inclination 90°

Charleston Project
Cochise County Arizona

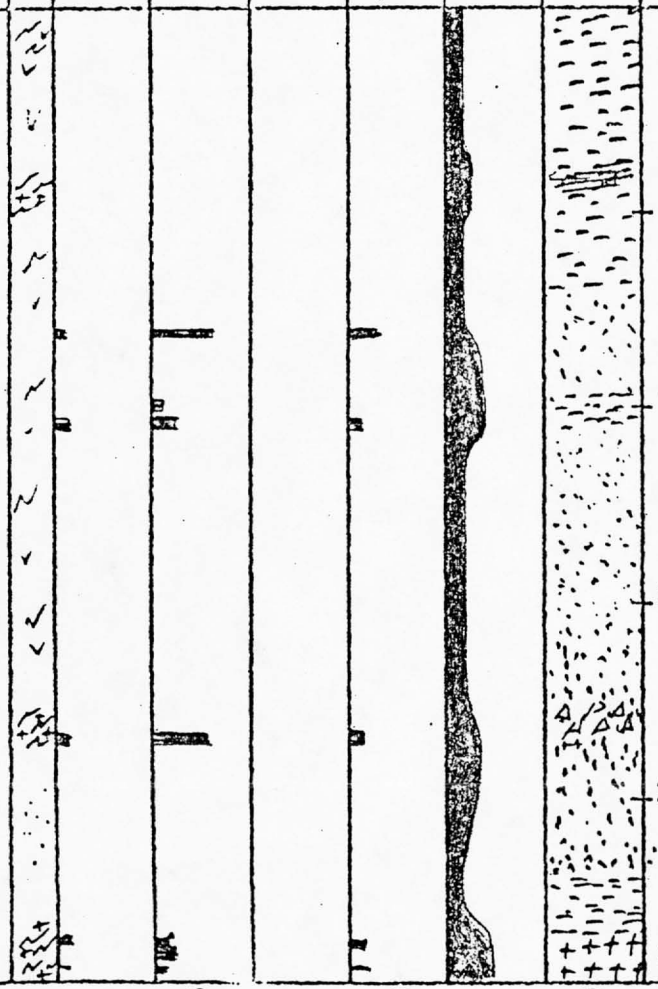
Scale
Started
Completed

By

Alteration

	Sericite		Garnet
	Kaolin		Serpentine
	Silica		Biotite
	Chlorite		K Feldspar

Core Recovery | Alteration | Chalcopyrite | Sphalerite | Galena | Ag | Pyrite | Rock Type



2050
2100
2150
2200
2250

1906-1939 Brecciated & cemented arkosic qtzt very much mottled w/chlorite, olivine. Rock appears pink, py -.5%. 1920-1925 very dark gray siltstone silicified with 2% py. Very highly altered and bleached.

1929-1957 Light gray qtzt, 1938-1940 similar to pre section, sulphides .5%, blebs of olivine surrounded by chlorite

1957-1969 Highly altered arkose? with much sericite and minor chlorite highly bleached, banding 50° to core axis, diss sphal at 1963, 6" minor py in section -.5%

1969-2001 Very similar to section from 1906-1929, broken with sericite 1978-1979, 1" sphal vein 15° to core axis at 1998, py approx 1%

2001-2003 Very dark gy-wacke, 3% py, minor specks of cpy

2003-2072 Lt gy arkosic qtzt, py -.5%, 10% py 2023-2026, 2034-2041 finer grained with more py and more highly altered, 1% py, fault zone with sericite, 2044-2046. Fault gouge 2053-2054. Strong alteration 50° to core axis at 2071.

2072-2196 Siltstone, strong silicification w/olivine blebs and minor chlorite patches, some sericite; Arkose 2090.5-2094; 2097.5-2104 healed breccia, mineralized zone, with introduce quartz phenocrysts, 1.5' core lost, 10% sphal, 2% cpy, 5% py; 2101-2104 30% core recovery; 2123-2124 core is deep purple colored with white splotches; 2161-2181 core badly broken with much sericite; mineralized arkose, sphal 6%, cpy 2%, py 8%, 2183-2190, one foot core missing; 2190-2196 broken with sericite.

2196-2225 Purple siltstone, bleached and broken with sericite 2198-2206, very dark purple 2214-2223

2225-2242 Arkosic qtzt lt gy becomes porphyritic 2241 some sericite development near porphyry contact. Mineralized zone 22[illegible]5-2236, sphalerite [illegible] cpy 1%

Drill Hole No. 4
Collar Elevation
Coordinates
Bearing
Depth
Inclination 90°

Charleston Project
Cochise County Arizona

Scale
Started
Completed

By

Alteration

	Sericite		Garnet
	Kaolin		Serpentine
	Silica		Biotite
	Chlorite		K Feldspar

Core Recovery | Alteration | Chalcopyrite | Sphalerite | Galena | Ag | Pyrite | Rock Type

2242-2290 Andesite porphyry, 2249-2250 test for sphal. Mineraliz porphyry silicified altered with gouge and cpy 2% sphal 3% py 5%, sericite 30% core recovery, 2276-2283. 2277-2283 only 2' core recovered.

2290-2313 Arkose 2290-2291, 2" salmon colored igneous veinlet 10° to core axis at 2290, looks aplitic; quartzitic 2300-2309.

2300

2313-2334 Very fine grained gray silicified hornfels with minute angular quartz crystals as eyes look slightly oplitic from 2329-2334, becomes arkosic about 2330.

2334-2336 Dark Purple arkose, white splotches.

2336-2354 Purple siltstone, white lime silicates splotches. Grades to gray arkose at 2347 grades to gray arkose

2350

2354-2362 Gray arkose becoming very white quartzitic arkose at 2356, becomes gray arkose at 2358

2362-2377 Siltstone, gray to 2364 then purple to2377

2377-2384 Lime silicates with epidote splotches

2384-2387 Purple siltstone

2400

2387-2398 Greenish gray very fine grained silicified arkose ribbon rock or serpentinized 2392 grades into pink fine grained silicified arkose grades to gray 2394 -1% py.

2398-2408 Purple siltstone py -1%

2408-2413 Light gray to light purple arkose

2413-2472 Chlorite & epidote present. Lime silicates, considerable sericite, 10" sphal vein 30° to core axis 2438 gray arkose with sericite 2455-2456, 6" mineralization 2459, 3% sphal 3% cpy, 6' mineralization 2465 2% sphal 3% cpy overall py plus 1%

2450

2472-2487 White silicified tuff, 20% core recovery 2476-2487

2487-2497 Banded grayish purple siltstone grading to qtzt 2489-2497

2500

Drill Hole No. 4
Collar Elevation
Coordinates
Bearing
Depth
Inclination 90°

Charleston Project
Cochise County Arizona

Scale
Started
Completed

By

Core Recovery	Alteration	Chalcopyrite	Sphalerite	Galena	Ag	Pyrite	Rock Type

Alteration

	Sericite		Garnet
	Kaolin		Serpentine
	Silica		Biotite
	Chlorite		K Feldspar

2497-2510 Gray arkosic qtzt mixed. 6" sphal at 2500 3% sphal.
2510-2559 White arkosic quartzite with sericite fairly well broken 2% py.
2559-2575 Light gray lime silicates and qzt, grades to gray arkosic qtzt
2575-2613 Light gray arkosic qtzt & tuff, with purple bands 30° to core axis, 4% py, gouge zone 2578-2579, mineralized 2597
2613-2643 Light gray qtz, 5% py, white splotches

2643-2680 Tuff, gray to 2653 then changes to white arkosic qtzt to 2669 then gray qtzt to 2673 then grades to highly bleached tuff 2680, 8% py.
2680-2693 Fine grained bleached arkosic qtzt, mineralized zone mostly py 5-8% 2691-2693 brecciated with sericite some cpy -.2 average 2% py.

2693-2699 Andesite porphyry py -1%
2699.5-2705.5 Mineralized zone brecciated with much sericite, 50% core recovery split, py 5%, minor diss cpy and sphal.
2705.5-2712 Gray fine grained silicified qtzt, by 3%, very minor specs cpy.
2712-2743 Very fine grained silicified qtz/grades from white to gray containing py 1% with minor sphal argillaeous in spots. Brecciated and healed pink quartzite healed fractures 20° to core axis, py not present 2717-2722 white argillaeous qtzt 2729-2740

Drill Hole No. 4
Collar Elevation
Coordinates
Bearing
Depth
Inclination 90°

Charleston Project
Cochise County Arizona

Scale
Started
Completed

By

Core Recovery	Alteration	Chalcopyrite	Sphalerite	Galena	Ag	Pyrite	Rock Type

Alteration

	Sericite		Garnet
	Kaolin		Serpentine
	Silica		Biotite
	Chlorite		K Feldspar

2743-2755 Light purple arkosic qtzt. Sulphides oxidized limon e on fractures 1' cpy and sphal 2754' Cu -.5 Zn 2.0

2755-2781 Light pink to purple siltstone purple 2758-2767. All oxidized. 6" mineralization 2768 (split) bleached hornfels 2769-2781. Splotches of epodite and chlorite

2800

2781-2802 Argillaeous quartzite grades to purple siltstone at 2788-2791, mineralized 1' 2784 (split) Bleached with splotches of epidote. Bleached siltstone 2791-2797. Purple siltstone 2797-2802

2802-2824 Bleached fine grained arkosic qtz

2824-2840 White coarse grained silicified arkosic qtzt. Very minor specks black mineral possibly bornite

2850

2840-2852 Fine grained siltstone bleached

2852-2889 Coarse grained white qtzt and tuff, sericite present, minor black specs present. 2882-2885 siltstone dark gray in color 2881-2884 contains 2% py.

2889-2929 Light gray arkosic qtzt banding 40-50° to core axis grades to silicified lime 2895-2929

2900

2929-2958 Bleached siltstone with sections of lime silicates, purple siltstone, large patches of epidote

2958-2973.5 Light gray, fine grained tuff

2973.5-2981 Very coarse grained greenish gray tuff and qtzt. Mineralized slickenside at 2973.5

2950

2981-3001 Bleached siltstone, white to purple same as 2929-2958

3001-3018 Find grained gray arkosic qtzt. Coarse grained 3011-3018

Drill Hole No. 4
Collar Elevation
Coordinates
Bearing
Depth
Inclination 90°

Charleston Project
Cochise County Arizona
Scale
Started
Completed

By

Core Recovery	Alteration	Chalcopyrite	Sphalerite	Galena	Ag	Pyrite	Rock Type	

Alteration

	Sericite		Garnet
	Kaolin		Serpentine
	Silica		Biotite
	Chlorite		K Feldspar

3018-3100 Bleached siltstone white to purple numerous slikensides some sericite present, same as 2929-2958, numerous broken zones

3050

3100-3119 White arkosic quartzite

3100

3119-3242 Bleached siltstone white to purple some dark gray argillite same as 2929-2958. 3232-3234 borinite and cpy.

3150

3200

3242-3293 Arkosic quartzite, minor specs of black mineral with green (halos not copper)

3250

Drill Hole No. 4
Collar Elevation
Coordinates
Bearing
Depth
Inclination 90°

Charleston Project
Cochise County Arizona

Scale
Started
Completed

By

Core Recovery	Alteration	Chalcopyrite	Sphalerite	Galena	Ag	Pyrite	Rock Type	
								3293-3301 Bleached siltstone white to purple same as 2929-2958
								3300
								3301-3303 Brecciated and calcite filled arkosic qtzt. Beginning of sulphide zone again 6" cpy at 3303
								3350
								3400
								3450
								3500

Alteration

	Sericite		Garnet
	Kaolin		Serpentine
	Silica		Biotite
	Chlorite		K Feldspar

6 356

Hole #4. pg 1

0' – 124½' Surface rock - fractured in places - manganese in water courses + seams.

124½' } appears to be from dirty mud - slick between the fingers,
127' } probably a form of (sericite)

127' } Gray clay sericitic in nature, presence of few pyrites well dispersed
128' } throughout material.

128' } alternates between gray andesite + Brown red andesite. Calcite in
153' } seams - 144-149 seams vertical. No pyrites -

153' } altered sericite very siliceous, rock gray brown, No pyrites.
154' }

154' } alternating gray - red, more red than gray - manganese present
186' } in gray. some vertical calcite seams - no pyrites

186' } dark flinty gray - all material to date is finely textured.
188' } No pyrites

188' } Continues a lighter gray. No pyrites
193' }

193'. broken altered sericite

193' } blocks inside do not correspond to footage on outside - footages given are
203' } two feet per tube. Gray fine grained - lots of iron stain in seams
beginning to pick up a few pyrites. footage 203 is marked by block 197.

BX #20 203' (block 197) } altered sericite - well dispersed pyrites less than 1%
205' } concentration. Lots in gray andesite. Lots of iron stain
+ manganese present in seams.

199.

205' } Gray more siliceous but finely textured - pyrites stay throughout thus
209' } for.

Hole #4 pg 2

adjust to footage according to markings on box.

Run 21. - 209' - 212' (there are ten footing in box).
from gray to red brown - No pyrite -
4 inches of altered material at 212 - may not be sericite, it is red but sticky to touch - seams are very slick.

212 } red to gray.
216 }

216 } fractured and mostly altered sericite - No pyrite.
228 }

228 } red to gray. No pyrite
235 }

235 - 6" altered sericite. ~~Same~~ No pyrite.

235 } same (red to gray)
238 }

238 } highly fractured - about 1% altered sericite. No pyrite
245 }

245 } same (light + dark gray)
259 }

259 - light pyrite
261 } pyrite heavier exede 1% of content. well dispersed throughout
272 } material.

272 } pyrite congregate in seams.
274 }

274 } lose pyrite.

274 ft - 11:00 Wed - 30 July - [signature]
I respectfully request permission to take core of lose. Driller is not mad!

2-24-4 (from Clark Hughes) 237

File Hole 4 — L

Ho6 4 - pg1.

274 } alternate dark gray - red brown - No pyrite. (1 ft of pyrite at 275)
293 } gray material not real fine grained - all material with calcite seams, iron stain

293 } altered sericite. Very ~~big~~ few disseminated pyrite.
295 }

295 } dark gray - red brown alternating - faree color gray with pink cast
303 } and green not somewhat marbleized at 300 ft.

303 } very broken calcite seams - iron + manganese stain.
307 } lighter gray.

307 } still broken - iron stain + a few pyrites.
310 }

310 } dark gray - to reddish brown - to greenish gray - somewhat marbleized -
323 } granular + siliceous, not broken but lots of calcite seams, iron stains.

323 } very broken - some altered sericite - some alternating darker
328 } + lighter - no pyrites.

328 } same, ~~too~~ not broken.
332 }

332 8 inches altered sericite.

332 } same - gray to red brown.
341 }

341 } pyrites in a lighter gray
342 }

342 } same
372 }

372 } good pyrites in dark gray to light gray - sample at 381 -
384 }

384 } material darker - pyrites ~~light~~ fewer - step at 390.
390 }

390 } ~~same~~ dark gray - granular - no pyrites.
408 }

408 } few pyrites in lighter gray
410 }

410 } same - as sample # 459 - No pyrites (this is the green, red, brown, gray material)
472 }

angle seams 60° to vertical at bottom.

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PHOENIX, ARIZONA

474 } lighter gray. finer texture. pyrite, disseminated throughout
480 } less than 1% concentration - big wide 1 inch calcite vein almost vertical - contains pyrite.

480 } same similar to sample 459 a little lighter.
510 }

510 } Pyrite 510-515 light gray - 15-19 goes into red-brown + gray.
519 }

519 } as sample 459 to a ~~light~~ dark gray - as layers.
580 }

530 } pyrite in lighter gray
537 }

537 } dark gray no pyrite.
543 }

---

sample 459 - typical red brown gray green material.
" 541 - " dark gray material.
" 531 - " light gray with pyrite.

sample 381 - found only at 381

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Yes gray to red brown material are in 2 to 3 ft layers -

Love
Charles

Drill Hole No. 4 — Horne-Charleston Project — Page 5
Collar Elevation — Cochise County ARIZONA — By C. DAVIS
Coordinates
Bearing — Scale
Depth — Started Aug. '69
Inclination 90° — Completed

% Core Recovery	Structure	Alteration	Mineralization	Rock Type	GEOLOGY	CORE ASSAYS INTERVAL Pb. ~~From~~	Zn. To	MINERAL Cu%	MOS_2 ppm	Ag	Au
NX					1600 Porphry - Intermediate; 02 Meta Sediments - green. phenc; 17	1611-1616	.222	.720	.160	2	.20	.001
BX					1650' Meta Sed. (ss); 65 fe Cw							
					1700' Meta Sed. ss; 48							
					1750' Meta Sed - Sericite Mineralization + Zn, Pb, Cu, Mo, Ag; 62	1762-1773	.013	.074	.290	3	.15	.001
BX					ARKOSE - Mineralization (11') Broken - porphry; 73; 91							
					1800' ARKOSE - Large Pyrite Mineralization (33') Dark-fine-grained; 23	1791.5-1822	.049	.073	.029	45	.80	.001
						1791.5-1802	.234	.450	4.950	50	.50	.001
						1802-1810	.008	.028	.052	20	.10	.001
						1810-1817.5	.029	.100	1.800	75	.75	.001
						1817.5-1822	.016	.048	1.400	30	.45	.001
					1850' Meta-Sed - (ss)	1852.5-1853.5	.440	.480	.020	5	.20	.001
					74	1894.5-1898.5	.25	5.3	.28	2	1.3	
					92	1898.5-1902	.48	2.7	.18	2	1.5	
					1900' Meta Sed. ARKOSE - Broken - Mineralization 06	13' 1902-1903	.40	9.0	.54	1	2.2	
					Meta Sed. (ss)							
					1950' Large pyrite							
BX					84; 92 ARKOSE - Broken - Mineralization Cu, Pb, Zn, Mo, Ag							
					2000 Med-grained meta-sediments 03 -(ss)	2023-2025	.005	.08	.11		.1	
					22; 24 ARKOSE dark. Mineralization 4' Ag, Pb, Zn, Cu, MO							
					2050'							
					72; 79 porphry Intermediate	2097.5-2099	.15	15.1	.78	2	2.0	
						2099-2101	.02	2.9	3.78	4	.4	
					2100'	2101-2104	.03	4.0	.46	1	.5	
					2150'	2183.5-2190	.03	8.2	.67	1	.8	
					2200'	2230.5-2231.5	.03	2.4	.68	1	.4	
						2231.5-2236	.10	3.5	.28	3	.8	
					2250'	2249-2249.5	.14	1.1	1.3	5	.7	
						2276-2278	.018	.02	.004	4	.13	.002
					2300'							
					2350'							

ALTERATION: Sericite; Kaolin; Silica; Chlorite; Garnet; Serpentine; Biotite; K Feldspar

MINERALIZATION: Pyrite; Chalcopyrite; Chalcocite; Molybdenite; Magnetite; Galena; Sphalerite; Specularite

D.D. #4 ASSAYS

Int Nic

#4	% Cu	Pb	Zn	S	Ag
1611-16	.14	.19	.83	1.39	2.07
1791-96	7.70	.58	.81	8.88	5.84
1896-1903	0.53	.46	13.9	7.73	2.04
2097-2099	1.15	.86	13.4	8.23	2.34
2099-2104	0.21	.04	1.41	0.88	0.088
2183 2190	0.49	.06	12.0	6.66	.58
1729	.01	.10	.095	1.19	2.09
1890	.02	.32	1.93	1.22	.88
2424	.01	03	007	3.15	2.09
1479 1501	.02	.71	1.48	2.62	.58
1762 1830	1.53	017	.13	2.26	1.46

The above are copies of International Nickel assays.

G

Bear Creek
Inco.

CHARLESTON PROPERTY ASSAYS

Borehole # 4

Sample	Footage	% Cu	% Pb	% Zn	% S	oz/ton Pd	Pt	Au	Ag
S69-909	1611-1616	0.14	0.19	0.83	1.39	.0014	.0016	<.001	< .09
S69-910	1791-1796	7.70	0.58	0.81	8.88	.0018	.0018	.0018	5.84
S69-911	1896-1903	0.53	0.46	13.9	7.73	.0016	.0016	<.001	2.04
S69-912	2097-2099	1.15	0.26	13.4	8.23	.0018	.0023	.0015	2.34
S69-913	2099-2104	0.21	0.04	1.41	0.88	.0021	.0030	<.001	.088
S69-914	2183-2190	0.49	0.06	12.0	6.66	.0016	.0018	<.001	.58
S69-915	@1729	0.01	0.10	0.095	1.19	.0021	.0023	<.001	<.09
S69-916	@1890	0.02	0.32	1.93	1.22	.0018	.0018	<.001	.88
S69-917	@2424	0.01	0.03	0.007	3.15	.0069	.0076	.0016	<.09
S69-918	1479-1501	0.02	0.71	1.48	2.62	.0013	.0014	.0010	.58
S69-919	1762-1830	1.53	0.17	0.13	2.26	.0025	.0026	.0038	1.46

Molybdenum results will be reported when available - <.01

October 31 & November 20, 1969

Bear Creek
Inco.

CHARLESTON PROPERTY ASSAYS

Borehole # 4

Footage	% Cu	% Ni	% Co	% Pb	% Zn	% MoS_2	oz/ton Pd	oz/ton Pt	oz/ton Au	oz/ton Ag
1479.5 - 1481	.012	.012	.005	-	-	-	Nil	Nil	Nil	.04
1478 - 1480	.410	.010	.006	-	-	-	Nil	Nil	Nil	.78
1481 - 1486	.069	.009	.008	-	-	-	Nil	Nil	Nil	.08
1485 - 1487	.080	.008	.008	-	-	-	Nil	Nil	Nil	.13
1487 - 1494	.007	.010	.008	-	-	-	Nil	Nil	Nil	.02
1494 - 1496	.136	.012	.010	-	-	-	Nil	Nil	Nil	.27
1496 - 1498	.024	.011	.003	-	-	-	Nil	Nil	Nil	.02
1498 - 1501	.247	.011	.006	-	-	-	Nil	Nil	Nil	.38
1791.5 - 1802	5.40	.010	.004	-	-	-	Nil	Nil	.002	5.25
1802 - 1810	.048	.009	.002	-	-	-	Nil	Nil	Nil	.11
1810 - 1817.5	1.59	.009	.005	-	-	-	Nil	Nil	Nil	.74
1817.5 - 1822	1.16	.011	.006	-	-	-	Nil	Nil	Nil	.27
1895.5 - 1898.5	2.98	.009	.010	-	-	<.05	Nil	Nil	Nil	1.39
1898.5 - 1902	.245	.009	.006	-	-	-	Nil	Nil	Nil	1.26
1902 - 1903	.365	.008	.011	-	-	<.05	Nil	Nil	Nil	2.16
2097.5 - 2099	.690	.009	.018	-	-	-	Nil	Nil	Nil	2.02
2230.5 - 2231.5	.700	.009	.005	-	-	-	Nil	Nil	Nil	.42
2231.5 - 2236	.44	.009	.005	-	-	-	Nil	Nil	Nil	.67

February 10, 1970

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MAR 30 1970

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~~Bear Creek~~
Inco

42719	C.O. Pritchard (J.E. Mullock)	Feb.10/70	U.S.A. - Arizona Charleston Mine; BH #4 @ 1479.5' - 1481'. Sa.#4 Pulp. Assay: Cu Pb Zn PM's Ag	.012	.012	.005			PM's	- r
				Ag -	.04					
				Zn -	.12					
				Pb -	<.1					
42720	"	"	Ditto: @ 1478' - 1480'. Sa.#5 Assay: Cu Pb Zn PM's Ag	.410	.010	.006			PM's	- r
				Ag -	.78		Zn - 8.90			
							Pb - 1.05			
42721	"	"	Ditto: @ 1481' - 1486'. Sa.#6 Assay: Cu Pb Zn PM's Ag	.069	.009	.008			PM's	- r
				Ag -	.08		Zn - 1.31			
							Pb - <.1			
42722	"	"	Ditto: @ 1486' - 1487'. Sa.#7 Assay: Cu Pb Zn PM's Ag	.080	.008	.008			PM's	- r
				Ag -	.13		Zn - 2.50			
							Pb - 1.32			
42723	"	"	Ditto: @ 1487' - 1494'. Sa.#8 Assay: Cu Pb Zn PM's Ag	.007	.010	.008			PM's	- r
				Ag -	.02		Zn - .39			
							Pb - <.1			
42724	"	"	Ditto: @ 1494' - 1496'. Sa.#9 Assay: Cu Pb Zn PM's Ag	.136	.012	.010			PM's	- r
				Ag -	.27		Zn - 1.18			
							Pb - 1.05			

Form 219

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MAR 30 1970

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Sample No.	Name	Date	Location	Cu	Ni	Co	S	Total PMs	Misc.
42725	C.O. Pritchard (J.E. Mullock)	Feb. 10/70	Ditto: @ 1496' - 1498'. Sa.#10 Assay: Cu Pb Zn PM's Ag	.024 Ag -	.011 .02	.003	Zn - 0.10 Pb - <.1		PM's - r
42726	"	"	Ditto: @ 1498' - 1501'. Sa.#11 Assay: Cu Pb Zn PM's Ag	.247 Ag -	.011 .38	.006	Zn - 2.85 Pb - 1.37		PM's - r
42727	"	"	Ditto: @ 1791.5' - 1802'. Sa.#15 Assay: Cu Pb Zn PMs Ag	5.40 Ag -	.010 5.25	.004	Zn - .58 Pb - .24	.002	Pd&Pt:- r OPM:- r Au:- ∞
42728	"	"	Ditto: @ 1802' - 1810'. Sa.#17 Assay: Cu Pb Zn PM's Ag	.048 Ag -	.009 .11	.002	Zn - <.05 Pb - <.1		PM's - r
42729	"	"	Ditto: @ 1810' - 1817.5'. Sa.#18 Assay: Cu Pb Zn PM's Ag	1.59 Ag -	.009 .74	.005	Zn - 0.10 Pb - <.1		PM's - r
42730	"	"	Ditto: @ 1817.5'. Sa. #19. Assay: Cu Pb An PM's Ag	1.16 Ag -	.011 .27	.006	Zn - 0.05 Pb - <.1		PM's - r
42731	"	"	Ditto: @ 1895.5'-1898.5'. Sa.#A. Assay: Cu Pb Zn PM's Ag	2.98 MoS_2 - Ag -	.009 <.05 1.39	.010	Zn - 6.40 Pb - .26		PM's - r
42732	"	"	Ditto: @ 1898.5' - 1902. Sa.#B Assay: Cu Pb Zn PM's Ag	.245 Ag -	.009 1.26	.006	Zn - 2.00 Pb - .37		PM's - r
2733	"	"	Ditto: @ 1902'-1903'. Sa.#C Assay: Cu Pb Zn PM's Ag	.365 MoS_2 - Ag -	.008 <.05 2.16	.011	Zn - 10.00 Pb - .37		PM's - r
42734	"	"	Ditto: @ 2097.5'-2099'. Sa.#D Assay: Cu Pb Zn PM's Ag	.690 Ag -	.009 2.02	.018	Zn - 17.0 Pb - .13		PM's - r
42735	"	"	Ditto: @ 2230.5'-2231.5'. Sa.#H Assay: Cu Pb Zn PM's Ag	.700 Ag -	.009 .42	.005	Zn - 1.90 Pb - .02		PM's - r
42736	"	"	Ditto: @ 2231.5'-2236'. Sa.#I Assay: Cu Pb Zn PM's Ag	.44 Ag -	.009 .67	.005	Zn - 2.80 Pb - .10		PM's - r

43

CHEMICAL & MINERALOGICAL SERVICES 3435 SOUTH STATE STREET, SALT LAKE CITY, UTAH 84115, (801) 266-8228

RECEIVED

MAR 14 1970

JAMES STEWART COMPANY
PHOENIX, ARIZONA

DD #4

ANALYTICAL REPORT FOR:

Hewitt Enterprises	OUR NUMBER 0801
12415 South 960 East	DATE Oct 16, 1969
Draper, Utah	CUSTOMER'S ORDER NO.

Sample #	Ag oz/ton	Au oz/ton	Cu %	Pb %	Zn %	Mo ppm
1895-1898	1.3	.001	.28	.25	5.3	2
1898-1902	1.5	.001	.18	.48	2.7	2
1902-1903	2.2	.001	.54	.40	10.0	1
2023-2025	.1	.001	.11	.005	.08	2
2097-2099	2.0	.003	.78	.15	15.1	1
2099-2101	.4	.002	.08	.02	2.9	1
2101-2104	.5	.002	.46	.03	4.0	1
2183.5 2184-2190	.8	.002	.67	.03	8.2	1
2230-2232	.4	.001	.68	.03	2.4	3
2231-2236	.8	.001	.44	.10	3.5	3
2249-2249.5	.7	.002	1.30	.14	1.1	10

CMSI

CHEMICAL & MINERALOGICAL SERVICES 3435 SOUTH STATE STREET, SALT LAKE CITY, UTAH 84115, (801) 266-8228

ANALYTICAL REPORT FOR:

RECEIVED

D.D.H. #4

Hewitt Enterprizes	OCT 29 1969	OUR NUMBER 0813
12415 South 960 East	JAMES STEWART COMPAN PHOENIX, ARIZONA	DATE Oct 22, 1969
Braper, Utah		CUSTOMER'S ORDER NO.

Sample #	Ag oz/ton	Au oz/ton	Cu %	Pb %	Zn %	Mo ppm	Co ppm	Ni ppm
#1 2276-2278	.13	.002	.004	.018	.02	4	90	70
#2 2438 10"	.43	.002	.009	.035	17.00	2	50	190
#3 2597-2604	.65	.002	.365	.030	1.10	1	40	15
#4 2699.5-2705.5	.26	.002	.080	.010	.03	13	40	10

Ray Broadhead

CMSI

CHEMICAL & MINERALOGICAL SERVICES 3435 SOUTH STATE STREET, SALT LAKE CITY, UTAH 84115, (801) 266-8228

ANALYTICAL REPORT FOR:

Hewitt Enterprizes	OUR NUMBER 0760
12415 South 960 East	DATE Sept 30, 1969
Draper, Utah	CUSTOMER'S ORDER NO.

Sample #	Ag oz/ton	Au oz/ton	Cu %	Pb %	Zn %	Mo ppm
3X	.30	.001	.006	.003	.005	4
2-1532-1534	.50	.001	.020	.210	.400	13
4-1180-1184	.20	.001	.005	.005	.010	4
4-1478-1480	.90	.001	.350	1.160	9.200	2
4-1479.5-1481	.15	.001	.008	.022	.100	2
4-1481-1486	.15	.001	.049	.031	1.600	25
1486-1487	.30	.001	.056	1.345	2.800	1
4-1487-1494	.10	.001	.006	.060	.310	3
4-1494-1496	.15	.001	.140	1.090	1.600	10
4-1496-1498	.10	.001	.015	.051	.086	5
4-1498-1501	.40	.001	.220	1.275	2.400	10
4-1590-1591	.20	.001	.029	.142	.440	6
4-1611-1616	.20	.001	.160	.222	.720	2
4-1762-1773	.15	.001	.290	.013	.074	3
4-1791.5-1802	.80	.001	.029	.049	.073	45
4-1791.5-1802	.50	.001	4.950	.234	.450	50
4-1802-1810	.10	.001	.052	.008	.028	20
4-1810-1817.5	.75	.001	1.800	.029	.100	75
4-1817.5-1822	.45	.001	1.400	.016	.048	30
4-1852.5-185315	.20	.001	.020	.440	.480	5

Ray Broadhead

PHELPS DODGE CORPORATION
WESTERN EXPLORATION OFFICE
DRAWER 1217
DOUGLAS, ARIZONA 85607

TEL. 602-364-8414

April 26, 1971

RECEIVED
APR 28 1971
JAMES STEWART COMPANY
PHOENIX, ARIZONA

Mr. Seth Horne
James Stewart Construction Co.
3033 N. Central Avenue
Phoenix, Arizona 85531

Dear Mr. Horne:

Attached are additional analytical results of core samples from drill hole No. 4 at the Charleston property near Tombstone. John Forrester felt they would be informative even though it was obvious they would be below ore grades. The intervals are not necessarily continuous and range from a depth of 195 feet to 2020 feet. This work was carried out in our laboratory and includes three spectrographic analyses for pulps 1535, 1540 and 1546 noted in the left hand column of the geochemical analysis sheets.

Very truly yours,

R. W. Ludden

R. W. Ludden, Jr.
Chief Geologist

RWL:c

Encl.

4/28/71 - Copy to Clyde Davis
Boyd Hewitt

4-16-71

GEOCHEMICAL ANALYSIS

Date Received 3-16-71 Location Charleston Mine, Tombstone Quad., Ariz.

Em. Spec. 4-5-71 LAT X-Ray 4-12-71 JDT Chem. Geologist J. D. Forrester

Pulp No.	SAMPLE NUMBER T. R. S. IDENT.	Mo P.P.M.	Pb P.P.M.	Zn P.P.M.	Cu P.P.M.	Ag OZ/TON	Au OZ/TON			
1524	DDH #4 195'-203	X	X	X	X					
		< 35	40	120	40	ES	.02			
1525	256'-264.5'	X	X	X	X					
		< 35	25	105	30	ES	< .02			
1526	264.5'-273'	X	X	X	X					
		< 35	47	115	67	ES	.02			
1527	273'-280#'	X	X	X	X					
		< 35	20	80	32	ES	< .02			
1528	280'-287'	X	X	X	X					
		< 35	42	85	37	ES	< .02			
1529	559'-564'	X	X	X	X					
		< 35	40	105	57	ES	< .02			
1530	567'-569'	X	X	X	X					
		< 35	47	83	29	ES	< .02			
1531	1090'-1100'	X	X	X	X					
		47	40	47	37	ES	.02			

1 Troy Oz/Ton = 34.28 PPM: ES = Em. Spectrograph X = X-Ray A = Atomic Absorption C = Coloromet[illegible] O = [illegible]ther

VS = Very [illegible]ng S = Strong M = [illegible]dium F = Faint ND [illegible] Not Detected

4-16-71

GEOCHEMICAL ANALYSIS

Date Received 3-16-71 Location Charleston Mine Tombstone Quad., Ariz.

Em. Spec. 4-5-71 LAT X-Ray 4-12-71 DT Chem. Geologist J. D. Forrester

Pulp No.	SAMPLE NUMBER T. R. S. IDENT.	Mo P.P.M.		Pb P.P.M.		Zn P.P.M.		Cu P.P.M.		Ag OZ/TON		Au OZ/TON					
1532	DDH#4 1175'-1180'		X		X		X		X								
			< 35		15		82		50	ES	< .02						
1533	1478-1480		X		X		X		X								
			< 35		980		300		57	ES	.06						
1534	1600-1610		X		X		X		X								
			< 35		110		190		27	ES	< .02						
1535	1610-1620		X		X		X		X								
			< 35		232		1137		240	ES	.02						
1536	1620-1630		X		X		X		X								
			< 35		558		995		30	ES	.02						
1537	1630-1640		X		X		X		X								
			< 35		57		130		32	ES	< .02						
1538	1640-1650		X		X		X		X								
			< 35		65		195		25	ES	< .02						
1539	1650-1660		X		X		X		X								
			< 35		72		210		25	ES	< .02						

1 Troy Oz/Ton = 34.28 PPM: ES = Em. Spectrograph X = X-Ray A = Atomic Absorption C = Colorometric O = Other

VS = Very Strong S = Strong M = Medium F = Faint ND = Not Detected

3-16-71

GEOCHEMICAL ANALYSIS

Date Received 3-16-71

Location Charleston Mine, Tombstone Quad., Ariz.

Em. Spec. 4-6-71 LAT X-Ray 4-12-71 DT Chem.

Geologist J. D. Forrester

Pulp No.	SAMPLE NUMBER T. R. S. IDENT.	Mo P.P.M.	Pb P.P.M.	Zn P.P.M.	Cu P.P.M.	Ag OZ/TON	Au OZ/TON				
1540	DDH#4 1794'-1795'	X	X	X	X						
		40	7300	4569	2.9%	A	16.93				
1541	1818-1820	X	X	X	X						
		< 35	725	1655	1.1%	ES	.24				
1542	1894-1899	X	X	X	X						
		< 35	680	1.2%	412	ES	.20				
1543	1970-1975	X	X	X	X						
		< 35	70	209	42	ES	< .02				
1544	1975-1980	X	X	X	X						
		< 35	65	225	45	ES	< .02				
1545	1980-1985	X	X	X	X						
		< 35	20	145	15	ES	.03				
1546	1985-1990	X	X	X	X						
		< 35	3630	8570	555	ES	.12				
1547	1990-1995	X	X	X	X						
		< 35	1150	2357	160	ES	.08				

1 Troy Oz/Ton = 34.28 PPM: ES = Em. Spectrograph X = X-Ray A = Atomic Absorption C = Colorometer O = Other

VS = Very Strong S = Strong M = Medium F = Faint ND = Not Detected

4-16-71

GEOCHEMICAL ANALYSIS

Date Received 3-16-71 Location Charleston Mine Tombstone Quad., Arizona

Em. Spec. 4-6-71 LAT X-Ray 4-13-71 DT Chem. Geologist J. D. Forrester

Pulp No.	SAMPLE NUMBER T. R. S. IDENT.	Mo P.P.M.	Pb P.P.M.	Zn P.P.M.	Cu P.P.M.	Ag OZ/TON	Au OZ/TON			
1548	1995'-2000'	X	X	X	X					
		< 35	215	290	50	ES .02				
1549	2000-2005	X	X	X	X					
		< 35	37	80	30	ES < .02				
1550	2005-2010	X	X	X	X					
		< 35	27	60	0	ES < .02				
1551	2010-2015	X	X	X	X					
		< 35	40	62	60	ES < 0.016				
1552	2015-2020	X	X	X	X					
		< 35	42	45	7	ES < 0.016				

1 Troy Oz/Ton = 34.28 PPM: ES = Em. Spectrograph X = X-Ray A = Atomic Absorption C = Colorometric O = Other

VS = Very Strong S = Strong M = Medium F = Faint ND = Not Detected

4-16-71

QUALITATIVE ANALYSIS REPORT

252

1535	Charleston Mine, Tombston, Arizona	3-16-71	Forrester
PULP	LOCATION	SAMPLE DATE	GEOLOGIST

DDH #4 1610'-1620'

Method	SPECTRO	X-RAY	OTHER		SPECTRO	X-RAY	OTHER
Date:	4-6-71						
Initials:	LAT						
Aluminum	M			Molybdenum	ND		
Antimony	ND			Nickel	15 ppm		
Arsenic	ND			Niobium	*		
Barium	ND			Osmium	ND		
Beryllium	ND			Palladium	ND		
Bismuth	ND			Phosphorus	ND		
Boron	33 ppm		Q#	Platinum	ND		
Bromine	*			Potassium	ND		
Cadmium	ND			Rhenium	ND		
Calcium	ND			Rhodium	ND		
Cerium	ND			Rubidium	ND		
Cesium	*			Ruthenium	ND		
Chlorine	*			Scandium	ND		
Chromium	ND			Selenium	*		
Cobalt	#####	42 ppm		Silicon	VS		
Copper	VS			Silver	.02 oz/ton		
Fluorine	*			Sodium	F		
Gallium	ND			Strontium	ND		
Germanium	ND			Sulfur	*		
Gold	ND			Tantalum	ND		
Hafnium	ND			Tellurium	ND		
Iodine	*			Thallium	ND		
Indium	ND			Thorium	ND		
Iridium	ND			Tin	ND		
Iron	S			Titanium	M		
Lanthanum	ND			Tungsten	ND		
Lithium	ND			Uranium	*		
Lead	S			Vanadium	F		
Magnesium	VS			Yttrium	ND		
Manganese	S			Zinc	ND		
Mercury	ND			Zirconium	ND		

Comments:

Legend: VS - very strong S - strong M - medium F - faint ND - not detected

* - Not detectable by this method

4-16-71

QUALITATIVE ANALYSIS REPORT

253

1540	Charleston Mine, Tombstone, Arizona	3-16-71	Forrester
PULP	LOCATION	SAMPLE DATE	GEOLOGIST

DDH#4 1794'-1795'

Method	SPECTRO	X-RAY	OTHER		SPECTRO	X-RAY	OTHER
Date:	4-6-71						
Initials:	LAT						
Aluminum	F			Molybdenum	ND		
Antimony	53 ppm			Nickel	ND		
Arsenic	30 ppm			Niobium	*		
Barium	ND			Osmium	ND		
Beryllium	ND			Palladium	ND		
Bismuth	> 1000 ppm			Phosphorus	ND		
Boron	47 ppm			Platinum	ND		
Bromine	*			Potassium	ND		
Cadmium	120 ppm			Rhenium	ND		
Calcium	F			Rhodium	ND		
Cerium	ND			Rubidium	ND		
Cesium	*			Ruthenium	ND		
Chlorine	*			Scandium	ND		
Chromium	ND			Selenium	*		
Cobalt	ND			Silicon	VS		
Copper	VS			Silver	> 5.0 oz/ton		
Fluorine	*			Sodium	ND		
Gallium	ND			Strontium	ND		
Germanium	F			Sulfur	*		
Gold	ND			Tantalum	ND		
Hafnium	ND			Tellurium	ND		
Iodine	*			Thallium	ND		
Indium	ND			Thorium	ND		
Iridium	ND			Tin	ND		
Iron	S			Titanium	F		
Lanthanum	ND			Tungsten	ND		
Lithium	ND			Uranium	*		
Lead	VS			Vanadium	ND		
Magnesium	S			Yttrium	ND		
Manganese	S			Zinc	VS		
Mercury	ND			Zirconium	ND		

Comments:

Legend: VS - very strong S - strong M - medium F - faint ND - not detected

* - Not detectable by this method

254

4-16-71

QUALITATIVE ANALYSIS REPORT

PULP	LOCATION	SAMPLE DATE	GEOLOGIST
1546	Charleston Mine, Tombstone, Arizona	3-16-71	Forrester

DDH #4 1985'-1990'

Method	SPECTRO	X-RAY	OTHER
Date:	5-4-6-71		
Initials:	LAT		

	SPECTRO	X-RAY	OTHER
Aluminum	S		
Antimony	ND		
Arsenic	ND		
Barium	ND		
Beryllium	ND		
Bismuth	13 ppm		
Boron	79 ppm		
Bromine	*		
Cadmium	51 ppm		
Calcium	F		
Cerium	ND		
Cesium	*		
Chlorine	*		
Chromium	ND		
Cobalt	62 ppm		
Copper	VS		
Fluorine	*		
Gallium	ND		
Germanium	F		
Gold	ND		
Hafnium	ND		
Iodine	*		
Indium	ND		
Iridium	ND		
Iron	S		
Lanthanum	ND		
Lithium	ND		
Lead	VS		
Magnesium	VS		
Manganese	VS		
Mercury	ND		

	SPECTRO	X-RAY	OTHER
Molybdenum	F		
Nickel	21 ppm		
Niobium	*		
Osmium	ND		
Palladium	ND		
Phosphorus	ND		
Platinum	ND		
Potassium	F		
Rhenium	ND		
Rhodium	ND		
Rubidium	ND		
Ruthenium	ND		
Scandium	F		
Selenium	*		
Silicon	VS		
Silver	.12 oz/ton		
Sodium	S		
Strontium	ND		
Sulfur	*		
Tantalum	ND		
Tellurium	ND		
Thallium	ND		
Thorium	ND		
Tin	3 ppm		
Titanium	F		
Tungsten	ND		
Uranium	*		
Vanadium	ND		
Yttrium	ND		
Zinc	VS		
Zirconium	ND		

Comments:

Legend: VS - very strong S - strong M - medium F - faint ND - not detected

* - Not detectable by this method

355

HOLE #4 Assay Summary

6/18/70 - Copy to CAC and Hewitt

CHARLESTON MINE

Assay Summary

HOLE #4

Depth	Ag Oz/Ton	Au Oz/Ton	Cu %	Pb %	Zn %	Mo PPM	Ni %	Co %
1180 - 1184	.20	.001	.005	.005	.01	4		
1478 - 1480	.90	.001	.35	1.16	9.20	2		
1479.5 - 1481	.15	.001	.008	.022	.10	2		
1481 - 1486	.15	.001	.049	.031	1.60	25		
1486 - 1487	.30	.001	.056	1.345	2.80	1		
1487 - 1494	.10	.001	.006	.06	0.31	3		
1494 - 1496	.15	.001	.14	1.09	1.6	10		
1496 - 1498	.10	.001	.015	.051	.086	5	.011	.003
1498 - 1501	.40	.001	.220	1.275	2.40	10	.011	.006
1532 - 1534	.50	.001	.020	.210	.40	13		
1590 - 1591	.20	.001	.029	.142	.44	6		
1611 - 1616	.20	.001	.16	.222	.72	2		
1762 - 1773	.15	.001	.29	.013	.074	3		
1791.5 - 1802	5.40	.001	4.95	.234	.45	50	.01	.004
1802 - 1810	.10	.001	.052	.008	.028	20	.009	.002
1810 - 1817	.75	.001	1.80	.029	.100	75	.009	.005
1817.5 - 1822.5	.45	.001	1.40	.016	.048	30		
1852.5 - 1855.5	.20	.001	.02	.440	.480	5		
1895 - 1898	1.3	.001	2.98	.25	6.40	2		
1898 - 1902	1.5	.001	.18	.48	2.7	2		
1902 - 1903	2.2	.001	.54	.40	10.0	1		
2023 - 2025	.1	.001	.11	.005	.08	2		
2097 - 2099	2.0	.003	.78	.15	17.0	1		
2099.5 - 2101	.4	.002	.08	.02	2.9	1		
2183.5 - 2190	.8	.002	.67	.03	8.2	1		
2230 - 2231.5	.4	.001	.68	.03	2.4	3		
2231 - 2236	.8	.001	.44	.10	3.5	3		
2249 - 2249.5	.7	.002	1.30	.14	1.1	10		
2276 - 2278	.13	.004	.004	.018	.02	4		
2238 (10")	.43	.002	.009	.035	17.00	2		
2597 - 2604	.65	.002	.365	.03	1.10	1		
2699.5 - 2705.5	.26	.002	.080	.010	.03	13		

CHARLESTON MINING PROPERTY
Assay Summary
Drill Hole #4

Footage	Percentage							oz/ton				ppm		
	Cu	Pb	Zn	Ni	Co	S	MoS_2	Pd	Pt	Ag	Au	Mo	Co	Ni
1180 -1184	.005	.005	.010							.20	.001	4		
1478 -1479.5	.350	1.160	9.200							.90	.001	2		
1478 -1480	.410	1.05	8.90	.010	.006					.78				
1479.5-1481	.012	.1	.12	.012	.005					.04				
1479 -1501	.02	.71	1.48			2.62		.0013	.0014	.58	.0010			
1479.5-1481	.008	.022	.100							.15	.001	2		
1481 -1486	.069	.1	1.31	.009	.008					.08				
1481 -1486	.049	.031	1.600							.15	.001	25		
1485 -1487	.080	1.32	2.50	.008	.008					.13				
1486 -1487	.056	1.345	2.800							.30	.001	1		
1487 -1494	.009	.1	.39	.010	.008					.02				
1487 -1494	.006	.060	.310							.10	.001	3		
1494 -1496	.136	1.05	1.18	.012	.010					.27				
1494 -1496	.140	1.090	1.600							.15	.001	10		
1496 -1498	.024	.10	.10	.011	.033					.02				
1496 -1498	.015	.051	.086							.10	.001	5		
1498 -1501	.247	1.37	2.85	.011	.006					.38				
1498 -1501	.220	1.275	2.400							.40	.001	10		
1590 -1591	.029	.142	.440							.20	.001	6		
1611 -1616	.160	.222	.83							.20	.001	2		
1611 -1616	.14	.19	.83			1.39		.0014	.0016	.09	.001			
1729	.01	.10	.095			1.19		.0021	.0023	.09	.001			
1762 -1773	.290	.013	.074							.15	.001	3		
1762 -1830	1.53	.17	.13			2.26		.0025	.0026	1.46	.0038			
1791 -1796	7.70	.58	.81			8.88		.0018	.0018	5.84	.0018			
1791.5-1802	.029	.049	.073							.80	.001	45		
1791.5-1802	5.40	.24	.58	.010	.004					5.25	.002			
1791.5-1802	4.950	.234	.450							.50	.001	50		
1802 -1810	.048	.1	.05	.009	.002					.11				
1802 -1810	.052	.008	.028							.10	.001	20		
1810 -1817.5	1.59	.1	.10	.009	.005					.74				
1810 -1817.5	1.800	.029	.100							.75	.001	75		
1817.5-1822	1.400	.016	.048							.45	.001	30		
1817.5-1822	1.16	.1	.05	.011	.006					.27				
1852.5-1853.5	.020	.440	.480							.20	.001	5		
1890	.02	.32	1.93			1.22		.0018	.0018	.88	.001			
1895 -1898	.28	.25	5.3							1.3	.001	2		

Footage	Percentage							oz/ton				ppm		
	Cu	Pb	Zn	Ni	Co	S	MoS_2	Pd	Pt	Ag	Au	Mo	Co	Ni
1895.5-1898.5	2.98	.26	6.40	.009	.010		.05			1.39				
1898 -1902	.18	.48	2.7							1.5	.001	2		
1896 -1903	.53	.46	13.9			7.73		.0016	.0016	2.04	.001			
1898.5-1902	.245	.37	2.00	.009	.006					1.26				
1902 -1903	.54	.40	10.0							2.2	.001	1		
1902 -1903	.365	.37	10.00	.008	.011		.05			2.16				
2023 -2025	.11	.005	.08							.1	.001	2		
2097 -2099	.78	.15	15.1							2.0	.003	1		
2097 -2099	1.15	.26	13.4			8.23		.0018	.0023	2.34	.0015			
2097.5-2099	.690	.13	17.0	.009	.018					2.02				
2099 -2101	.08	.02	2.9							.4	.002	1		
2101 -2104	.46	.03	4.0							.5	.002	1		
2099 -2104	.21	.04	1.41			.88		.0021	.0030	.088	.001			
2183 -2190	.49	.06	12.0			6.66		.0016	.0018	.58	.001			
2183.5-2190	.67	.03	8.2							.8	.002	1		
2230 -2232	.68	.03	2.4							.4	.001	3		
2230.5-2231.5	.700	.02	1.90	.009	.005					.42				
2231 -2236	.44	.10	3.5							.8	.001	3		
2231.5-2236	.44	.10	2.80	.009	.005					.67				
2249 -2249.5	1.30	.14	1.1							.7	.002	10		
2276 -2278	.004	.018	.02							.13	.002	4	90	70
2424	.01	.03	.007			3.15		.0069	.0076	.09	.0016			
2438 -2439 10"	.009	.035	17.00							.43	.002	2	50	190
2597 -2604	.365	.030	1.10							.65	.002	1	40	15
2699.5-2705.5	.080	.010	.03							.26	.002	13	40	10
1987 -1995	.05	.46	1.20							.21	.002			

5-1065

GENERALIZED DESCRIPTIVE LOG

Charleston Lead Mine | Cochise County | James Stewart Construction Co.

HORNE(STEWART)#5 DRILL HOLE

0-12	No core	
12-369	Graywacke, gray, very fine-to coarse-grained, bedding 50°, locally very thin bedded, shaley, locally arkosic, volcanoclastic, and/or conglomeratic. Clasts up to 2" diam.	
	91-155	Conglomeratic 50% fragments of sediments and volcanics
	166-173	Fracture zone; 166-167 red gouge remainder is broken core and gouge argillic, chloritic, Fe oxide
	173-182	Conglomeratic, 70° fracture, argillic
	191-203	Fracture zone, gouge and broken core, moderate Fe oxide, strong argillization
	203-211	Calcite and clay stringers
	211-213	Fracture zone
	213-219	Weak Fe oxide
	219-221	Fracture zone, gouge
	239-259	Conglomeratic, clasts up to 2" diam., locally well broken
	259-369	Massive, dark graywacke, high angle kaolin stringers
		304-305 Pyritic, leached
		328-329 Gouge zone, local calcite-quartz stringers
		330- 15° fracture with drusy quartz
369-390	Andesite, dark green-gray, porphyritic-aphantic; feldspar phenocrysts up to 1 cm. Argillized, kaolinized, bottom on 50° fracture	
390-537	Graywacke as above, kaolinized, fractured, Fe oxide in fractures	
537-551	Breccia, maroon, arkosic, shaley, with clasts of graywacke up to 2". Clay along fractures, minor pyrite	
551-837	Graywacke as above	
	551-566	Light gray pyritic rock, 1% pyrite, very fine-grained; calcite stringers, bleached, argillized
	566-568	Fracture zone, finely broken, gouge
	568-582	Dark gray graywacke conglomerate, clasts of shale, graywacke, volcanics drusy calcite on fractures, kaol. on slips
	637-638	Fault zone 20°
	651-677	Bleached, pyritic 0.5-1% pyrite, possible galena traces in fractures drusy calcite and broken core at 665
	677-728	Arkosic graywacke conglomerate
	728-730	Broken core
	745-753	Bleached .5% pyrite on fractures
	763-774	Bleached, pyrite

	775-804	Irregular disseminated pyrite up to 3%, epidote	
	821-837	Disseminated pyrite, argillic-intensity increasing toward bottom, abundant clots of epidote up to 1" diam.	
837-921	Alternating graywacke and light gray porphyritic andesite		
	837-840	Andesite, phenocrystic plagioclase up to 2 mm, local clots of epidote and magnetite	
	840-844	Graywacke	
	844-846	Andesite	
	846-850	graywacke	
	850-853	Andesite	0.1-1% disseminated pyrite
	853-862	Graywacke	
	862-864	Andesite	
	864-873	Graywacke	
	873-875	Andesite	
	875-902	Graywacke: baren	
	902-903	Andesite	0.1-1% pyrite, trace chalcopyrite increasing with depth to 2% pyrite
	903-916	Graywacke, 909-912 gouge	
	916-921	Andesite	
	921-936	Graywacke, galena stringer at 930	
936-947	Graywacke (?) thoroughly argillized, pyritized, pyrite 1-3%, galena stringers		
	938-940	Gouge	
	944	Bleb 5-8% pyrite, specks of sphalerite	
947-1398	Graywacke, dark gray, fine-grained, pyritic		
	947-957	Calcite and pyrite stringers (2% pyrite), chloritized, bleached coarse euhedral pyrite	
	957-975	1-3% disseminated pyrite	
	975-985	Conglomeratic, tarnished pyrite decreasing to 1%, epidotization increasing with depth	
	1007	1-2% irregular pyrite	
	1017-1026	Intense alteration, pyrite 4-6%, blebs of sphalerite and galena stringers of galena-pyrite-epidote, trace chalcopyrite	
	1026	Weakly chloritized, 1-2% pyrite	
	1041	Fracture zone 20°, bleached 1' both sides, veins of quartz-calcite-epidote-galena-sphalerite	
		Below 1041 irregular steep quartz-calcite-pyrite-chalcopyrite-galena stringers. 1-3% disseminated pyrite	
	1065-1067	Fracture zone; quartz-calcite-pyrite-chalcopyrite-sphalerite-galena strings. Galena weakening	
	1080	All stringers weak. 3% pyrite decreasing with depth disappears at 1100	
	1107	0.5% pyrite increasing with depth	
	1115-1117	Fracture zone; broken core and gouge	

1117 Intense alteration or thermal metamorphism
1139 Pyrite decreasing with depth
1143 Chloritic hydrothermal alteration; trace galena
1147-1149 Fracture zone
1154 Fresh rock
1156 Thermal metamorphism, pyrite, epidote, recrystallization
1158 Chlorite-epidote-pyrite mineralization; trace galena, chalcopyrite
1182 Galena-pyrite-chalcopyrite stringers
1188-1191 Blebs of galena-chalcopyrite-epidote-calcite up to 1" long. Disseminated galena-sphalerite.
1193, 1195, 1197, 1200 Veins, up to 1.5", galena-pyrite-chalcopyrite-sphalerite-calcite, 15°. Disseminated galena-sphalerite
1201-1204 Broken core
1204 Chloritized graywacke; pyrite 1-2%
1212 8" quartz vein 60° 1% pyrite
1213 Graywacke, pyrite, stringers of galena
1220-1223 Quartz-pyrite vein 20°, minor galena and chalcopyrite
1218-1222 5% pyrite, 0.1% Cu, 0.1% Pb
1230 Base metal zone
1230-1235 Graywacke conglomerate, clasts of sediments and volcanics up to 2" diam. 1% pyrite
1235-1246 Graywacke, 2% pyrite, minor epidote, pyrite decreases with depth
1258 2-3% pyrite, fine-grained chlorite-epidote alteration, trace galena
1270-1281 Conglomerate; thoroughly altered, galena-calcite-sphalerite stringers
1281 3" quartz-pyrite vein 50°
1300 Base metals zone. 0.5% pyrite
1308-1316 Fracture zone, no alteration, weak Fe oxides
1325 Chloritic, argillic alteration, 2% pyrite, rock fragments up to 8"
1342 Galena-epidote-calcite stringers; alteration becoming less pervasive, more irregular
1369 No alteration
1378 1/2" galena-pyrite-chalcopyrite-sphalerite-calcite vein, 50° sulfide content increasing with depth

1398-1516 Gray arkosic sandstone conglomerate, clasts of sediments and volcanics. 0.5-1% disseminated pyrite, 1% galena and chalcopyrite. Galena-chalcopyrite-calcite stringers; chalorite-epidote, argillic alteration.

	1416 Stringers of sphalerite	Frequency of clasts decreasing Pyrite 0.5% decreasing
	1428-1429 Quartz-calcite-pyrite vein	
	1430 Disseminated galena and chalcopyrite	
	1464 Sphalerite-epidote-quartz-chalcopyrite stringers	
	1496 Pyrite increasing to 1%	
	1502 1" sphalerite-pyrite-epidote-quartz vein, 25°	
	1510 1/4" vein same as above, 20°	
1516-1537	Gradational contact to massive light gray shale. Grades into dark very-thin-bedded shale then back to massive shale. Abundant calcite stringers. Pyrite 0.5-1%. Grades into limestone below.	
1537-1556	Light gray massive limestone, slightly recrystallized, 0.1-0.2% pyrite and few calcite stringers. Badly broken core near bottom.	
1556-1560	Light gray fine-grained quartzite, calcareous matrix 0.1% pyrite	
1560-1579	Argillaceous sandstone, with few clasts, partially epidotized, 0.5% pyrite argillic-chloritic alteration	
1579-1584	Coarse grained sandstone, no pyrite, argillic-chloritic-epidote alteration	
1584-1672	Fine-grained argillaceous sandstone 0.5% disseminated pyrite, light gray to white	
	1554-1674 Badly broken core. Local pebbles up to 1" diam. erratic pyrite distribution. Calcareous matrix below 1618	
	1638-1642 No core	
	1650 Silicified	
	1654-1658 Silicified sandstone or quartz vein, 10% pyrite with galena, chalcopyrite and sphalerite	
	1657-1663 Gouge, high pyrite	
	1658-1660 Lost core	
	1667-1672 Gouge	
1672-1700	Very fine-grained gray quartzite, very thinly bedded near top becoming more massive with depth, 40° on bedding, fine pyrite, 5-7% chalcopyrite minor galena.	
	1676-1700 Fine-grained, silicified, pyrite 0.5% locally, massive epidote nodules with pyrite and chalcopyrite	
1700-1704	Maroon, arkosic shale, trace pyrite, minor epidote	
1704-1795	Fine-grained argillaceous quartzite, light gray, 0.5% disseminated pyrite	
	1709 No pyrite	
	1714 Limestone inclusions	
	1718 0.5% pyrite	
	1729 and 1737 1/2" veins of quartz-sphalerite-chalcopyrite-galena with epidote rim	
	1772 Pyrite gone	
	1772-1782 Contact; 70°, with epidotic hornfelsic shale epidote-calcite nodules, trace pyrite	
	1795 End of drilling as of 24 September 1970	

GENERALIZED DESCRIPTIVE LOG (Cont.)

Charleston Lead Mine Cochise County James Stewart Construction Co.

HORNE (STEWART) # 5 DRILL HOLE

1795-1805	Quartzite, light gray, fine grained, trace of pyrite along fractures. 1798-1804 Fractured and bleached zone, calcite along fractures.
1805-1817	Hornfelsic shale, dark gray, epidote nodules, pyrite and calcite in nodules and in stringers, 0.1-0.3% disseminated pyrite 1814-1817 Fracture zone, clay in stringers
1817-1824	Quartzite, gray, calcite in stringers $<$ 0.1% pyrite
1824-1847	Hornfelsic shale, epidote in nodules, $<$ 0.1% pyrite, dark gray with several maroon horizons; pyrite and chlorite on high-angle slips.
1847-1853	Quartzite, light gray, fine-to-medium grained, 0.1% disseminated pyrite.
1853-1873	Shale, maroon, epidote nodules, bleached with pyrite and epidote, calcite and clay on slips.
1873-1919	Hornfelsic shales, gray, epidotized; epidote-calcite-chlorite nodules with pink matrix, $<$0.1% pyrite, last 20' is maroon and coarser grained. 1914-1917 Fracture zone.
1919-1927	Quartzite, light gray, very-fine-grained; some epidote on fractures.
1927-1947	Hornfelsic shale, epidotized as above.
1947-1961	Quartzite, fine grained as above.
1961-1978	Hornfelsic shales, white to gray, epidote nodules, 0.1% disseminated pyrite. 1965-1966 Broken core, no pyrite below fracture.
1978-2014	Quartzite, light gray, fine-to-medium grained. Calcite on slips, local thin beds of hornfelsic shale.
2014-2040	Hornfelsic shale, epidote nodules with calcite, 0.1-0.2% disseminated pyrite irregularly distributed, trace of sphalerite in last 2'.
2040-2048	Quartzite, light gray, locally epidotized, sphalerite in stringers and disseminated $<$ 0.1-0.2% pyrite, trace chalcopyrite, stringers of calcite.

2048-2080	Hornfelsic shale, light to dark gray, epidote in stringers and nodules, 0.1-0.2% disseminated pyrite, trace chalcopyrite, trace galena and sphalerite in blebs and disseminated, sparse mineralization below 2064. 2069-2074 chloritized, pyrite, sphalerite, chalcopyrite, galena disseminated in friable fractured rock.
2080-2083	Quartzite, chloritized, disseminated pyrite, chalcopyrite, sphalerite, galena.
2083-2105	Quartzite, trace of chlorite, trace disseminated pyrite, stringers of epidote-calcite-pyrite-chalcopyrite-sphalerite-galena.
2105-2118	Hornfelsic shale, epidotized, calcite-pyrite-epidote-sphalerite-chalcopyrite in stringers, local disseminated chalcopyrite, pyrite 0.5% decreasing with depth.
2118-2127	Quartzite, very fine-grained, gray, epidote-calcite stringers, $<$ 0.1% pyrite.
2127-2147	Hornfelsic shale, as above. 2130 3" long sphalerite-chalcopyrite bleb.
2147-2151	Quartzite as above.
2151-2213	Hornfelsic shale as above. 2161 1' fracture zone 2165 Pyrite stringers 2169 Pyrite-epidote-calcite stringers, epidote nodules 2191-2195 Fracture zone, finely broken, argillized, 0.5-0.1% pyrite disseminated and in veins.
2213-2231	Contact zone, abundant epidote-chlorite-calcite blebs and spots, 0.5-0.1% pyrite, dark gray quartzitic to volcanic rock, local phenocrysts of pink feldspar?, local intense brecciation
2231-2313	Dark to medium gray latite to andesite porphyry, phenocrysts are epidotized. 1-3% disseminated pyrite 2269-2275 Fracture zones with gouge
2313-2316	Contact zone, chloritized, bleached, broken rock fragments
2316-2318	Black, aphanitic rock with feldspar phenocrysts and epidote blebs.
2318-2322	Quartzite, gray, fine grained, relic bedding at 45°, interbedded with metashale at bottom, epidotized.
2322-2336	Hornfelsic shale as above.

2336-2374	Quartzite, light gray, fine-to-medium grained, local epidote stringers. 2352 2" dike andesite porphyry. 2369 6" of disseminated galena.
2374-2528	Alternating quartzite and hornfelsic shale, each 5 to 10' thick. Hornfelses are epidotized with minor local epidote nodules. 0.1% pyrite average distributed irregularly with no apparent control. Broken core at 2497-2499, 2501-2507, 2514-2517
2528	End of hole.

JED:a
October 19, 1970

5 - ASSAYS

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY Hewitt Enterprise

DATE Oct. 5, 1970

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
Hole 5 - 1717	Trace	0.06	0.01	0.01	0.03	.0087	=8700 ppm

RECEIVED
OCT 19 1970
JAMES STEWART COMPANY
PHOENIX, ARIZONA

INVOICE# 5387

CHARGES $ 13.75

10/5/70

ASSAYER-CHEMIST

To Harland
1/29/71

3226 East 46th Street

Phone 624-0049

367

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY [illegible]

DATE Sept. 26, 1970

SAMPLE MARKED	GOLD OZ / TON	SILVER OZ / TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON	
DDH # 5 1339.0'-1339.5'	.002	0.15	0.01	Trace	[illegible]	.0007	100ppm	

RECEIVED

OCT 19 1970

JAMES STEWART COMPANY
PHOENIX, ARIZONA

Invoice # 5324

CHARGES $ 13.75

REGISTERED ASSAYER
CERTIFICATE
ARIZONA
9/26/70

ASSAYER - CHEMIST

J. Harlow
1/29/71

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY Hewitt Enterprises

DATE Sept. 26, 1970

SAMPLE MARKED	GOLD OZ / TON	SILVER OZ. / TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
Hole # 5 1197-1197.5	.001	0.18	0.05	0.65	1.55	.0009	900 ppm

RECEIVED

OCT 19 1970

JAMES STEWART COMPANY
PHOENIX, ARIZONA

REGISTERED ASSAYER
CERTIFICATE NO. 6852
PETE S. FLORES
Arizona U.S.A.

Invoice # 5324
CHARGES $ 13.75

ASSAYER - CHEMIST

To Harlan 1/29/71 ef

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY Hewitt Enterprises, Inc.

DATE Sept. 11, 1970

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
H-5 937.5'-938'	.003	0.80	0.11	2.55	0.03	.0011 =	1100ppm.

REGISTERED ASSAYER CERTIFICATE NO. 6852 REYES FLORES Date Signed 9/11/70 Arizona U. S. A.

CHARGES $ 13.75 (Invoice # 5281)

ASSAYER-CHEMIST

To Harlan 1/29/71

Charleston

3226 East 46th Street

Phone 624-0049

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY Hewitt Enterprises, Inc.

DATE Sept. 11, 1970

SAMPLE MARKED	GOLD OZ / TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
H-5 937.5'-938'	.003	0.80	0.11	2.55	0.03	.0011	
H-5 1339-1339.5			.01		.02		
Not Complete							

Hole 5 - Charleston

RECEIVED
SEP 17 1970
JAMES STEWART COMPANY
PHOENIX, ARIZONA

REGISTERED ASSAYER
CERTIFICATE NO. 6852
PETE S. FLORES
Date Signed 9/11/70
Arizona U. S. A.

CHARGES $ 13.75 (Invoice # 5281)

ASSAYER - CHEMIST

Assay #5

To Harlan 1/29/71 ef.

3226 East 46th Street

Phone 624-0049

271

AMERICAN ANALYTICAL and RESEARCH LABORATORIES

ASSAYERS - CHEMISTS - METALLURGISTS

TUCSON, ARIZONA 85713

SAMPLE SUBMITTED BY Hewitt Enterprises

DATE Oct. 5, 1970

SAMPLE MARKED	GOLD OZ./TON	SILVER OZ./TON	PER CENT COPPER	PERCENT LEAD	PERCENT ZINC	PERCENT MOLYBDENUM	PERCENT IRON
Hole # 5 1662 - 1662.5	Trace	0.11	0.01	0.20	0.02	.0001	

RECEIVED

OCT 19 1970

JAMES STEW... ...
PHOENIX, ARIZONA

Invoice # 5387

CHARGES $ 13.75

ASSAYER - CHEMIST

J. Harland 1/29/71

PHELPS DODGE CORPORATION
WESTERN EXPLORATION OFFICE
DRAWER 1217
DOUGLAS, ARIZONA 85607

December 23, 1970

TEL. 602-364-8414

Mr. M. S. Horne
James Stewart Company
707 Mayer Central Building
3033 North Central Avenue
Phoenix, Arizona 85012

RE: Charleston Mine

Dear Mr. Horne:

Mr. Walker just handed me your letter of December 4, 1970, and asked me about the footage on Hole #5 from 1,795' to 2,038'. I have reviewed our logs and suggested sampling and no samples were requested within that interval.

May I request that Mr. Hughes put the hole number on each sample bag. It simplifies record keeping by our sample handlers.

Very truly yours,

John D Forrester

J. D. Forrester

JDF:a

cc: D. Clark Hughes
C. A. Cosgrove

RECEIVED
DEC 28 1970
JAMES STEWART COMPANY
PHOENIX, ARIZONA

273

PHELPS DODGE CORPORATION

WESTERN EXPLORATION OFFICE
DRAWER 1217
DOUGLAS, ARIZONA 85607

October 20, 1970

TEL. 602-364-8414

Mr. M. S. Horne, President
James Stewart Company
707 Mayer Central Building
3033 North Central Avenue
Phoenix, Arizona 85012

Re: Charleston Mine, Tombstone

Dear Mr. Horne:

Mr. Jonathan DuHamel and I have logged the remainder of Hole #5. Attached are our logs and suggested sample intervals.

We appreciate the opportunity of logging these holes and look forward to receiving the split core for assay.

Very truly yours,

John D. Forrester

JDF:jc
Encls.

cc: Clark Hughes

JA

Suggested Assays - Horne #5

Footage	Assay Intervals
2038-2040	2'
2040-2048	8'
2048-2080	10'
2080-2083	3'
2083-2105	10'
2105-2118	5'
2240-2250	10'
2325-2335	10'
2350-2360	10'
2400-2410	10'
2518-2528	10'

COPY

275

CARLOS ROCHIN
MANAGER
REGISTERED ASSAYER
ARIZONA REG. 7126

HECTOR C. ROCHIN SR.
FOUNDER
REGISTERED ASSAYER
ARIZONA REG. No. 4073

HECTOR A. ROCHIN JR
MINING ENGINNER AND
LAND SURVEYOR
ARIZONA REG. No. 2472

ROCHIN ENGINEERING AND ASSAY OFFICE

P. O. BOX 218 PHONE 364-8092
DOUGLAS, ARIZONA 85607

CERTIFICATE OF ASSAY

Name Western Exploration, Drawer 1217, Douglas, Arizona 85607

Attn: Mr. J. Forrester	GOLD OZS	SILVER OZ	COPPER %	Pb %	Zn %
30799 14461	Tr	Tr	0.078	0.34	2.00

LOCATION: CHARLESTON-LEAD MINE, TOMBSTONE QUAD.
D.D.H. STEWARD NO. 5 DEPTH 1180' thru 1185'

REGISTERED ASSAYER CERTIFICATE NO. 7126 CARLOS ROCHIN Date Signed Arizona U. S. A.

REMARKS: To H Jones 1/29/71 -

DATE: November 7, 1970

CHARGES $11.50

276

CARLOS ROCHIN
MANAGER
REGISTERED ASSAYER
ARIZONA REG. 7126

ROCHIN ENGINEERING AND ASSAY OFFICE

P. O. BOX 218 PHONE (AC 602) 364-8092
DOUGLAS, ARIZONA - 85607

HECTOR A. ROCHIN, Jr.
MINING ENGINEER AND
LAND SURVEYOR
ARIZONA REG. No. 2473

ASSAYERS & METALLURGICAL CHEMISTS

CERTIFICATE OF ASSAY

LOCATION:
CHARLESTON LEAD MINE
TOMBSTONE QUAD., ARIZONA

Name Western Exploration, Drawer 1217, Douglas, Arizona D.D.H. STEWART NO.5

Attn: Mr. J. Forrester		GOLD OZS	SILVER OZS	COPPER %	Pb %	Zn %	INTERVALS	BOX NO.
30800	14462	Tr	Tr	0.058	0.25	0.79	1185 - 1189	129
30801	14463	Tr	Tr	0.058	0.31	0.96	1189 - 1191	"
30802	14464	Tr	Tr	0.068	0.32	0.78	1191 - 1193	"
30803	14465	0.08	0.78	0.116	0.34	1.68	1193 - 1195	"
30804	14466	Tr	0.18	0.280	2.88	4.27	1195 - 1197	"
30805	14467	Tr	0.08	0.165	0.64	2.29	1197 - 1198	"
30806	14468	Tr	0.02	0.145	0.22	1.69	1198 - 1200	130
30807	14469	Tr	Tr	0.129	0.27	1.29	1200 - 1202	"
30808	14470	Tr	Tr	0.068	0.37	1.28	1202 - 1204	"
30809	14471	Tr	Tr	0.087	0.25	1.09	1204 - 1206	"
30810	14472	Tr	Tr	0.097	0.25	1.00	1206 - 1208	"
30811	14473	Tr	Tr	0.107	0.32	1.08	1208 - 1210	131
30812	14474	Tr	Tr	0.078	Tr	1.18	1210 - 1212	"
30813	14475	Tr	Tr	0.078	Tr	0.98	1218 - 1220	132
30814	14476	Tr	Tr	0.089	Tr	1.28	1220 - 1222	"
30815	14477	Tr	0.02	0.097	Tr	1.86	1222 - 1224	"
30816	14478	Tr	0.02	0.078	Tr	1.97	1224 - 1226	"
30817	14479	Tr	0.18	0.107	Tr	1.19	1226 - 1228	"
30818	14480	Tr	Tr	0.087	Tr	1.27	1228 - 1233	133
30819	14481	Tr	Tr	0.068	Tr	Tr	1233 - 1237	"
30820	14482	0.02	12.32	0.087	Tr	Tr	1237 - 1242	134
30821	14483	Tr	Tr	0.079	Tr	Tr	1242 - 1246	"
30822	14484	Tr	Tr	0.068	Tr	Tr	1281 - 1282	138

REGISTERED ASSAYER CERTIFICATE NO. 7126 CARLOS ROCHIN ARIZONA U. S. A.

REMARKS:

DATE: November 19, 1970

CHARGES: $ 264.50

CARLOS ROCHIN
MANAGER
REGISTERED ASSAYER
ARIZONA REG. 7126

ROCHIN ENGINEERING AND ASSAY OFFICE

P. O. BOX 218 PHONE (AC 602) 364-8092
DOUGLAS, ARIZONA - 85607

HECTOR A. ROCHIN, Jr.
MINING ENGINEER AND
LAND SURVEYOR
ARIZONA REG. No. 2473

ASSAYERS & METALLURGICAL CHEMISTS

CERTIFICATE OF ASSAY

LOCATION:
CHARLESTON MINE
TOMBSTONE QUAD., ARIZONA
D.D.H. STEWART No. 5

Name Western Exploration, Drawer 1217, Douglas, Arizona

		GOLD OZS	SILVER OZS	COPPER %	Pb %	Zn %		INTERVALS	BOX No
30823	14485	Tr	Tr	0.068	tr	tr	CORE	1323 - 1325	143
30824	14486	Tr	Tr	0.058	0.10	tr		1325 - 1327	"
30825	14487	Tr	Tr	0.068	0.18	tr		1327 - 1329	"
30826	14488	0.01	1.93	0.058	0.21	0.80		1329 - 1331	"
30827	14489	Tr	0.04	0.068	0.15	tr		1331 - 1332	"
30828	14490	Tr	Tr	0.087	tr	0.50		1389 - 1394	150
30829	14491	Tr	0.08	0.079	tr	1.50		1394 - 1398	"
30830	14492	Tr	Tr	0.068	tr	tr		1398 - 1403	151
30831	14493	Tr	Tr	0.087	tr	tr		1403 - 1408	"
30832	14494	Tr	Tr	0.078	tr	tr		1408 - 1413	152
30833	14495	Tr	Tr	0.079	tr	tr		1413 - 1417	"
30834	14496	Tr	Tr	0.058	tr	tr		1417 - 1422	153
30835	14497	Tr	Tr	0.068	tr	tr		1422 - 1427	"
30836	14498	Tr	Tr	0.068	tr	tr		1427 - 1432	154
30837	14499	Tr	Tr	0.097	tr	tr		1432 - 1436	"
30838	14500	Tr	Tr	0.079	tr	tr		1436 - 1441	155
30839	14316	Tr	Tr	0.050	tr	tr		1441 - 1446	"
30840	14317	Tr	Tr	0.050	tr	tr		1512 - 1517	163
30841	14318	Tr	Tr	0.050	tr	tr		1517 - 1521	"
30842	14319	Tr	Tr	0.040	tr	tr		1[illegible] - 1605	173
30843	14320	Tr	Tr	0.040	tr	tr		1605 - 1609	"
30844	14321	Tr	Tr	0.069	tr	tr		1609 - 1624	175
30845	14322	Tr	Tr	0.050	tr	tr		1624 - 1629	"

REGISTERED ASSAYER CERTIFICATE No. 7126 CARLOS ROCHIN Signed Arizona U.S.A.

REMARKS:

DATE: 22 Nov 70

CHARGES: $ 264.50

CARLOS ROCHIN
MANAGER
REGISTERED ASSAYER
ARIZONA REG. 7126

ROCHIN ENGINEERING AND ASSAY OFFICE

P. O. BOX 218 PHONE (AC 602) 364-8092
DOUGLAS, ARIZONA - 85607

HECTOR A. ROCHIN, Jr.
MINING ENGINEER AND
LAND SURVEYOR
ARIZONA REG. No. 2473

ASSAYERS & METALLURGICAL CHEMISTS

CERTIFICATE OF ASSAY

LOCATION:
CHARLESTON LEAD MINE
TOMBSTONE QUAD., ARIZONA
D.D.H. STEWART No.5

Name Western Exploration, Drawer 1217, Douglas, Arizona

Attn: Mr. J. Forrester

		GOLD OZS	SILVER OZS	COPPER %	Pb %	Zn %		INTERVALS	BOX No.
30846	14323	Tr	Tr	0.050	tr	tr	CORE	1643 - 1645	177
30847	14324	Tr	Tr	0.030	tr	tr		1645 - 1647	"
30848	14325	Tr	Tr	0.020	tr	tr		1647 - 1649	"
30849	14326	Tr	Tr	0.040	tr	tr		1649 - 1651	"
30850	14327	Tr	Tr	0.050	tr	tr		1651 - 1653	"
30851	14328	Tr	Tr	0.040	tr	tr		1653 - 1655	178
30852	14329	Tr	Tr	0.327	1.60	2.50		1655 - 1657	"
30853	14330	Tr	Tr	0.288	0.27	0.50		1657 - 1659	"
30854	14331	Tr	Tr	0.060	tr	tr		1659 - 1662	"
30855	14332	Tr	Tr	0.040	tr	tr		1662 - 1665	"
30856	14333	Tr	0.10	0.754	tr	tr		1665 - 1667	179
30857	14334	Tr	0.04	0.536	tr	tr		1667 - 1669	"
30858	14335	Tr	Tr	0.119	tr	tr		1669 - 1672	"
30859	14336	Tr	0.34	1.310	tr	tr		1672 - 1674	"
30860	14342	Tr	Tr	0.069	tr	tr		1674 - 1676	"

REGISTERED ASSAYER CERTIFICATE NO. 7126 CARLOS ROCHIN Date Signed Arizona U. S. A.

REMARKS:

DATE: 22 Nov 70

CHARGES: $ 172.50

CARLOS ROCHIN
MANAGER
REGISTERED ASSAYER
ARIZONA REG. 7126

ROCHIN ENGINEERING AND ASSAY OFFICE

P. O. BOX 218 PHONE (AC 602) 364-8092
DOUGLAS, ARIZONA - 85607

HECTOR A. ROCHIN,
MINING ENGINEER AND
LAND SURVEYOR
ARIZONA REG. No. 24

ASSAYERS & METALLURGICAL CHEMISTS

CERTIFICATE OF ASSAY

RESULTS FROM:
CHARLESTON MINE DH #5
TOMBSTONE QUAD. ARIZONA

Name Western Exploration Office Drawer 1217 Douglas, Arizona 85607

Attn: Mr. R.W. Ludden		GOLD OZS	SILVER OZS	COPPER %	Pb %	Zn %	INTERVALS
31070	16951			0.030	0.10	Tr	537 - 544
31071	16952			0.040	0.10	Tr	544 - 550
31072	16953			0.050	Tr	Tr	570 - 575
31073	16954			0.030	Tr	Tr	650 - 660
31074	16955			0.025	0.10	Tr	660 - 670
31075	16956			0.025	Tr	Tr	670 - 680
31076	16957			0.030	Tr	Tr	680 - 685
31077	16958			0.035	Tr	Tr	685 - 690
31078	16959			0.025	Tr	Tr	690 - 700
31079	16960			0.040	Tr	Tr	700 - 705
31080	16961			0.035	Tr	Tr	705 - 710
31081	16962			0.030	0.11	Tr	710 - 720
31082	16963			0.025	0.17	0.15	720 - 730
31083	16964			0.030	0.13	0.20	730 - 740
31084	16965			0.020	0.13	0.15	740 - 750
31085	16966			0.030	Tr	Tr	750 - 760
31086	16967			0.030	Tr	Tr	760 - 770
31087	16968			0.030	Tr	Tr	770 - 780
31088	16969			0.030	Tr	Tr	780 - 790
31089	16970			0.030	Tr	Tr	790 - 800
31090	16971			0.040	Tr	Tr	800 - 810
31091	16972			0.025	Tr	Tr	810 - 820
31092	16973			0.040	Tr	Tr	820 - 830

REGISTERED ASSAYER CERTIFICATE 7126 CARLOS ROCHIN ARIZONA U.S.A.

REMARKS: CORE SAMPLES

DATE: February 17, 1971

CHARGES: $ 189.75

CARLOS ROCHIN
MANAGER
REGISTERED ASSAYER
ARIZONA REG. 7126

ROCHIN ENGINEERING AND ASSAY OFFICE

P. O. BOX 218 PHONE (AC 602) 364-8092
DOUGLAS, ARIZONA - 85607

HECTOR A. ROCHIN, J
MINING ENGINEER AND
LAND SURVEYOR
ARIZONA REG. No. 247

24

ASSAYERS & METALLURGICAL CHEMISTS

CERTIFICATE OF ASSAY

RESULTS FROM:
CHARLESTON MINE DH #5
TOMBSTONE QUAD. ARIZONA

Name Western Exploration Office Drawer 1217 Douglas, Arizona 85607

Attn: Mr. R.W. Ludden		GOLD OZS	SILVER OZS	COPPER %	Pb %	Zn %	INTERVALS	
31093	16974			0.050	Tr	Tr	850 - 860	
31094	16975			0.045	Tr	Tr	900 - 905	
31095	16976			0.060	0.17	Tr	905 - 910	
31096	16977			0.060	Tr	Tr	910 - 915	
31097	16978			0.080	0.41	Tr	915 - 920	
31098	16979			0.085	0.13	Tr	920 - 925	
31099	16980			0.050	Tr	Tr	925 - 930	
31100	16981			0.055	Tr	Tr	930 - 935	
31101	16982			0.035	0.34	Tr	935 - 940	
31102	16983			0.050	0.21	Tr	940 - 945	
31103	16984			0.045	0.23	0.30	945 - 950	
31104	16985			0.050	0.23	0.50	960 - 965	
31105	16986			0.065	0.17	Tr	965 - 970	
31106	16987			0.045	Tr	0.40	975 - 980	
31107	16988			0.060	Tr	0.40	980 - 985	
31108	16989			0.050	0.14	0.30	985 - 990	
31109	16990			0.050	0.17	Tr	990 - 995	
31110	16991			0.050	Tr	Tr	995 - 1000	
31111	16992			0.050	Tr	Tr	1000 - 1005	
31112	16993			0.050	0.13	Tr	1005 - 1010	
31113	16994			0.055	0.17	Tr	1010 - 1015	
31114	16995			0.045	0.17	Tr	1015 - 1020	
31115	16996			0.055	0.20	Tr	1020 - 1025	

REGISTERED ASSAYER CERTIFICATE NO. 7126 CARLOS ROCHIN U. S. A.

REMARKS:	DATE:	CHARGES:
CORE SAMPLES	February 17, 1971	$ 189.75

281

CARLOS ROCHIN
MANAGER
REGISTERED ASSAYER
ARIZONA REG. 7126

ROCHIN ENGINEERING AND ASSAY OFFICE

P. O. BOX 218 PHONE (AC 602) 364-8092
DOUGLAS, ARIZONA - 85607

HECTOR A. ROCHIN, J
MINING ENGINEER AND
LAND SURVEYOR
ARIZONA REG. No. 247:

ASSAYERS & METALLURGICAL CHEMISTS

CERTIFICATE OF ASSAY

RESULTS FROM:
CHARLESTON MINE D.H. #5
TOMBSTONE QUAD. ARIZONA

Name Western Exploration Office Drawer 1217 Douglas, Arizona 85607

Attn: Mr. R.W. Ludden		GOLD OZS	SILVER OZS	COPPER %	Pb %	Zn %	INTERVALS			
31116	16997			0.050	Tr	Tr	1025	- 1030		
31117	16998			0.060	0.17	Tr	1030	- 1035		
31118	16999			0.060	Tr	Tr	1035	- 1040		
31119	17000			0.055	Tr	Tr	1040	- 1045		

REGISTERED ASSAYER CERTIFICATE NO. 7126 CARLOS ROCHIN Date Signed Arizona U.S.A.

REMARKS:

DATE: February 17, 1971

CHARGES: $ 33.00

HECTOR C. ROCHIN
MANAGER
REGISTERED ASSAYER
ARIZONA REG. No. 4073

ROCHIN ENGINEERING AND ASSAY OFFICE

100 W. 9TH STREET • P. O. BOX. 218 • PHONE: EMpire 4-8092
DOUGLAS, ARIZONA

HECTOR A. ROCHIN
MINING ENGINEER AND
LAND SURVEYOR
ARIZONA REG. No. 2472

Western Exploration, Drawer 1217, Douglas, Arizona RESULTS FROM:

CERTIFICATE OF ASSAY

CHARLESTON MINE DH #5

Attn: Mr. R.W. Ludden		GOLD ozs.	SILVER ozs.	COPPER %	LEAD %	Zn %	INTERVALS	
31120	17151			0.040	Tr	0.50	1045 - 1050	
31121	17152			0.010	Tr	Tr	1050 - 1055	
31122	17153			0.035	Tr	0.40	1055 - 1060	
31123	17154			0.040	Tr	0.40	1060 - 1065	
31124	17155			0.045	Tr	0.45	1065 - 1070	
31125	17156			0.040	Tr	Tr	1070 - 1075	
31126	17157			0.040	Tr	Tr	1075 - 1080	
31127	17158			0.080	Tr	Tr	1080 - 1085	
31128	17159			0.040	Tr	0.35	1085 - 1090	
31129	17160			0.050	Tr	Tr	1090 - 1095	
31130	17161			0.055	Tr	0.40	1095 - 1100	
31131	17162			0.055	Tr	0.40	1126 - 1128	
31132	17163			0.070	Tr	Tr	1156 - 1159	
31133	17164			0.040	Tr	Tr	1159 - 1162	
31134	17165			0.040	Tr	Tr	1162 - 1165	
31135	17166			0.040	Tr	0.35	1165 - 1168	
31136	17167			0.040	Tr	Tr		1168 - 1171
31137	17168			0.040	0.10	Tr		1171 - 1174
31138	17169			0.040	Tr	0.40		1174 - 1177
31139	17170			0.050	Tr	0.30		1177 - 1180
31140	17171			0.050	Tr	Tr		1213 - 1218

REGISTERED ASSAYER CERTIFICATE NO. 7126 CARLOS ROCHIN Date Signed Arizona U. S. A.

REMARKS:
RESULT FROM: CHARLESTON MINE
TOMBSTONE QUAD.
ARIZONA

ANALYSIS CERT. BY:

DATE: Feb. 26, 1971

CHARGES: $ 172.25

HECTOR C. ROCHIN
MANAGER
REGISTERED ASSAYER
ARIZONA REG. No. 4073

ROCHIN ENGINEERING AND ASSAY OFFICE

100 W. 9TH STREET • P. O. BOX. 218 • PHONE: EMpire 4-8092
DOUGLAS, ARIZONA

HECTOR A. ROCHIN
MINING ENGINEER AND
LAND SURVEYOR
ARIZONA REG. No. 247

283

Western Exploration, Drawer 1217, Douglas, Arizona — RESULTS FROM: CHARLESTON MINE

CERTIFICATE OF ASSAY

D.D.H. #5

		GOLD ozs.	SILVER ozs.	COPPER %	LEAD %	Zn %			INTERVALS
31141	17172			0.040	Tr	Tr			1250 - 1260
31142	17173			0.040	Tr	Tr			1260 - 1270
31143	17174			0.040	Tr	Tr			1270 - 1275
31144	17175			0.035	0.10	Tr			1275 - 1280
31145	17176			0.070	Tr	0.70			1280 - 1285
31146	17177			0.070	Tr	Tr			1285 - 1290
31147	17178			0.050	Tr	Tr			1290 - 1295
31148	17179			0.065	Tr	0.40			1295 - 1300
31149	17180			0.085	Tr	Tr			1325 - 1330
31150	17181			0.070	Tr	0.35			1330 - 1335
31151	17182			0.060	Tr	Tr			1335 - 1340
31152	17183			0.070	Tr	0.40			1340 - 1345
31153	17184			0.060	Tr	Tr			1345 - 1350
31154	17185			0.070	Tr	0.40			1350 - 1355
31155	17186			0.070	Tr	0.40			1355 - 1360
31156	17187			0.070	Tr	0.30			1360 - 1365
31157	17188			0.080	Tr	Tr			1366 - 1370
31158	17189			0.090	Tr	0.35			1370 - 1375
31159	17190			0.110	Tr	Tr			1375 - 1385
31160	17191			0.080	Tr	0.35			1446 - 1452
31161	17192			0.080	Tr	Tr			1452 - 1458

REMARKS:
RESULTS FROM:
CHARLESTON MINE
TOMBSTONE QUAD.
ARIZONA

ANALYSIS CERT. BY:

REGISTERED ASSAYER CERTIFICATE 7126 CARLOS ROCHIN Fee Signed Arizona U. S. A.

DATE: Feb. 26, 1971

$ 172.25

CHARGES: $

HECTOR C. ROCHIN
MANAGER
REGISTERED ASSAYER
ARIZONA REG. No. 4073

ROCHIN ENGINEERING AND ASSAY OFFICE

100 W. 9TH STREET • P. O. BOX. 218 • PHONE: EMpire 4-8092
DOUGLAS, ARIZONA

HECTOR A. ROCHIN
MINING ENGINEER AND
LAND SURVEYOR
ARIZONA REG. No. 2472

284

Western Exploration office

Results from;
Charleston mine

CERTIFICATE OF ASSAY

DD.H. #5

ATTN: R.W. LUDDEN JR		GOLD ozs.	SILVER ozs.	COPPER %	LEAD %	Zn %		INTERVALS	
31162	17193			0.070	Tr	Tr		1458	- 1464
31163	17194			0.080	Tr	0.35		1500	- 1502
31164	17195			0.100	Tr	Tr		1502	- 1506
31165	17196			0.050	Tr	Tr		1506	- 1510
31166	17197			0.025	Tr	Tr		1582	- 1592
31167	17198			0.030	0.26	0.35		1592	- 1602
31168	17199			0.035	Tr	0.30		1602	- 1612
31169	17200			0.030	Tr	Tr		1612	- 1622
31170	17201			0.070	Tr	Tr		1622	- 1632
31171	17202			0.050	Tr	Tr		1632	- 1642
31172	17203			0.050	Tr	Tr		1676	- 1680
31173	17204			0.065	Tr	Tr		1680	- 1684
31174	17205			0.055	Tr	Tr		1684	- 1688
31175	17206			0.050	Tr	Tr		1688	- 1692
31176	17207			0.060	Tr	Tr		1692	- 1696
31177	17208			0.090	Tr	Tr		1696	- 1700
31178	17209			0.050	Tr	Tr		1700	- 1705
31179	17210			0.060	Tr	Tr		1705	- 1710
31180	17211			0.050	Tr	Tr		1710	- 1715
31181	17212			0.060	0.14	Tr		1715	- 1720
31182	17213			0.040	Tr	Tr		1720	- 1725

REMARKS:
RESULTS FROM:
CHARLESTON MINE
TOMBSTNE QUAD. ARIZONA

ANALYSIS CERT. BY:

DATE: Feb. 26, 1971

CHARGES: $174.25

HECTOR A. ROCHIN
MANAGER
REGISTERED ASSAYER
ARIZONA REG. No. 4073

ROCHIN ENGINEERING AND ASSAY OFFICE

100 W. 9TH STREET • P. O. BOX. 218 • PHONE: EMpire 4-8092
DOUGLAS, ARIZONA

HECTOR A. ROCHIN
MINING ENGINEER AND
LAND SURVEYOR
ARIZONA REG. No. 247

RESULTS FROM:
CHARLESTON MINE

CERTIFICATE OF ASSAY

WESTERN EXPLORATION OFFICE

D.D.H. #5

		GOLD ozs.	SILVER ozs.	COPPER %	LEAD %	Zn %		INTERVALS	
31183	17214			0.070	2.13	Tr		1725 - 1730	
31184	17215			0.040	1.05	Tr		1730 - 1735	
31185	17216			0.030	Tr	0.40		1735 - 1740	
31186	17217			0.030	Tr	Tr		1740 - 1745	
31187	17218			0.030	0.83	0.40		1745 - 1750	
31188	17219			0.030	Tr	Tr		1750 - 1755	
31189	17220			0.025	Tr	Tr		1755 - 1760	
31190	17221			0.025	Tr	Tr		1760 - 1765	
31191	17222			0.010	Tr	Tr		1765 - 1770	
31192	17223			0.040	Tr	0.30		1770 - 1775	
31193	17224			0.040	Tr	Tr		1775 - 1780	
31194	17225			0.040	Tr	Tr		1780 - 1785	
31195	17226			0.030	Tr	Tr		1785 - 1790	
31196	17227			0.030	Tr	Tr		1790 - 1795	

REMARKS:

XXXX RESULTS FROM:
CHARLESTON MINE
TOMBSTONE QUAD. ARIZONA

ANALYSIS CERT. BY:

DATE: Feb. 26, 1971

CHARGES: $ 116.50

5.A 1065

ASARCO

Exploration Department
Southwestern United States Division

January 28, 1986

Mr. James A. Briscoe
James A. Briscoe & Associates, Inc.
Suite 120
5701 E. Glenn Street
Tucson, AZ 85712

Charleston Mine Area
Tombstone District
Cochise County, AZ

Dear Mr. Briscoe:

Attached are five pages of 1978 drill logs by B.J. Devere from two holes (C-1: 2764'TD and C-5A: 1405'TD) in Section 36, T20S, R21E, next to Las Boquillas y Nogales land grant. Hole 1 is 2600' S80W and hole 5A is 1500' S45W of the NE corner of Section 36.

We hope this information will be useful to you and to the owner with the present land status problems adjoining the Boquillas Grant.

Very truly yours,

Fleetwood R. Koutz
Geologist

FRK:mek
Att.

cc: W.L. Kurtz/J.D. Sell

ASARCO Incorporated P. O. Box 5747 Tucson, Az 85703-0747
1150 North 7th Avenue (602) 792-3010

ASARCO

DEC 8 1978

JAMES STEWART COMPANY
PHOENIX, ARIZONA

Exploration Department
Southwestern United States Division
R. B. Crist
Property Manager

December 6, 1978

J. Stewart Company
3033 North Central Avenue
Phoenix, Arizona 85012

Attention: Mr. Roger Horne

Charleston Mine
Cochise County, Arizona

Dear Roger:

Sorry to be so late with this. Burt Devere, the Asarco geologist who handles the Tombstone area, gave me the enclosed log regarding your Charleston property.

In October, he logged the core from Drill Holes 1 and 2.

The alteration was weak and the mineralization decreased with depth. None of the core was assayed due to the lack of mineralization.

We always appreciate the opportunity to look at rocks. In this instance the core was not split for assay work, however, I did promise assays and if you ask again, I will get some for you.

Very sincerely,

R. B. Crist

R. B. Crist.

RBC:jlh
encls BJD log

ASARCO Incorporated P. O. Box 5747 Tucson, Az 85703
1150 North 7th Avenue (602) 792-3010

1/78
B.J.Devere

Charleston Pb Mine
Cochise County, Arizona

Hole #1

From	To	
0	2103	Drilled previously.
2103	2252	Cretaceous Bisbee Group, <½% py, rare Tr sph mineral.
2252	2514	Cretaceous Bisbee Group, barren to rare Tr py mineral.
2514	2640	Cretaceous Bisbee Group, weak py <1% mineral.
2640	2764	Cretaceous Bisbee Group, barren, no mineral.

Bottom 2764 feet.

Hole #5-A – This may be the same as #2

0	631	Drilled previously.
631	733	Tertiary-Cretaceous Bronco Volcanics, ±2% diss py mineral.
733	785	Tertiary-Cretaceous Bronco Volcanics, barren, no mineral.
785	824	Tertiary-Cretaceous Bronco Volcanics, ±1% diss py mineral.
824	984	Tertiary-Cretaceous Bronco Volcanics, barren, no mineral.
984	1184	Cretaceous Bisbee Group, barren, no mineral.
1184	1405	Cretaceous Bisbee Group, rare trace diss py, mineral.

Bottom 1405 feet.

BJD:jlh

py = pyrite
Tr = trace
sph = sphalerite
diss = disseminated

AMERICAN SMELTING & REFINING CO.
GEOLOGIC LOG

PROPERTY Charleston Pb Mine
MINING DISTRICT Tombstone
COUNTY, STATE Cochise, Arizona

DRILL HOLE 5-A
FINAL DEPTH 1405 ft

PAGE 1 of 3
DATE 10-19-78
LOG BY BLD

DEPTH FROM	DEPTH TO	ROCK	MINERALIZATION	ALTERATION	REMARKS
0	631	?	?	?	Drilled previously
631	647	Andesite	Barren	None	trace of magenitite, Bronco volcanics
647	675	Andesite	medium to fn gr diss xlyn py ±2%	moderate to strong clay, some vuggy calcite filled fractures	Rock shattered, Bronco volcanics
675	700	Andesite	Barren	Very weak clay	massive red andesite, similar to interval 631-647
700	711	andesite	medium to fn gr diss xlyn py ±2%	moderate to strong clay, calcite along some fractures	massive, vague impression of flow banding @ 65° to core axis, Bronco volcanics
711	714	Fault	3% py diss in gouge & Fault Bx matrix	None	fragments of Hb in fault Breccia
714	733	Dacite Porphyry	rare trace of very fn gr py diss. along occ fractures	weak clay, weak chlorite	massive dacite porphyry - Bronco volcanics
733	748	Andesite Porphyry	Barren	None	massive, fresh Bronco volcanics
748	759	Dacite Porphyry	Barren	None	massive, fresh Bronco volcanics
759	772.5	Andesite Porphyry	Barren	None	Some talc and occ. Hb phenos. Massive Bronco vol.
772.5	779	Dacite Porphyry	Barren	None	massive, fresh as interval 748-759', Bronco volcanics
779	784	Fault	Barren	None	—
784	785	Andesite Porphyry	Barren	None	Same as interval 759-772.5', Bronco volcanics
785	811	Dacite Porphyry	1% very fn gr diss py	Hb replaced by chlorite, diss calcite in groundmass, weak clay	massive - Bronco volcanics
811	820	Andesite	Trace very fn gr diss py	None	Somewhat felted texture, massive, Bronco volcanics
820	824	Fault	2% xlyn py diss in gouge	None	—
824	845	Andesite	Barren	some talc and calcite on fracture	Badly broken - Bronco volcanics
845	847	Fault	Barren	None	—
847	867	Andesite	Barren	talc and calcite on fractures	Same as interval 824-845' except much more massive - Bronco volcanics.

AMERICAN SMELTING & REFINING CO.
GEOLOGIC LOG

PROPERTY Charleston Pb mine
MINING DISTRICT Tombstone
COUNTY, STATE Cochise, Arizona

DRILL HOLE 5-A
FINAL DEPTH 1205 ft

DATE 10-19-78
LOG BY BJD

DEPTH FROM	DEPTH TO	ROCK	MINERALIZATION	ALTERATION	REMARKS
867	894	Dacite porphyry	trace fn gr diss py, usually with chlorite that replaces Hb	chlorite after Hb & on fractures weak clay	very badly broken - Bronco volcanics
894	901	Fault	Barren	None	—
901	915	agglomerate	Barren	None	andesite fragments in sandy, volcanic matrix - Bronco vol
915	957	Andesite	Barren	None	massive fresh Red andesite - Bronco volcanics
957	984	agglomerate	Barren	None	Same as interval 901-915' - Bronco volcanics.
984	1017	Siltstone	very fn gr xlyn py diss <1%	weak silicification	massive - Kb
1017	1025	Sandstone	Barren	None	massive, fn gr maybe a sandstone lense in siltstone - Kb
1025	1050	siltstone	Barren	None	Brecke, somewhat fissel - Kb
1050	1063	Sandstone	Barren	None	fn gr, massive, - Kb
1063	1065	Fault	Barren	None	—
1065	1070	Siltstone	Barren	None	same as interval 1025-1050' - Kb
1070	1076	Sandstone	Barren	None	same as interval 1050-1063' - Kb
1076	1084	Fault	Barren	None	1/8" gouge zone down center of core, half of core siltstone other half sandstone
1084	1112	siltstone	rare trace of very fn gr py on fractures	some calcite filled fractures	moderately broken, - Kb
1112	1129	mudstone	Barren	None	poorly broken, contains some qtz pebbles and calcite blebs - Red mudstone - Kb
1129	1135	sandstone	Barren	xlyn calcite along fractures	occ. qtz pebbles scattered throughout fn gr SS - Kb
1135	1181	Sandstone	Barren	None	Sandstone grades back & forth between fn gr clean sand & sandy mudstone - Kb
1181	1205	Sandstone	rare trace of very fn gr xlyn py	chlorite surrounding occ. qtz pebbles	fn gr, moderately well broken - Kb

AMERICAN SMELTING & REFINING CO.
GEOLOGIC LOG

PROPERTY Charleston Pb Mine
MINING DISTRICT Tombstone
COUNTY, STATE Cochise, Arizona

DRILL HOLE 5-A
FINAL DEPTH 1405 ft

DATE 10-19-78
LOG BY BJD

DEPTH FROM	DEPTH TO	ROCK	MINERALIZATION	ALTERATION	REMARKS
1205	1224	Congl.	Tr py in monzonite fragment elsewhere barren	wk chlorite & xlyn sericite in monz fragment - no other alteration	fragments of Kb and medium gr. monzonite, could be PE fragment, congl. - KB
1224	1242	mudstone	Barren	None	Laminated beds dip 50° to core axis - KB
1242	1305	siltstone	occ rare specks of very fn gr xlyn py	None	massive siltstone with chert blebs - KB
1305	1315	Shale	rare trace of fn gr xlyn py	calcite filled fractures	badly broken, fossil Black shale, upper contact 55° to core axis - KB
1315	1321	siltstone	trace fn gr xlyn py	None	massive, sandy siltstone - KB
1321	1323	Fault	Barren	None	—
1323	1337	shale	Barren	calcite filled fractures	as interval 1305-1315' except no sulfides - KB
1337	1344	Fault	veins of py up to ½" wide in gouge	None	—
1344	1375	Shale	rare fine gr py along fractures that have some gouge, usually < ½" wide	None	moderately well broken Black silty shale - KB
1375	1379	Fault	xlyn py dis throughout < 1%	None	—
1379	1382	Shale	Barren	None	as interval 1344-1375 except no sulfides - KB
1382	1405	Sandstone	fn gr dis xlyn py	chlorite along occ. fractures	fn gr, somewhat friable, some carbonaceous blebs & lenses, arkosic - KB
			Bottom 1405 ft.		

54 ASSAYS

D.D. #6 LGGS

D.D. #6 ASSAYS

D.O. # 7 LOGS

October 15, 1971

Mr. H. Clyde Davis
Director, Mineral Development
859 East 2730 North
Provo, Utah 84601

Dear Clyde:

We have sent you under separate cover via Airmail three small samples from Drill Hole #7 at Tombstone. We are still drilling one shift only, and make about 20 feet a day.

Clarence and I think that you should have a serious study made of the samples enclosed yesterday. Note the unusual metal at approximately 3273'. Also you will note that we have run through a section of very good sericite. This is by far the deepest that we have encountered any sericite of this quality.

Both Clarence and I will be in Washington, D. C. all of next week. We will be staying at the Interstate Inn (703) 534-9100. If you think that the hole should be shut down, please call us there and we will call Clark. I think Clarence has a surge of optimism because of what we have encountered at 3200'.

Sincerely yours,

M. S. Horne

MSH:ef

D.D. #7 Assays

789

CMS

CHEMICAL & MINERALOGICAL SERVICES 3435 SOUTH STATE STREET, SALT LAKE CITY, UTAH 84115 (801) 266-8228

ANALYTICAL REPORT FOR:

Mr. Clyde Davis Brigham Young University	OUR NUMBER 2263
Administration Bldg.	DATE Oct 24, 1971
Provo, Utah Hole #7	CUSTOMER'S ORDER NO.

Sample #	Ag ppm	Cu ppm	Pb ppm	
3233 ft	3.0	20	10	Light Rock – pyrite
3274 ft		20		Darker Rock —
	.03	.002	.001	

Roy Broadhead

HAWLEY & HAWLEY

ASSAYERS AND CHEMISTS, INC.
BOX 50106 1700 W. GRANT RD.,
TUCSON, ARIZONA 85703 (602) 622-4836

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Inspiration
El Paso
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IDENTIFICATION		Gold OPT	Silver OPT	Lead %	Copper %	Zinc %	Mo. %			
Hole 7										
1	1656-1660		None	< 0.01	< 0.01	0.02				
2	1670-1674		0.01	< 0.01	< 0.01	< 0.01				
3	1674-1678		None	< 0.01	< 0.01	< 0.01				
4	1683-1687		None	< 0.01	< 0.01	< 0.01				
5	1697-1702		0.01	< 0.01	< 0.01	0.14				
6	1702-1706		None	0.03	< 0.01	0.03				
7	1716-1720		None	0.02	0.01	0.26				
8	1722-1725		0.01	0.18	< 0.01	0.01				
9	1775-1779		None	0.02	< 0.01	< 0.01				
10	1839-1843		None	< 0.01	< 0.01	< 0.01				
11	1885-1889		None	< 0.01	< 0.01	< 0.01				
12	2102-2106		None	< 0.01	0.01	< 0.01				
13	2161-2165		None	< 0.01	< 0.01	< 0.01				
14	2209-2213		None	< 0.01	< 0.01	< 0.01				
15	2218-2222		0.01	0.18	< 0.01	< 0.01				
16	2231-2235		None	< 0.01	< 0101	< 0.01				
17	2236-2240		None	< 0.01	< 0.01	< 0.01				

REGISTERED ASSAYER CERTIFICATE NO. 678 H. E. RICHARD Arizona U. S. A.

CC: James Stewart Co.
ADD: Attn: Mr. Clark Hughes
CITY: 3033 N. Central Avenue
ADD: Phoenix, Arizona 85012
CITY:

REMARKS:
Single analyses

Analysis Cert. By ..... Signed

Preparation $ 15.30
Analysis $ 161.50

ACC:	Date Spl. Received	Date Compl.		$
JAMES STEWART COMPANY	8/20/71	8/25/71	PNX 345569	176.80

HH3

D.D. #8 (OGS

Edgl

September 19, 1973

MEMO TO: M. S. Horne

RE: HOLE #8

It is my belief from observation that transition from volcanic to sedimentary rock occurred at a depth of 840-845 feet. At this point there is approximately six feet of fault gouge very, very heavy in ground up metals. No possibility of determination of type without microscopic examination and analysis.

Thorough lab studies and assays of this hole would be to your advantage. A piece of core from 870' location is attached.

CAC/bde

C. A. Cosgrove

Exhib

September 19, 1973

MEMO TO: M. S. Horne

RE: CHARLESTON

Hole #8 was stopped at depth 872', Monday, September 17.

Strata coordination was found between sediments:

#2 -- 785-797

#8 -- 850-864

A quartzitic material, one which I call sugar quartz. I think Clyde knows what I mean, and can give it its proper nomenclature.

Below this strata there is a transition into fine grained sandstone, very salicaous.

It is well to remember in comparing strata differentials that the collar elevation of Hole #8 is about 50 feet below collar elevation of Hole #2. Hence, the true strata differential is about 115 feet in a horizontal of 340' or a pitch of an angle whose tangent is .0334 plus or minus.

CAC/bde

C. A. Cosgrove

D.O. #8 HSAHS

Hole #8

E 1993

ARIZONA TESTING LABORATORIES

A DIVISION OF CLAUDE E. McLEAN & SON LABORATORIES, INC.
817 WEST MADISON ST. PHOENIX, ARIZONA 85007 PHONE 254-6181

For Mr. C. A. Cosgrove Date September 5, 1973

Sample of ~~XXXX~~ Ore Received: 9/4/73

Submitted by: same

ASSAY CERTIFICATE

Gold figured at $ 100.00 per ounce Silver figured at $ 2.00 per ounce

LAB. NO.	IDENTIFICATION	GOLD		SILVER		PERCENTAGES		
		OZ. PER TON	VALUE	OZ. PER TON	VALUE	COPPER	LEAD	ZINC
5152	8-287'	Nil		Nil		15ppm	35ppm	
	8-347'	Nil		Nil				
	8-488'	0.1ppm		1 ppm				
	8-566'	0.1		46	ppm? ≈1.50/ton	1200	5.00%	0.59%
	8-598'	0.1		13		70	0.37%	1000ppm

RECEIVED
JAMES STEWART CO.
Phoenix, Arizona

SEP 12 1973

Respectfully submitted,

ARIZONA TESTING LABORATORIES

Claude E. McLean Jr. U.O.

Claude E. McLean, Jr.

294

September 19, 1973

MEMO TO: M. S. HORNE

RE: ASSAY ON LAST SAMPLES

Hole #8, Depth 771:

Silver	.2
Lead	0
Copper	.025
Zinc	2.4

Hole #8, Sample #2, Depth 806:

Silver	.09
Lead	0
Copper	.025
Zinc	0

all was pyrite.

bds

D.D. #9 LOGS

295

October 10, 1973

Mr. H. Clyde Davis
859 E. 2730 North
Provo, Utah 84601

Dear Clyde:

RE: CHARLESTON - HOLE #9

Under separate cover we are transmitting samples of the volcanics from Hole #9. A brief study of the hole Monday and Tuesday indicated roughly the following.

The first 170 feet is very good serracite completely altered. We then have a horst of andesite, followed by another 40 or 50 feet of serracite. We then break into the andesite which continues down to approximately 515 feet. The top 100 feet of this andesite are fairly heavily metalized with pyrites diminishing as it approaches the 320 foot zone. At 340 feet we pick up a section which I believe is a minable zinc ore section flowing out from both sides of a high grade streak at 346 feet. This high grade streak has zinc sulphide, lead and calcopyrite. The calco extends a couple of feet in each direction from the center, but is the minor constituent of the three metals, with zinc predominant. I have not disturbed this ore zone, but have taken a sample from approximately 15 feet below it and having it assayed by Holley & Holley at Tucson. We are assaying this for all the metals.

The zone immediately below this ore zone for the next 150 feet is interspersed continuously with seams of sphalerite ranging from knife thickness to 1' thick zones. In almost every case the outer fringes of the sphalerite is seemingly oxidized into what I feel is hemimorphite. Also continuously through this section are isolated splotches of possible hemimorphite, some of them with the zinc as a pseudo morph after galena. Continuing on down, we pass the 520 foot zone and go into a couple hundred feet of highly salicious light colored volcanic monzonite heavily metalized with pyrite. However, much of the pyrite is oxidized and this zone also contains the green splotches. There falls below this a zone of a darker material, less heavily metalized with pyrite, but much heavier in the dark green splotches. Also this zone contains intermittent zones of the sphalerite, both in seams and in pocket forms. This hole bottoms out at approximately 900 feet deep with a 30 foot section of breccia.

They were still in the breccia when I left last night and I presume they will have penetrated the sediment today. It is our intention to cut off the hole today and await study of both Holes #8 and #9 before further work is done. The holes are cased for further depth drilling if and when it is deemed necessary.

This hole, to me, is the most interesting hole we have drilled yet. The zinc sphalerite throughout the whole volcanic section occupies practically every seam or fissure available. It also has penetrated both in disseminated form and in splotchy form. This led me to a possible conclusion as to the source of the intrusion bringing the metal in. It is my thinking that the intrusion may lay below the two east-west faults, one which is in the pit and the other a half mile north of the pit. You will recall this is a highly altered fault laying between two definite faults.

Would appreciate your thoughts on this, as well as the investigation into the zinc oxide in the volcanics. If it is zinc oxide, Hole #9 becomes a minable proposition. Regards.

Sincerely,

CAC/bde

C. A. Cosgrove

P.S. I realize that there is a possibility that the green material is one of the chlorides instead of the oxide of zinc, but even if this is true there are sufficient sulphides of zinc and lead that this Hole still leaves me excited.

D.D. #4 Assays

TO Clyde Davis
859 East 2730 North
Provo Utah 84601

FROM C.H. Cosgrove
326 San Vicente Blvd
Santa Monica Calif
90402

Subject Assays - Holes 8 & 9 Date 11/15/73

MESSAGE: Enclosed are copies of assays of Holes 8 & 9 which I took.

#9-365 was taken outside of what I considered an ore zone centered on Elevation 346' which I didn't want disturbed prior to logging & charting.

9-763 was taken to test for Zinc Oxide.

Both Holes deserve study and assay work. Surely Hope ASYR does some work on them.

NOV 19 1973

Regards
Clarence

Copy MS Horne

Signed

Rediform 4S 468 ☐ NO REPLY NECESSARY ☐ REPLY REQUESTED—USE REVERSE SIDE

SKYLINE LABS, INC.
Hawley & Hawley, Assayers and Chemists Division
P.O. Box 50106, 1700 W, Grant Rd., Tucson, Arizona 85703

CERTIFICATE OF ANALYSIS

SAMPLE IDENTIFICATION	GOLD oz/ton	SILVER oz/ton	LEAD %	ZINC %	COPPER %	MO			
9-365	<0.005	0.19	0.93	1.36	0.04				

NOV 19 1973

TO:
Mr. C.A. Cosgrove
1923 W. Osborn Road
Phoenix, Arizona 85015

Hole #9

REMARKS:
Single analysis

CERTIFIED BY:

CHARGES:
PREPARATION $
ANALYSIS $ 10.00
Minimum charge

ACCT.:	DATE REC'D:	DATE COMPL.:		
MR. C.A. COSGROVE	10/10/73	10/16/73	348082	$10.00

SKYLINE LABS, INC.
Hawley & Hawley, Assayers and Chemists Division
P.O. Box 50106, 1700 W. Grant Rd., Tucson, Arizona 85703

CERTIFICATE OF ANALYSIS

SAMPLE IDENTIFICATION	GOLD	SILVER	LEAD	ZINC %	COPPER %	MO	ZnO %		
763'				0.44	0.01		0.02		

TO:
Mr. C. A. Cosgrove
1923 W. Osborne
Phoenix, Arizona 85015
cc: Santa Monica, California

(Hole #9)
CAC getting copy to Dave

REMARKS:
Single analysis
Split Core being mailed under separate cover.

CERTIFIED BY:

CHARGES:
PREPARATION $
ANALYSIS $10.00

ACCT.:	DATE REC'D:	DATE COMPL.:		
MR. C.A. COSGROVE	10/12/73	10/18/73	348095	$10.00 Pa

D.D #10 LOGS

D.D. #10 Assays

3-7

COPPER STATE ANALYTICAL LAB., INC.

DNYANENDRA A. SHAH
ARIZONA REG. NO. 8888

REGISTERED ASSAYER
P. O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVANS BLVD
PHONE 602-884-5811
884-5812

James Stewart Co.
Attn: Harvey Hays
707 Mayer Central Bldg.
3033 N. Central Ave.
Phoenix, AZ 85012

JOB # 001454
RECEIVED 8/27/82
REPORTED 9/3/82
INVOICE # C 1775

SAMPLE NUMBER		Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm
Hole 10							
Box 7	1128-1137	0.04	11.6	0.16%	0.21%	2.10%	12
16	1211-1220	<.01	0.4	12	20	40	
24	1282-1291	0.01	0.5	14	194	500	
25	1291-1300 at 1292	0.01	0.7	20	106	0.60%	
27	1309-1318	<.01	1.8	0.16%	782	0.17%	
28	1318-1328	<.01	0.7	264	0.21%	0.98%	
36	1392-1401-A	<.01	0.7	38	44	55	22
36	1392-1401-B	<.01	0.9	112	0.12%	0.53%	
37	1401-1410	<.01	0.3	22	20	50	
43	1456-1465	0.01	<.2	18	14	54	
45	1475-1484	<.01	<.2	16	12	62	
47	1491-1503	<.01	<.2	15	12	40	
49	1513-1522	<.01	<.2	22	28	114	
61	1623-1632	<.01	1.2	116	491	810	30
62	1632-1642	<.01	0.2	30	40	26	

REGISTERED ASSAYER CERTIFICATE NO. 8888 Dnyanendra Amrutlal Shah ARIZONA U. S. A.

Shah 9-3-82

1 ppm = 0.0001% 1 troy oz./ton = 34.286 ppm 1 ppm = 0.0292 troy oz./ton

* Gold and Silver reported in troy oz. per 2,000 lb. ton.

301

COPPER STATE ANALYTICAL LAB., INC.

DNYANENDRA A. SHAH
ARIZONA REG. NO. 8888

REGISTERED ASSAYER
P. O. BOX 7517
TUCSON, ARIZONA 85725

710 E. EVANS BLVD.
PHONE 602—884-5811
884-5812

James Stewart Co.
707 Mayer Central Bldg.
3033 N. Central Ave.
Phoenix, AZ 85012
Attn: Harvey Hays

#10 Hole

JOB#	001493
RECEIVED	9/17/82
REPORTED	9/27/82
INVOICE#	C 1825

SAMPLE NUMBER		Pb ppm	Cu ppm	Zn ppm			
Box							
75		42	20	48			
100		62	20	160			
125		34	20	64			
135		32	18	50			

REGISTERED ASSAYER CERTIFICATE NO. 8888 Dnyanendra Amrutlal Shah DATE SIGNED 9-27-82 Arizona U. S. A.

Underground depth

1 ppm = 0.0001% 1 troy oz./ton = 34.286 ppm 1 ppm = 0.0292 troy oz./ton

* Gold and Silver reported in troy oz. per 2,000 lb. ton.

CHS #1 L065

CH2 1852 (sample labelled CHS-2)

The original rock was a mudstone or claystone composed largely of argillic material. Detrital grains are widely scattered in a massive, crudely bedded fabric. These are small grains that are subangular to subround. Most common are quartz and mafites (mostly hornblende), with minor plagioclase. The rock has been hornfelsed by epizonal thermal metamorphism.

Most of the rock is now a dense cryptocrystalline mass of pennine, quartz, and feldspars stippled uniformly with earthy clots of epidote. Incipient veinlets, zones of crystal growth, cut the fabric carrying the same minerals - quartz, pennine, epidote - as the matrix but of enlarged grain size. Pyrite is sparingly disseminated throughout the matrix with no associated nearby recrystallization. One spherule has developed and consists of cherty quartz and small quartz crystalloblasts formed around detrital quartz. This patch is purged of pennine but is rich in coarse poikiloblastic epidote, interstitial calcite, and pyrite.

CHS - 1 1810

The original rock was a porphyry, probably a quartz monzonite. There were numerous subhedral phenocrysts of plagioclase, and less of rounded β quartz, thick biotite books, and an occasional hornblende prism. These are randomly oriented in a granular matrix that was probably quartz-orthoclase. Epizonal alteration has been strong.

Coarse shreddy sericite replaces feldspars in matrix and phenocrysts alike. It also rims biotite and hornblende prisms that have been pseudomorphosed by clinochlore and accessory rutile. Sericite in the matrix tends to be pushed into the interstices of enlarged quartz grains. Pyrite tends to be concentrated in veins with crystalloblasts of anhydrite.

Minerals are present in the following estimated amounts: quartz 35%, sericite 54%, anhydrite 2%, pyrite 4%, clinochlore 4%, plagioclase tr., rutile 0.5%.

CHS - 1 2765

The rock is a breccia of varied fragments including coarse andesite among more numerous chunks of porphyry - probably a quartz monzonite originally. The original nature of the matrix is uncertain owing to intense alteration and K-metasomatism.

First coarse secondary biotite formed at the expense of mafites in the fragments; it is most abundnat in the andesite. As a result of continued growth, the biotite may attack plagioclase as well. A later epizonal event relates to veining by granular quartz associated with pyrite and anhydrite. Quartz has been introduced in the vein walls, growing to a granular aggregate with sericite (derived from feldspars) trapped in the interstices. Further from the veins, sericite attacks plagioclase and biotite has retrogressed to clinochlore. This episode seems to have ended with veining by pyrite-anhydrite-calcite.

CHS - 1 3862

The rock is a granodiorite porphyry with numerous subhedral phenocrysts of plagioclase and thick biotite books set at random in a granular quartz - feldspar matrix. A few phenocrysts of β quartz and hornblende were noted. Orthoclase rarely mantles and corrodes plagioclase phenocrysts. Hydrothermal alteration is moderate.

Early crushed zones developed in the fabric were characterized by growth of secondary biotite in plagioclase and growth of orthoclase. Disseminated pyrite relates to this event as well as retrograde sericitization of plagioclase. Some biotite and all hornblende were chloritized at this time. A last event is veining by coarse stilbite and interstitial calcite. These are evidently retrograde minerals derived in large measure from plagioclase.

Percentages of minerals present are as follows: quartz 20%, orthoclase 12%, plagioclase 34%, sericite 5%, calcite 6%, clinochlore 8%, stilbite 9%, pyrite 2%, magnetite 0.5%, biotite 3%, rutile 0.5%, apatite tr., zircon tr..

CHS - 2 4061

The rock is an andesite with a pilotaxitic structure. It was originally composed of swarms of well aligned plagioclase laths and small interstitial grains of mafites. Flowage alignment wraps around large subhedral plagioclase phenocrysts. The rock seems to have experienced some autobrecciation. Hydrothermal alteration and K-metasomatism have been moderate.

Most of the rock is unaffected except where cut by a network of granulated zones. In these, tiny scales of secondary biotite have formed at the expense of plagioclase and mafites; the biotite may be accompanied by lenses or pods of new, fresh orthoclase. Coarser orthoclase also occurs in well-defined veins with pyrite and late interstitial calcite. The walls of such veins show sericitization of plagioclase and retrograde alteration of biotite to clinochlore.

CHS - 3 2616

The rock is an intrusive breccia of intermediate composition. It carries innumerable phenocrysts of plagioclase and some β quartz and thick biotite books. These lie in a dense microgranular matrix of quartz and orthoclase that may embay or corrode phenocrysts. There is a crude flowage alignment to the matrix, and it carries numerous, partly resorbed xenoliths. Most of these appear to be cognate granophyres. The rock is quite fresh with epizonal alteration expressed only along fractures or veinlets.

Veinlets generally carry orthoclase and albite euhedrons; which it is depends on whether the vein cuts plagioclase (albite) or the matrix (orthoclase). Additional gangue minerals include calcite and clinochlore. Pyrite is rare in the veins and was also observed mantling accessory magnetite in the vein walls. Elsewhere in the rock alteration is confined to minor calcite and hydromicas in plagioclase and partial chloritization of biotite.

Total Depth
Elevation
Coordinates
Inclination Vertical

GEOLOGIC LO

Project Charleston

Chs-1

HOLE No. Chs-
Sheet No.
Date Completed
Logged by J R King

From	To	Interval	Size	Spec	Recovery %	Total % Sulf.	Diss/Fract	Mineralization Ratio	Py	Cpy	Mo	Others	Alteration Phy	Arg	Pot	Mag	Anhy	Rock	Remarks
0	22																		PLUG BIT
22	181	159	NC		+85	6-8	3/1		+				✓	+				U.S. por	oxidized to ≅15' alter is intense, b cavities occurs small fault 181-1
181	228	47	NC		"	5-7	3/1		+				✓	+				An por	PROB dike
228	278	50	NC		"	4-7	3/1		+				✓	+				Δ	Heterolithic lots
278	356	78	NC		"	7	3/1		+				+	✓				(An por) Δ	with open cavit as above. less cavities small 236 & 284.
356	450	94	NC		"	6-8	3/1		+				+	✓				Δ	good breccia w/ NATURE as w/
450	505	55	NC		"	3-5	4/1	100/1	+	tr			+			tr		An por	mix Gd por becoming more ch mag as diss &
505	690	185	NC		"	5-7	3/1	100/1	+	tr			+					Δ	poss fault 470-4 beautiful hetero breccia as seen outcrop
690	811	121	NC		"	4-6	2/1		+				+					An por	breccia in part alter decreasing CaCO3 occurring al fract.
811	831	20	NC		"	6	4/1		+				+					Gd por	less gmss, ligh color, alter sa same intensity
831	916	85	NC		"	4-5	2/1	20/1	+	tr			+			✓		And por	somewhat flui & brecciated, cpy both diss & fract
916	950	34	NC		"	3-4	1/1	15/1	+	✓	?		+			tr		Gd por	well mineral bu alter decreasi silic in

CHS #1

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GEOLOGIC LOG

Project Charleston

Chs-1

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Sheet No.

Date Completed

Logged by J. R. King

From	To	Interval	Size	Spec	Recovery %	Total % Sulf.	Diss/Fract	Mineralization Ratio	Py	Cpy	Mo	Others	Alteration Phy	Arg	Pot	Mag	Anhy	Rock	Remarks
50	860	10	NC		[illegible]	4	1/2		+				+			tr		Δ	Intrusive breccia mod to strong al
0	1000	40	NC		+85	5	2/1		+				+			tr		Gd por	as before sm faults 967, 998
00	1021	21	NX		+85	5	2/1		+				+			tr		"	as above
21	1411	390	NX		+85	3	1/2	20/1	+	tr			✓			✓	✓	An por	alter - weak to v chl increasing
11	1658	247	NX		+85	2-4	1/3	15/1	+	✓			+		tr	✓	✓	Δ	intrusive heter breccia no op cavities
58	1829	171	NX		+85	2	1/1	15/1	+	tr			+			✓	✓	Gd por	1507-17, 1610-12 as before show several zones o brecciation go gouge 1792-1800
29	2151	322	NX		+85	3	1/2	20/1	+	tr			+			tr	✓	Gd por	as before alter mod to strong
51	2312	161	NX		+85	4	1/2	25/1	+	tr			+				+	Δ-Gd por	variable por breccia, alter
312	2392	80	NX		+85	5	1/1	30/1	+	tr		?Gn	+				+	Gd por	small fault-2307 alter strong
2	2617	225	NX		+85	4	1/2	15/1	+	✓			+			✓	✓	Δ-Gd por	as above alter mod-stron heterolith breccia part, some stockw VNING
7	2879	262	NX		+85	3	1/3	10/1	+	✓			+		tr	tr	tr	Δ	Heterolith breccia gd por - mix - an alter mod to str
79	2947	68	NX		+85	2	1/4	20/1			?		+		tr	✓	tr	Gd por	as before alter wk to mo
			END OF NX																

305

GEOLOGIC LOG

Project [illegible] Chs-1

Date Completed

Logged by [illegible]

From	To	Interval	Size	Spec	Recovery %	Total % Sulf.	Diss/Frach	Mineralization Ratio	Py	Cpy	Mo	Others	Alteration Phy	Arg	Pot	Mag	Anhy	Rock	Remarks
47	3005	58	Bx		+85	2	1/4	20/1	+	✓	?		+		?	+r		Gd por	as before [illegible] 2767, alteratic weak to modes
05	3038	33	Bx		+70°	2	?												cataclastic - broken - fau
38	3469	431	Bx		+85°	1-2	1/4	10/1	+	✓			+		+r	✓		Gd por -	mix An por, al weak to moder cpy more abun
69	3605	136	Bx		+85	2	1/3	7/1	+	✓	?		+		✓	+r		Gd por -	mix An por as above [illegible] zones of better c
05	3656	51	Bx		+65	2	1/2	20/1	+	+r								fault	zone
656	3749	93	Bx		+85	1-2	1/1	30/1	+	+r			+		✓	+r		Gd por	with some zon An por (3600-14 alteration we
749	3890	141	Bx		+85	1	1/2	15/1	+	✓	?		+		✓	+r		Gd por	as above, s fault 3892 o weak
890	4002 TD	52	Bx		+85	2	1/2	10/1	+	✓	?		+		✓	✓		Gd por.	mix an por o before alter weak small - 3913, 3922.

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GEOLOGIC LOG

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Sheet No. 1
Date Completed
Logged by AR King

Project Charleston

From	To	Interval	Size	Spec	Recovery %	Total % Sulf.	Diss/Fract	Mineralization Ratio	Py	Cpy	Mo	Others	Alteration Phy	Arg	Pot	Mag	Anhy	Rock	Remarks
0	22																		Plug Bit
22	181	159	NC		+85	6-8	3/1		+				✓	+				U.S. por	oxidized to ≈150' alter is intense, breccia cavities occas. pres. small fault 181-186
181	228	47	NC		"	5-7	3/1		+				✓	+				An por	PROB dike
228	278	50	NC		"	4-8	3/1		+				✓	+				Δ (An por)	Heterolithic breccia with open cavities
278	356	78	NC		"	7	3/1		+				+	✓				Δ	as above. less OPEN CAVITIES, small FAULTS 236 & 284.
356	450	94	NC		"	6-8	3/1		+				+	✓				Δ	good breccia w/ FLUID NATURE as w/ MIN.
450	505	55	NC		"	3-5	4/1	100/1	+	tr			+			tr		An por	min Gd por, alter becoming more chl, mag as diss & uns. pass fau + 470-490
505	690	185	NC		"	5-7	3/1	100/1	+	tr			+					Δ	beautiful heterolith breccia as seen in outcrop
690	811	121	NC		"	4-6	2/1		+				+					An por	breccia in part alter decreasing in intro $CaCO_3$ occurring along fract.
811	831	20	NC		"	6	4/1		+				+					Gd por	less gmss, lighter color, alter remaining same intensity
831	916	85	NC		"	4-5	2/1	20/1	+	tr			+			✓		And por	somewhat fluidized & brecciated, cpy both diss & fract.
916	950	34	NC		"	3-4	1/1	15/1	+	✓	?		+			tr		Gd por	well mineral but alter. decreasing silic in[redacted]

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ASARCO
GEOLOGIC LOG

Project Chamberlain

E NO. Chs -
Sheet No.
Date Completed
Logged by J. R. King

From	To	Interval	Size	Spec	Recovery %	Total % Sulf.	Diss/Fract	Mineralization Ratio	Mineralization Py	Mineralization Cpy	Mineralization Mo	Mineralization Others	Alteration Phy	Alteration Arg	Alteration Pot	Alteration Mag	Alteration Anhy	Rock	Remarks
950	960	10	NC		-25	4	1/2		+				+			tr		Δ	intrusive breccia
																			mod to strong alter
960	1000	40	NC		+85	5	2/1		+				+			tr		6d por	as before, small
																			faults 967, 998.
1000	1021	21	NX		+85	5	2/1		+				+			tr		"	as above
1021	1411	390	NX		+85	3	1/2	20/1	+	tr			✓			✓	✓	An por	alter - weak to moderate
																			chl increasing
1411	1658	247	NX		+85	2-4	1/3	15/1	+	✓			+		tr	✓	✓	Δ	intrusive heterolith
																			breccia no open
																			cavities faulting
																			1507-17, 1610-12
1658	1829	171	NX		+85	2	1/1	15/1	+	tr			+			✓	✓	6d por	as before shows
																			several zones of
																			brecciation good
																			gouge 1792-1800 182
1829	2151	322	NX		+85	3	1/2	20/1	+	tr			+			tr	✓	6d por	as before alter.
																			mod to strong
2151	2312	161	NX		+85	4	1/2	25/1	+	tr			+				+	Δ-6d por	variable por &
																			breccia, alter str
2312	2393	20	NX		+85	5	1/1	30/1	+	tr		?Gn	+				+	6d por	small fault-2307
																			alter strong
2393	2617	225	NX		+85	4	1/2	15/1	+	✓			+			✓	✓	Δ-6d por	as above
																			alter mod - strong
																			heterolith breccia in
																			part, some stockwork
																			veining.
2617	2879	262	NX		+85	3	1/3	10/1	+	✓			+		tr	tr	tr	Δ	Heterolith breccia &
																			gd por - mix - an po
																			alter mod to strong
2879	2947	68	NX		+85	2	1/4	20/1			?		+		tr	✓	tr	6d por	as before
																			alter wk to mod.
			END OF NX																

ASARCO

GEOLOGIC LOG

Project Charleston

Hole No. Char 1

Sheet No.

Date Completed

Logged by J.R.K. & S.R.

From	To	Interval	Size	Spec	Recovery %	Total % Sulf.	Diss/Fract	Mineralization Ratio	Py	Cpy	Mo	Others	Alteration Phy	Arg	Pot	Mag	Anhy	Rock	Remarks
47	3005	58	Bx		+35	2	1/4	20/1	+	✓	?		+		?	tr		Gd por	as before. An por 2-2967, alteration weak to moderate
205	3038	33	Bx		+70°	2	?											cataclastic - broken - faulted	
038	3469	431	Bx		+85°	1-2	1/4	10/1	+	✓			+		tr	✓		Gd por -	mix An por, alter weak to moderate cpy more abundant
469	3605	136	Bx		+85	2	1/3	8/1	+	✓	?		+		✓	tr		Gd por -	mix An por as above, some zones of better cpy
605	3656	51	Bx		+65	2	1/2	20/1	+	tr								fault	zone
656	3749	93	Bx		+85	1-2	1/1	30/1	+	tr			+		✓	tr		Gd por	with some zones An por (3600-14). alteration weak
3749	3890	141	Bx		+85	1	1/2	15/1	+	✓	?		+		✓	tr		Gd por	as above, small fault 3890, alter weak.
3890	4002 TD	52	Bx		+85	2	1/2	10/1	+	✓	?		+		✓	✓		Gd por.	mix an por as before. alteration weak. small faults 3913, 3932,

CHS #1 ASSAYS

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm	As ppm			
1	Chs-1 68-75	<0.2	25	30	20	10				
2	143-152	<0.2	40	30	25	8				
3	164-169 tr Co ?	<0.2	310	25	30	4				
4	194-199		105	75	125	4				
5	321-326		255	120	100	6	5			
6	Chs-1 398-403	<0.2	255	110	185	16				

J. R. K.
APR 2 - 1974

TO:
American Smelting & Refining Company
Southwestern Exploration Division
P.O. Box 5747
Tucson, Arizona 85703

Attn.: Mr. J. R. King

REMARKS:
Trace analysis

CERTIFIED BY:
Registered Assayer Certificate No. 9425 William L. Lehmbeck Date Signed 4/24/74 Arizona U.S.A.

DATE REC'D:	DATE COMPL.:	JOB NUMBER:
4/20/74	4/24/74	740711

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm
1	CP-1 240-250		<0.2	15	50	185	2
2	CP-1 330-350		0.2	15	65	180	2
3	CP-1 370-395		<0.2	15	25	90	2
4	Chs-2 4351-4356	<0.02	<0.2	10	45	40	8
5	4470-4479	<0.02	<0.2	100	5	30	2
6	4742-4747	<0.02	<0.2	15	65	70	2
7	4971-4980	<0.02	<0.2	25	15	50	24
8	Chs-2 5012-5021	<0.02	<0.2	35	50	320	2

? Chs #1

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK

TO: American Smelting & Refining Company

REMARKS:

CERTIFIED BY:

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm			
1	CHS-1 520-528			300	45	70	8			
2	591-599			280	40	130	10			
3	692-700			180	105	200	4			
4	792-800			450	25	95	8			
5	CHS-1 923-933	<0.02	<0.2	330	60	80	14			

TO:
American Smelting & Refining Company
Southwestern Exploration Division
P.O. Box 5747
Tucson, Arizona 85703

Attn.: Mr. J. R. King

REMARKS:
Trace analysis

CERTIFIED BY:

DATE REC'D:	DATE COMPL.:	JOB NUMBER:
4/26/74	4/30/74	740759

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

3/3

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	Cu ppm	Pb ppm	Zn ppm	Mo ppm					
1	CHS-1 983-993	400	60	50	30					
2	CHS-1 1087-1097	600	25	20	14					
3	CHS-1 1257-1267	850	45	60	36					
4	CHS-1 1347-1357	750	45	60	40					

TO:
American Smelting & Refining Company
Southwestern Exploration Division
P.O. Box 5747
Tucson, Arizona 85703

Attn.: Mr. J. R. King

REMARKS:
Trace analysis

CERTIFIED BY:

DATE REC'D:	DATE COMPL.:	JOB NUMBER:
5/2/74	5/7/74	740816

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

314

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION		Cu ppm	Pb ppm	Zn ppm	Mo ppm					
1	CHS-1	1442-1452	950	50	55	22					
2		1552-1562	900	40	35	18					
3		1632-1642	1350	35	20	14					
4	CHS-1	1745-1754	20	30	5	22					

O:

American Smelting & Refining Company
Southwestern Exploration Division
P.O. Box 5747
Tucson, Arizona 85703

Attn.: Mr. J. R. King

REMARKS:

Trace analysis

CERTIFIED BY:

DATE REC'D:	DATE COMPL.:	JOB NUMBER:
5/9/74	5/14/74	740857

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

315

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm			
1	CHS-1 1857-1867			235	15	10	2			
2	1948-1958			610	35	40	6			
3	1996-2006			475	20	5	4			
4	2041-2051	<0.02	<0.2	135	20	5	30			
5	CHS-1 2124-2134			1200	20	5	12			

TO:
American Smelting & Refining Company
Southwestern Exploration Division
P.O. Box 5747
Tucson, Arizona 85703

Attn.: Mr. J. R. King

REMARKS:
Trace analysis

CERTIFIED BY: Charles E. Thompson

DATE REC'D: 5/17/74
DATE COMPL.: 5/22/74
JOB NUMBER: 740923

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

316

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm	As ppm		
1	CHS-1 2207-2217			60	10	5	< 2			
2	2280-2290			630	10	10	2			
3	2380-2390	<0.02	<0.2	620	10	5	10	28		
4	CHS-1 2455-2465			1150	10	10	20			

TO:
American Smelting & Refining Company
Southwestern Exploration Division
P.O. Box 5747
Tucson, Arizona 85703

Attn.: Mr. John R. King

REMARKS:
Trace analysis

CERTIFIED BY:

DATE REC'D:	DATE COMPL.:	JOB NUMBER:
5/31/74	6/6/74	741018

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

317

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	Cu %	Pb ppm	Zn ppm	Mo ppm					
1	CHS-1 2612-2622	0.19	20	20	18					
2	CHS-1 2525-2535	0.19	1000	85	12					

TO:
American Smelting & Refining Company
Southwestern Exploration Division
P.O. Box 5747
Tucson, Arizona 85703

Attn.: Mr. John R. King

REMARKS:
Trace analysis
Copper - single analysis

CERTIFIED BY:

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

DATE REC'D:	DATE COMPL.:	JOB NUMBER:
6/7/74	6/13/74	741062

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

318

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	Ag ppm	Cu ppm	Cu %	Pb ppm	Zn ppm	Mo ppm	As ppm		
	Series Chs-1:									
1	2684-2694		>2000	0.19	20	20	22			
2	2787-2797		>2000	0.13	15	15	16			
3	2844-2854		>2000	0.41	15	20	16			
4	2919-2929	< 0.2	950		25	15	10			
5	2525-2535 (from 741062)	< 0.2						5		

TO:
American Smelting & Refining Co.
Southwestern Exploration Division
P. O. Box 5747
Tucson, Arizona 85703

Attn: Mr. John R. King

REMARKS:
Trace analysis
3 Copper single analysis

CERTIFIED BY:

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK DATE SIGNED 6/17/74 Arizona U.S.A.

DATE REC'D:	DATE COMPL.:	JOB NUMBER:
6/13/74	6/17/74	741098

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

314

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION		Au ppm	Cu ppm	Cu %	Pb ppm	Zn ppm	Mo ppm			
1	Chs-1	3011-3021	<0.02	425		15	15	< 2			
2		3102-3112		495		10	15	2			
3		3231-3241		1300		10	30	< 2			
4		3305-3315		>2000	0.20	15	40	6			
5		3401-3411	<0.02	>2000	0.25	15	15	10			
6	Chs-1	3459-3469	<0.02	>2000	0.21	10	35	< 2			

D:
American Smelting & Refining Company
Southwestern Exploration Division
P.O. Box 5747
Tucson, Arizona 85703

Attn.: Mr. W. L. Kurtz

REMARKS:
Trace analysis
3 Copper - single analysis

CERTIFIED BY:

DATE REC'D:	DATE COMPL.:	JOB NUMBER:
6/28/74	6/29/74	741212

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

320

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION		Cu ppm	Cu %	Pb ppm	Zn ppm	Mo ppm				
1	Chs-1	3545-3554	>2000	0.23	10	25	14				
2	Chs-1	3626-3636	500		85	110	6				
3	Chs-1	3710-3719	435		220	240	6				

TO:

American Smelting & Refining Company
Southwestern Exploration Division
P.O. Box 5747
Tucson, Arizona 85703

Attn.: Mr. Steven R. Davis

REMARKS:

CERTIFIED BY: William L. Lehmbeck

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

DATE REC'D:	DATE COMPL.:	JOB NUMBER:
7/5/74	7/9/74	741246

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

321

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	Cu %	Pb ppm	Zn ppm	Mo ppm
1	Chs-1 3849-3858	0.23	15	35	18
2	Chs-1 3905-3914	0.26	45	160	4

J. R. K.

JUL 19 1974

TO:
American Smelting & Refining Company
Southwestern Exploration Division
P.O. Box 5747
Tucson, Arizona 85703

Attn.: Mr. S.R. Davis

REMARKS:

CERTIFIED BY: William L. Lehmbeck

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

DATE REC'D:	DATE COMPL.:	JOB NUMBER:
7/9/74	7/12/74	741282

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

322

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION		Cu %
1	CHS - 1	2535-2545	0.08
2		2545-2555	0.09
3		2555-2565	0.20
4		2565-2575	0.15
5		2575-2585	0.13
6		2585-2595	0.16
7		2595-2605	0.08
8		2605-2612	0.15
9		2622-2632	0.14
10		2632-2642	0.13
11		2642-2652	0.21
12	CHS - 1	2652-2662	0.17

American Smelting & Refining Co.
Southwestern Exploration Division
P. O. Box 5747
Tucson, Arizona 85703

Attn: Mr. W. L. Kurtz

REMARKS: Single determinations

CERTIFIED BY:

DATE REC'D: 8/5/74

DATE COMPL.: 8/13/74

JOB NUMBER: 741520

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

323

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	Cu %
	Series CHS-1	
1	2662-2672	0.11
2	2672-2684	0.11
3	2694-2705	0.30
4	2705-2715	0.15
5	2715-2725	0.16
6	2725-2735	0.18
7	2735-2745	0.21
8	2745-2755	0.21
9	2755-2765	0.17
10	2765-2775	0.19
11	2775-2787	0.25
12	2797-2807	0.22
13	2807-2817	0.20
14	2817-2827	0.22
15	2827-2837	0.18
16	2837-2844	0.17

J. R. K.
AUG 2 0 1974

0060
JRK

TO:
American Smelting & Refining Co.
Southwestern Exploration Division
P.O. Box 5747
Tucson, Arizona 85703

Attention: Mr. John R. King

REMARKS:
Single determinations

CERTIFIED BY:

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK ENGINEER ARIZONA U.S.A.
8/23/74

DATE REC'D:	DATE COMPL.:	JOB NUMBER:
8/22/74	8/23/74	741656

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

324

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION		Cu %
1	CHS - 1	2854-2865	0.26
2		2865-2875	0.24
3		2875-2885	0.15
4		2885-2895	0.18
5		2895-2905	0.12
6		2905-2915	0.10
7		2915-2919	0.10
8		2929-2940	0.14
9		2940-2950	0.12
10		2950-2960	0.12
11		2960-2970	0.11
12		2970-2980	0.09
13		2980-2990	0.05
14		2990-3000	0.05
15		3000-3011	0.05
16		3021-3030	0.03
17		3030-3040	0.05
18		3040-3050	0.04
19		3050-3060	0.04
20		3060-3070	0.04
21		3070-3080	0.04
22		3080-3090	0.10
23		3090-3103	0.08
24		3112-3120	0.06
25		3120-3130	0.04
26		3130-3140	0.09
27		3140-3150	0.09
28	CHS - 1	3150-3160	0.09

TO:
American Smelting & Refining Company
Southwestern Exploration Division
P.O. Box 5747
Tucson, Arizona 85703

Attn.: Mr. John King

REMARKS:
Single analysis

CERTIFIED BY:

DATE REC'D:	DATE COMPL.:	JOB NUMBER:
8/26/74	8/29/74	741694

325

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION		Cu %
1	CHS-1	3160-3170	0.05
2		3170-3180	0.05
3		3180-3190	0.13
4		3190-3200	0.12
5		3200-3210	0.10
6		3210-3220	0.14
7		3220-3232 *	0.11
8		3242-3250 **	0.09
9		3250-3260	0.16
10		3260-3270	0.08
11		3270-3280	0.10
12		3280-3290	0.14
13		3290-3305	0.20
14		3315-3325	0.19
15		3325-3335	0.20
16		3335-3345	0.09
17		3345-3355	0.06
18		3355-3365	0.15
19		3365-3375	0.20
20		3375-3385	0.22
21		3385-3401	0.25
22		3411-3420	0.25
23		3420-3430	0.20
24		3430-3440	0.09
25		3440-3450	0.16
26		3450-3459	0.18
27		3469-3480	0.26
28		3480-3490	0.24
29		3490-3500	0.28
30		3500-3510	0.19
31		3510-3520	0.29
32		3520-3530	0.15
33		3530-3545	0.33
34		3554-3565	0.26
35	CHS-1	3565-3575	0.16

TO:
American Smelting & Refining Company
P.O. Box 5747
Tucson, Arizona 85703

REMARKS:
* Sample marked 3220-3231
** Sample marked 3241-3250

CERTIFIED BY:

DATE REC'D: | DATE COMPL.: | JOB NUMBER:

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

326

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION		Cu %
36	CHS-1	3575-3585	0.35
37		3585-3595	0.32
38		3595-3605	0.22
39		3605-3615	0.07
40		3615-3626	0.09
41		3636-3645	0.05
42		3645-3655	0.02
43		3655-3665	0.04
44		3665-3675	0.03
45		3675-3685	0.01
46		3685-3695	0.01
47		3695-3710	0.03
48		3719-3730	0.07
49		3730-3740	0.01
50		3740-3750	0.02
51		3750-3760	0.03
52		3760-3770	0.03
53		3770-3780	0.02
54		3780-3790	0.03
55		3790-3800	0.04
56		3800-3810	0.03
57		3810-3820	0.04
58		3820-3830	0.07
59		3830-3840	0.06
60		3840-3849	0.12
61		3858-3870	0.07
62		3870-3880	0.07
63		3880-3890	0.06
64		3890-3905	0.08
65		3914-3925	0.21
66		3925-3935	0.08
67		3935-3945	0.17
68		3945-3955	0.15
69		3955-3965	0.09
70		3965-3979	0.22
71	CHS-1	3988-3992	0.09

REMARKS:

CERTIFIED BY: William L. Lehmbeck

REGISTERED ASSAYER CERTIFICATE NO. 9125 WILLIAM L. LEHMBECK DATE SIGNED 9/23/74 Arizona U.S.A.

DATE REC'D:	DATE COMPL.:	JOB NUMBER:
9/13/74	9/23/74	741873

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

327

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	Au ppm	Ag ppm	As ppm						
1	Chs-1 3979-3988	<0.02	0.6	< 1						
2	Chs-1 3992-4002	<0.02	0.8	< 1						

TO:
American Smelting & Refining Company
Southwestern Exploration Division
P.O. Box 5747
Tucson, Arizona 85703

Attn.: Mr. S.R. Davis

REMARKS:
Trace analysis

CERTIFIED BY:
William L. Lehmbeck
7/29/74

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

DATE REC'D:	DATE COMPL.:	JOB NUMBER:
	7/29/74	741301-A

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	Cu %	Pb ppm	Zn ppm	Mo ppm	Au	Ag	As		
1	Chs-1 3979-3988	0.20	25	65	4					
2	Chs-1 3992-4002	0.16	20	230	4					

Please Run Au Ag As

J. R. K
JUL 19 1974

TO:
American Smelting & Refining Company
Southwestern Exploration Division
P.O. Box 5747
Tucson, Arizona 85703

Attn.: Mr. S. R. Davis

REMARKS:

CERTIFIED BY: William L. Lehmbeck

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

DATE SIGNED: 7/16/74

DATE REC'D:	DATE COMPL.:	JOB NUMBER:
7/11/74	7/16/74	741301

CHS #2 LOGS

CHS - 1 3862

The rock is a granodiorite porphyry with numerous subhedral phenocrysts of plagioclase and thick biotite books set at random in a granular quartz - feldspar matrix. A few phenocrysts of β quartz and hornblende were noted. Orthoclase rarely mantles and corrodes plagioclase phenocrysts. Hydrothermal alteration is moderate.

Early crushed zones developed in the fabric were characterized by growth of secondary biotite in plagioclase and growth of orthoclase. Disseminated pyrite relates to this event as well as retrograde sericitization of plagioclase. Some biotite and all hornblende were chloritized at this time. A last event is veining by coarse stilbite and interstitial calcite. These are evidently retrograde minerals derived in large measure from plagioclase.

Percentages of minerals present are as follows: quartz 20%, orthoclase 12%, plagioclase 34%, sericite 5%, calcite 6%, clinochlore 8%, stilbite 9%, pyrite 2%, magnetite 0.5%, biotite 3%, rutile 0.5%, apatite tr., zircon tr..

CHS - 2 4061

The rock is an andesite with a pilotaxitic structure. It was originally composed of swarms of well aligned plagioclase laths and small interstitial grains of mafites. Flowage alignment wraps around large subhedral plagioclase phenocrysts. The rock seems to have experienced some autobrecciation. Hydrothermal alteration and K-metasomatism have been moderate.

Most of the rock is unaffected except where cut by a network of granulated zones. In these, tiny scales of secondary biotite have formed at the expense of plagioclase and mafites; the biotite may be accompanied by lenses or pods of new, fresh orthoclase. Coarser orthoclase also occurs in well-defined veins with pyrite and late interstitial calcite. The walls of such veins show sericitization of plagioclase and retrograde alteration of biotite to clinochlore.

CHS - 3 2616

The rock is an intrusive breccia of intermediate composition. It carries innumerable phenocrysts of plagioclase and some β quartz and thick biotite books. These lie in a dense microgranular matrix of quartz and orthoclase that may embay or corrode phenocrysts. There is a crude flowage alignment to the matrix, and it carries numerous, partly resorbed xenoliths. Most of these appear to be cognate granophyres. The rock is quite fresh with epizonal alteration expressed only along fractures or veinlets.

Veinlets generally carry orthoclase and albite euhedrons; which it is depends on whether the vein cuts plagioclase (albite) or the matrix (orthoclase). Additional gangue minerals include calcite and clinochlore. Pyrite is rare in the veins and was also observed mantling accessory magnetite in the vein walls. Elsewhere in the rock alteration is confined to minor calcite and hydromicas in plagioclase and partial chloritization of biotite.

CH2 1852 (sample labelled CHS-2)

The original rock was a mudstone or claystone composed largely of argillic material. Detrital grains are widely scattered in a massive, crudely bedded fabric. These are small grains that are subangular to subround. Most common are quartz and mafites (mostly hornblende), with minor plagioclase. The rock has been hornfelsed by epizonal thermal metamorphism.

Most of the rock is now a dense cryptocrystalline mass of pennine, quartz, and feldspars stippled uniformly with earthy clots of epidote. Incipient veinlets, zones of crystal growth, cut the fabric carrying the same minerals - quartz, pennine, epidote - as the matrix but of enlarged grain size. Pyrite is sparingly disseminated throughout the matrix with no associated nearby recrystallization. One spherule has developed and consists of cherty quartz and small quartz crystalloblasts formed around detrital quartz. This patch is purged of pennine but is rich in coarse poikiloblastic epidote, interstitial calcite, and pyrite.

CHS - 1 1810

The original rock was a porphyry, probably a quartz monzonite. There were numerous subhedral phenocrysts of plagioclase, and less of rounded β quartz, thick biotite books, and an occasional hornblende prism. These are randomly oriented in a granular matrix that was probably quartz-orthoclase. Epizonal alteration has been strong.

Coarse shreddy sericite replaces feldspars in matrix and phenocrysts alike. It also rims biotite and hornblende prisms that have been pseudomorphosed by clinochlore and accessory rutile. Sericite in the matrix tends to be pushed into the interstices of enlarged quartz grains. Pyrite tends to be concentrated in veins with crystalloblasts of anhydrite.

Minerals are present in the following estimated amounts: quartz 35%, sericite 54%, anhydrite 2%, pyrite 4%, clinochlore 4%, plagioclase tr., rutile 0.5%.

CHS - 1 2765

The rock is a breccia of varied fragments including coarse andesite among more numerous chunks of porphyry - probably a quartz monzonite originally. The original nature of the matrix is uncertain owing to intense alteration and K-metasomatism.

First coarse secondary biotite formed at the expense of mafites in the fragments; it is most abundnat in the andesite. As a result of continued growth, the biotite may attack plagioclase as well. A later epizonal event relates to veining by granular quartz associated with pyrite and anhydrite. Quartz has been introduced in the vein walls, growing to a granular aggregate with sericite (derived from feldspars) trapped in the interstices. Further from the veins, sericite attacks plagioclase and biotite has retrogressed to clinochlore. This episode seems to have ended with veining by pyrite-anhydrite-calcite.

GEOLOGIC LO

Project Charleston Chs - 2

Hole No.
Sheet No.
Date Completed
Logged by A.R.K.

From	To	Interval	Size	Spec	Recovery %	Total % Sulf.	Diss/Fract	Mineralization Ratio	Py	Cpy	Mo	Others	Alteration Phy	Arg	Pot	Mag	Anhy	Rock	Remarks
0	21																		PLUG BIT
21	182		NC		+85	?	? 1/3	-					✓	+				Lus por	oxidized, with
																			of And por ex
																			132-159, alter
																			mod in Lus por,
																			in And por n
																			small faults 30, 8
																			103, 132-133, CO
182	619?		NC		+85	1-3	20/1		+				✓	+				Lus por	as above, al
																		"Uncle Sam"	variable wk-m
																			An por dikes
																			274-281 429-
																			pebble dikes freq
																			w/ above E
																			K6, 195-208, 29-2
																			267-274, 289, 3
																			376-403, 447, 46
619	1226		Nc		+85	1-3	20/1		+			tr GN Sph	+	+				Kbv	Bronco volcan
																			contact approx,
																			moderate mi
			↓																weaker. An f
																			768-808 919-923
			1012																1166 breccia
			Nx																1226 - strong a
226	1327		Nx		+90	1	20/1		+	tr		tr GN Sph	✓	+				An por	dike - variable
																			w/ some epido
1327	1355		Nx		+90	1-2	10/1		+				✓	+				BISBEE	sediments, silt
																			Bedding 10°, a
																			weak to mod.
1355	1407		Nx		+95	1	20/1		+					✓				An por	as above, epi
																			common mi
																			weak
																		CHS #2	

GEOLOGIC LOG

Project Charleston

Chs-2

Sheet No.

Date Completed

Logged by JRK

n	To	Interval	Size	Spec	Recovery %	Total % Sulf.	Diss/Fract	Mineralization Ratio	Py	Cpy	Mo	Others	Alteration Phy	Arg	Pot	Mag	Anhy	Rock	Remarks
27	1853		NX		+95	≥1	20/1		+				tr	✓				Bisbee	mudstones weak to mod; 1560-1579 1588 pebble dike 170 bedding 7°
53	1874		NX		+95	1	20/1		+					+				An por	
74	2210		NX		+95	≥1	25/1		+	?		tr ? Gn		✓			✓	Bisbee	sediment - as alter weak p flourite fault 92, bedding 1
10	2268		NX		95	1-2	20/1		+					+			+	An por	breccia - pebbl dike in part, 1 frags in A. s anhydrite VN
68	2307		NX		95	≥1	10/1		+					+				Bisbee	as above, mod mudstones, silts sandstone bed 12° dip
07	2352		NX		95	2-4	10/1		+				+	+				Peb dike	- fault zone
52	2949		NX		95	1-4	10/1		+	tr		tr Gn	✓	+				Bisbee	as above a weak - mod b 15° numerous & biotite dikes 2 2503-40 2572- 2592-2625, 267 2878-2903 epi
49	3033		?002 BX		25	3-6	10/1						+	✓		tr	✓	An por-	Gd por alter m bounded by a
33	3093		Bx		65													FAULT	involves both sed & intrusive rock

GEOLOGIC LOG

Project Charleston

Ch s - 2

OLE Ch

Sheet No.

Date Completed

Logged by ARK.

From	To	Interval	Size	Spec	Recovery %	Total % Sulf.	Diss/Fract	Mineralization Ratio	Py	Cpy	Mo	Others	Alteration Phy	Arg	Pot	Mag	Anhy	Rock	Remarks
Wedge			NX																
195	3415		3202 BX ↓		90														as described on page three
15	3895		BX		90	1-2	1/3		+	+r	+r	GN	+	✓			✓	BISBEE	siltst limesilt, s epidote g alter med to strong
345	4075		Bx			1-2	1/2		+				+		+r			An por	Gd por silicification r
275	4493		Bx		+90	1	1/1		+	+r	+r	GN	+		?		+	BISBEE	siltst alter strong silicification bedding 10°
193	4828		Bx		+90	≥1	2/1		+	+r	+r	GN	✓	✓				BISBEE	limest, congl alter to mod silic variable bed 10°
328	4959		Bx		+85	≥1	2/1		+		+r	GN						Paleozoic	marble alter is weak bedding 5°
259	4980		4985 AX ↓		+90	2-4	3/1		+				+					An por	fine grained r alteration poor core recovery silic noted
180	5028		AX		+80	.5-2	3/1		+	+r	+r	GN						Paleozoic	marble as before conta poor core recove alter wk, bedding 5 small fault 50

al - depth -3405 edge 5028

evation

ordinates

clination Vertical

ASARCO
GEOLOGIC LOG

✓ minor
tr trace

Project Charleston

E NO. Chs-2

Sheet No. 1

Date Completed

Logged by J R King - S R C

From	To	Interval	Size	Spec	Recovery %	Total % Sulf.	Diss/Fract	Mineralization Ratio	Py	Cpy	Mo	Others	Alteration Phy	Arg	Pot	Mag	Anhy	Rock	Remarks
0	21																		PLUG BIT
21	182		NC		+85	?	? 1/3	-					✓	+				Lus por	oxidized, with dikes of And por 80-100 132-159, alter is var mod in Lus por, wk in And por, numerous small faults 30, 80-85, 103, 132-133, CO_2 on
182	619?		NC		+85	1-3	20/1		+				✓	+				Lus por "Uncle Sam"	as above, alteration variable wk-mod, An por dikes 182-1 274-287, 429-463, pebble dikes freq, asso w/ above, faults 166, 195-208, 219-221, 2 267-274, 289, 310, 3 376-403, 447, 460, 48
619	1226		NC		+85	1-3	20/1		+			tr GN Sph	+	+				Kbu	bronco volcanics contact approx, alter moderate min some weaker. An por 768-828, 919-923, 940-9 1166, breccia 1185 1226 - strong alter
			↓ 1012 Nx																
1226	1327		Nx		+90	1	20/1		+	tr		tr GN Sph	✓	+				An por	dike - variable alte w/ some epi.
1327	1355		Nx		+90	1-2	10/1		+				✓	+				BISBEE	sediments, silts-sa Bedding 10°, alter weak to mod.
1355	1407		Nx		+95	1	20/1		+					✓				An por	as above, epidote common, min very weak

ASARCO

GEOLOGIC LOG

Project Charleston

H[illegible] NO. Chs-2
Sheet No.
Date Completed
Logged by JRK + S.R.[illegible]

	To	Interval	Size	Spec	Recovery %	Total % Sulf.	Diss/Fract	Mineralization Ratio	Py	Cpy	Mo	Others	Alteration Phy	Arg	Pot	Mag	Anhy	Rock	Remarks
2	1853		NX		+95	≥1	20/1		+				tr	✓				Bisbee	sediments [illegible] silt, mudstones altered weak to mod., fault 1560-1579, 1588, 1646 pebble dike 1709, bedding 7°;
3	1874		NX		+95	1	20/1		+					+				An por	mafic dike as scattered [illegible] phenocrysts and altered [illegible]
	2210		NX		+95	≥1	25/1		+	?		tr ? GN		✓			✓	Bisbee	sediments - as above altered weak poss. fluorite, fault 2187-92, bedding 10°
0	2260		NX		95	1-2	20/1		+					+			+	An por	breccia - pebble dike in part, Bisbee frags in Δ, strong anhydrite UNING
8	2302		NX		95	≥1	10/1		+					+				Bisbee	as above, nodular mudstones, siltst. sandstone, bedding 12°
2	2352		NX		95	2-4	10/1		+				+	+				Peb dike	- fault zone
2	2949		NX		95	1-4	10/1		+	tr		tr GN sph	✓	+				Bisbee	- as above altered weak - mod, bedding 15°, numerous an dacite dikes, 2470-94, 2503-40, 2572-76, 2592-2625, 2671-2721, 2878-2903 epi common
19	3032		3002 BX		25	3-6	10/1						+	✓		tr	✓	An por -	bd por altered moderately bounded by a fault
33	3093		Bx		65													FAULT	includes both sediment + [illegible] rocks

Depth 3405
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ASARCO
GEOLOGIC LOG

Project Charleston

NO. Chs-2
Sheet No. 3
Date Completed
Logged by ARK

	To	Interval	Size	Spec	Recovery %	Total % Sulf.	Diss/Fract	Mineralization Ratio	Py	Cpy	Mo	Others	Alteration Phy	Arg	Pot	Mag	Anhy	Rock	Remarks
3	3245		BX		+90	1-4	15/1		+	tr		tr GN	✓	✓		tr	✓	BISBEE	[illegible] limey siltstones alter mod bedding co, dike at 3112-3149.
5	3260		BX		+90	2-4	5/1	50/1	+	tr			+		tr		tr	Au pow	[illegible] alter strong
6	3415		BX		+90	1-4	5/1		+	tr		tr GN SPH	✓	+			tr	BISBEE	siltst, limey sit, limest, minor conglom alter is mod, epi common, silicification
							loss	hole	due	to	wash	at	30[illegible]					wedge	set for Chs-3111 at 3495

depth 5028
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ASARCO
GEOLOGIC LOG

Project Chalchuapa

NO. Chs-2W
Sheet No. 4
Date Completed
Logged by JRK

From	To	Interval	Size	Spec	Recovery %	Total % Sulf.	Diss/Fract	Mineralization Ratio	Py	Cpy	Mo	Others	Alteration Phy	Arg	Pot	Mag	Anhy	Rock	Remarks
wedge			NX																
75	3415		3202		40														as described on
			BX																page three
			↓																
15	3895		Bx		90	1-2	1/3		+	+v	+v	5N 1pk	+	v			v	Bisbee	siltst limestone, sandst
																			epidote alter, garnet
																			prevalent alter
																			mod to strong
95	4005		Bx		90	1-2	1/2		+				+		+v			An por	[illegible]
																			[illegible]
																			silicification noted
25	4493		Bx		+90	1	1/1		+	+v	+v	4N 1pk	+		?		+	Bisbee	siltst limest
																			alter strong -
																			silicification
																			bedding 10°
93	4828		Bx		+90	≥1	2/1		+	+v	+v	6N 1pk	v	v				Bisbee	limest, mod. lime
																			stone, alter wk
																			to mod. silicification
																			variable bedding
																			10°
28	4959		Bx		+25	≥1	2/1		+		+v	3N 1pk						Paleozoic	- marble
																			alter is weak
			↓																bedding 5°
57	4990		4985		+90	2-4	3/1		+				+					An por	fine grained mod
			AX																altered poor
			↓																core recovery on
																			contact silicification
																			noted
75	5028		Ax		+80	.5-2	3/1		+	+v	+v	5N 1pk						Paleozoic	marble as
																			before contact
																			poor core recovery
																			otherwise alteration
																			wk, bedding 5°
																			small fault 5028

CHS #2 ASSAYS

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

328

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION		Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm
1	CHS-2	50-60	<0.2	5	10	65	< 2
2		150-160	<0.2	35	15	95	< 2
3		250-260	<0.2	10	15	60	2
4		350-360	<0.2	5	10	75	< 2
5		450-460	<0.2	45	35	120	< 2
6		550-560	<0.2	10	50	65	< 2
7		650-660	<0.2	5	20	65	< 2
8		750-760	<0.2	5	20	65	< 2
9		850-860	<0.2	15	30	65	< 2
10	CHS-2	950-960	<0.2	5	35	35	< 2

TO:
American Smelting & Refining Company
P.O. Box 5747
Tucson, Arizona 85703

Attn.: Mr. S. R. Davis

REMARKS:

CERTIFIED BY: William L. Lehmbeck

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

DATE REC'D:	DATE COMPL.:	JOB NUMBER:
9/27/74	10/2/74	741959

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

339

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION		Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm
1	CHS-2	1050-1060	<0.2	10	65	75	2
2		1150-1160	<0.2	10	30	5	2
3		1250-1260	<0.2	55	15	130	< 2
4		1350-1360	<0.2	40	20	85	< 2
5		1450-1460	<0.2	5	15	35	2
6		1550-1560	<0.2	25	30	70	< 2
7		1650-1660	<0.2	5	10	35	< 2
8		1750-1760	<0.2	10	10	50	< 2
9		1850-1860	<0.2	15	50	130	2
10		1950-1960	<0.2	10	20	65	2
11		2050-2060	<0.2	5	15	70	2
12		2150-2160	<0.2	15	100	70	2
13		2190-2200	<0.2	5	20	5	2
14		2200-2210	<0.2	115	10	5	2
15		2210-2220	<0.2	35	15	50	2
16	CHS-2	2250-2260	<0.2	10	25	40	2

TO:
American Smelting & Refining Company
Southwestern Exploration Division
P.O. Box 5747
Tucson, Arizona 85703

Attn.: Mr. S. R. Davis

REMARKS:

CERTIFIED BY: WILLIAM L. LEHMBECK

REGISTERED ASSAYER CERTIFICATE NO. 9425 DATE SIGNED 10/7/74 Arizona U.S.A.

DATE REC'D:	DATE COMPL.:	JOB NUMBER:
9/30/74	10/7/74	741973

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

340

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm				
1	Chs-2 2911-2913	20.	485	5400	7600	< 2				

TO:

American Smelting & Refining Company
Southwestern Exploration Division
P.O. Box 5747
Tucson, Arizona 85703

REMARKS:

Trace analysis

CERTIFIED BY: William L. Lehmbeck

Date 5/30/79

DATE REC'D: | DATE COMPL.: | JOB NUMBER:

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm				
1	Chs-2 2988-2998	0.2	25	15	35	2				
2	Chs-2 3243-3253	0.6	210	1800	2100	2				
[redacted]		[redacted]								

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

CERTIFICATE OF ANALYSIS

Charles E. Thompson
Arizona Registered Assayer No. 942

William L. Lehmbeck
Arizona Registered Assayer No. 942

SAMPLE IDENTIFICATION	GOLD ppm	SILVER	COPPER	LEAD	ZINC ppm	MO ppm			
Chs-2 3243-3253	<0.02								
[redacted]	[redacted]				[redacted]	[redacted]			

TO: American Smelting & Refining Company
P.O. Box 5747
Tucson, Arizona 85703

Attn.: Mr. John R. King

REMARKS:

2 Gold @ $2.50
1 Zinc - 1.25
1 Molybdenum - $1.50

CERTIFIED BY: William L. Lehmbeck

REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK DATE SIGNED 11/4/74 ARIZONA U.S.A.

CHARGES:
PREPARATION $
ANALYSIS $ 7.75

DATE REC'D:	DATE COMPL.:	JOB NUMBER:	$ 7.75
	11/11/74	742154-A	

TO: American Smelting & Refining Company
P.O. Box 5747
Tucson, Arizona 85703

Attn.: Mr. John King

REMARKS:

CERTIFIED BY: William L. Lehmbeck

DATE REC'D:	DATE COMPL.:	JOB NUMBER:
10/30/74	11/4/74	742154

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

342

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm			
1	Chs-2 3378-3388	<0.02	<0.2	55	55	250	< 2			

TO:
American Smelting & Refining Company
Southwestern Exploration Division
P.O. Box 5747
Tucson, Arizona 85703

Attn.: Mr. John R. King

REMARKS:

CERTIFIED BY: William L. Lehmbeck

11/14/74

DATE REC'D: 11/6/74

DATE COMPL.: 11/14/74

JOB NUMBER: 74-2100

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	Au ppm	Ag ppm	Cu %	Pb ppm	Zn ppm	Mo ppm			
	Chs-2 W 4205-4215	<0.02	27	1.04	295	220	< 2			

TO:
American Smelting & Refining Co.
Southwestern Exploration Div.
P. O. Box 5747
Tucson, Arizona 85703

Attn: Mr. John King

REMARKS:

CERTIFIED BY:

DATE REC'D:

DATE COMPL.:

JOB NUMBER:

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	Au ppm	Ag ppm	Cu %	Pb ppm	Zn ppm				
1	Chs 4195-4205	<0.02	6.6	0.53	210	530				

American Smelting & Refining Company
Southwestern Exploration Division
P.O. Box 5747
Tucson, Arizona 85703

REMARKS:

CERTIFIED BY:

DATE REC'D:

DATE COMPL.:

JOB NUMBER:

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION		Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm			
1	CP-1	240-250		<0.2	15	50	185	2			
2	CP-1	330-350		0.2	15	65	180	2			
3	CP-1	370-395		<0.2	15	25	90	2			
4	Chs-2	4351-4356	<0.02	<0.2	10	45	40	8			
5		4470-4479	<0.02	<0.2	100	5	30	2			
6		4742-4747	<0.02	<0.2	15	65	70	2			
7		4971-4980	<0.02	<0.2	25	15	50	24			
8	Chs-2	5012-5021	<0.02	<0.2	35	50	320	2			

TO: American Smelting & Refining Company

REMARKS: Trace Analysis

CERTIFICATE: REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK

CHS. #3 1065

CHS - 1 3862

The rock is a granodiorite porphyry with numerous subhedral phenocrysts of plagioclase and thick biotite books set at random in a granular quartz - feldspar matrix. A few phenocrysts of β quartz and hornblende were noted. Orthoclase rarely mantles and corrodes plagioclase phenocrysts. Hydrothermal alteration is moderate.

Early crushed zones developed in the fabric were characterized by growth of secondary biotite in plagioclase and growth of orthoclase. Disseminated pyrite relates to this event as well as retrograde sericitization of plagioclase. Some biotite and all hornblende were chloritized at this time. A last event is veining by coarse stilbite and interstitial calcite. These are evidently retrograde minerals derived in large measure from plagioclase.

Percentages of minerals present are as follows: quartz 20%, orthoclase 12%, plagioclase 34%, sericite 5%, calcite 6%, clinochlore 8%, stilbite 9%, pyrite 2%, magnetite 0.5%, biotite 3%, rutile 0.5%, apatite tr., zircon tr..

CHS - 2 4061

The rock is an andesite with a pilotaxitic structure. It was originally composed of swarms of well aligned plagioclase laths and small interstitial grains of mafites. Flowage alignment wraps around large subhedral plagioclase phenocrysts. The rock seems to have experienced some autobrecciation. Hydrothermal alteration and K-metasomatism have been moderate.

Most of the rock is unaffected except where cut by a network of granulated zones. In these, tiny scales of secondary biotite have formed at the expense of plagioclase and mafites; the biotite may be accompanied by lenses or pods of new, fresh orthoclase. Coarser orthoclase also occurs in well-defined veins with pyrite and late interstitial calcite. The walls of such veins show sericitization of plagioclase and retrograde alteration of biotite to clinochlore.

CHS - 3 2616

The rock is an intrusive breccia of intermediate composition. It carries innumerable phenocrysts of plagioclase and some β quartz and thick biotite books. These lie in a dense microgranular matrix of quartz and orthoclase that may embay or corrode phenocrysts. There is a crude flowage alignment to the matrix, and it carries numerous, partly resorbed xenoliths. Most of these appear to be cognate granophyres. The rock is quite fresh with epizonal alteration expressed only along fractures or veinlets.

Veinlets generally carry orthoclase and albite euhedrons; which it is depends on whether the vein cuts plagioclase (albite) or the matrix (orthoclase). Additional gangue minerals include calcite and clinochlore. Pyrite is rare in the veins and was also observed mantling accessory magnetite in the vein walls. Elsewhere in the rock alteration is confined to minor calcite and hydromicas in plagioclase and partial chloritization of biotite.

GEOLOGIC LO

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Project Charleston

Chs-3

HOLE No.
Sheet No.
Date Completed
Logged by John R.

From	To	Interval	Size	Spec	Recovery %	Total % Sulf.	Diss/Fract	Mineralization Ratio	Py	Cpy	Mo	Others	Alteration Phy	Arg	Pot	Mag	Anhy	Rock	Remarks
0	23																		
23	115	92	NC		+80	1-4	–	–	+				+	+				Δ	Plug B,F Breccia w/ open oxidation to ~ 1 pred por + US
115	210	95	NC		+80	1-3	3/1		+					+				Dac por	dac→gd; phenos plag, Hb, Qtz Mc alter
210	560	350	NC		+75	3-6	5/1		+				+	✓				Gd por Δ	bottom 10' breccia in part, filling some alteration - strong faulting - 225, 25
560	610	50	NC 631		+85	3-6	4/1		+									Gd por	335, 355, 458, 4 as before relation
610	1070	460	NX		+85	2-5	3/1	100/1	+	tr		tr ON	+			tr	tr	Δ	heterolithic igne breccia frag. alter - st minor open cavit
1070	1093	23	NX		+85	2-3	5/1		+				+					Dac por	as above excep no py phenos plag hb qtz
1093	1104	11	NX		+85	2-3	2/1		+				+					Δ	heterolithic brec above alter decreasing
1104	1266	162	NX		+90	2-3	10/1		+			TR ON SPH	+				✓	Qtz Mz Por	with strong p dissem plag fa at 1260 otherwise sulfide VNING is NORMALLY NONE.

CHS #3

GEOLOGIC LO

Project Charleston

Ch s - 3

Sheet No.

Date Completed

Logged by LBK

From	To	Interval	Size	Spec	Recovery %	Total % Sulf.	Diss/Fract	Mineralization Ratio	Py	Cpy	Mo	Others	Alteration Phy	Arg	Pot	Mag	Anhy	Rock	Remarks
266	1484	[illegible]	NX		.95	2	3/1	25/1	+	tr			+		tr	tr	✓	Gd-Por	with dissem py [illegible] faulting 1278, [illegible] some brecciation [illegible] 1453-1484
484	1516	[illegible]	NX		.90	2	3/1	20/1	+	✓		tr GN	+			tr	✓	Δ	Heterolithic [illegible] breccia wi [illegible]
516	1587	[illegible]	NX		.95	1	4/1	20/1	+	✓			✓			tr	✓	An por	alter definite decreasing [illegible]
587	1930	[illegible]	NX		.95	1-2	4/1	20/1	+	✓			✓			✓	✓	Gd-por	of An por of C with [illegible] K s [illegible], alter wk to strong [illegible] ser twinn [illegible] An
930	2103	[illegible]	NX		.95	1	8/1	15/1	+	✓			✓		tr	✓	✓	Gd-por	mix 1830-1930 [illegible] relatively unjointed K-pl [illegible]
103	2340	[illegible]	NX		.95	≤1	4/1	10/1	+	✓			✓		✓	✓	✓	Gd por	mix and por qu possibly an intrus breccia zone
340	2501	[illegible]	NX		.95	1	2/1	15/1	+	✓			✓		✓	✓	tr	Gd por-	mix and por [illegible] rocks with K- phenos; in pa rock shows defi intrusive breccia qtz veining & [illegible] veining prevail

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GEOLOGIC LOG

Project Charleston

Ch s - 3

HOLE No.
Sheet No.
Date Completed
Logged by JRK.

From	To	Interval	Size	Spec	Recovery %	Total % Sulf.	Diss/Fract	Mineralization Ratio	Py	Cpy	Mo	Others	Alteration Phy	Arg	Pot	Mag	Anhy	Rock	Remarks
501	2910	[illegible]	NX		95	2	3/1	10/1	+	✓			+		✓	✓	✓	HYBRID	[illegible] mod to strong [illegible] por in places seen in Ch s hc before brec in places f 3254
2910	3003	93 TD	NX		95	≤1	2/1	15/1	+	✓			tr		tr	tr	tr	Gd por	very fresh, Kspar phenos alter weak, no chlorite.

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ASARCO
GEOLOGIC LOG

tr trace
✓ minor
+ abundant

Project Charleston

HOLE NO. [illegible]-3
Sheet No. 1
Date Completed
Logged by John R. [illegible]

From	To	Interval	Size	Spec	Recovery %	Total % Sulf.	Diss./Fract	Mineralization Ratio	Py	Cpy	Mo	Others	Alteration Phy	Arg	Pot	Mag	Anhy	Rock	Remarks
0	22																		Plug B.—
23	115	92	NC		+80	?1-4	–	–	+				+	+				Δ	Breccia w/ open cavitie oxidation to ≈ 150' pred. por qtz + US por fr
115	310	95	NC		+80	1-3	3/1		+					+				Dac por	dac→qtz phenos of Plag, Hb, Qtz, Mag, Py, altes to intense [illegible] bottom 10' intense sert.
310	560.	350	NC		+75	2-6	5/1		+				+	✓				Qtz por Δ	breccia in part, py-qtz filling some cavities alteration - chlorite fault, -225, 255, 310, 335, 355, 458, 470, 51[illegible]
560	610	50	NC 631		+85	3-6	4/1		+									Qtz por	as before except relative no breccia
610	1070	460	NX		+85	2-5	3/1	100/1	+	tr		TR GN SPH	+			tr	tr	Δ	heterolithic igneous breccia pred. qtz por frags alter - chlorite minor open cavit. Δ [illegible]
1070	1092	23	NX		+85	2-3	5/1		+				+					Dac por	as above, except no py phenos only plag, hb, qtz,
1093	1104	11	NX		+85	2-3	2/1		+				+					Δ	heterolithic breccia as above. alter is decreasing
1104	1266	162	NX		+90	2-3	10/1		+			TR GN SPH	+				✓	Qtz Mg Por	with strong py. dissem. plag strongly intermixed. fault at 1260 otherwise rock is unfractured. sulfide veining is virtually NON EXISTENT

depth 3003
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ASARCO
GEOLOGIC LOG

Project Charleston

E NO. Chs-3
Sheet No. 2
Date Completed
Logged by LRK

n	To	Interval	Size	Spec	Recovery %	Total % Sulf.	Diss/Fract	Mineralization Ratio	Py	Cpy	Mo	Others	Alteration Phy	Arg	Pot	Mag	Anhy	Rock	Remarks
66	1484	312	NX		+95	2	3/1	25/1	+	tr			+		tr	tr	✓	Gd-Por	with [illegible] [illegible] phenos also plag [illegible] qtz phenos. faulting 1278, 1303, [illegible] some brecciation [illegible] 1453-1494
94	1516	32	NX		+90	2	3/1	20/1	+	✓		tr 6N [illegible]	+			tr	✓	Δ	Heterolithic igneous breccia with some [illegible] sed-[illegible] frag.
6	1587	71	NX		+95	1	4/1	20/1	+	✓			✓			tr	✓	An por	alter definitely [illegible] [illegible] of An por of Chs-1
37	1930	343	NX		+95	1-2	4/1	20/1	+	✓			✓			✓	✓	Gd-por	with [illegible] K-spar phenos, alter [illegible] look to [illegible] [illegible] see twinning reflecting An por mix 1830-1930
30	2103	173	NX		+95	1	6/1	15/1	+	✓			✓		tr	✓	✓	Gd-por	lower relatively unjointed K-phenos generally lacking [illegible] [illegible]
23	2340	237	NX		+95	≤1	4/1	10/1	+	✓			✓		✓	✓	✓	Gd por	mix and por quite possibly a intrusive "breccia zone
40	2501	398	NX		+95	1	2/1	15/1	+	✓			✓		✓	✓	tr	Gd por-	mix and por both rocks with K-spar phenos, in part rock show definite intrusive brecciation qtz veining & mag veining prevalent

depth 3003
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ASARCO
GEOLOGIC LOG

Project Chalchicomula

NO. Chs-3
Sheet No. 3
Date Completed
Logged by JRK

	To	Interval	Size	Spec	Recovery %	Total % Sulf.	Diss/Fract	Mineralization Ratio	Py	Cpy	Mo	Others	Alteration Phy	Arg	Pot	Mag	Anhy	Rock	Remarks
1	2910	[illegible]	NX		~95	2	3/1	10/1	+	✓			+		✓	✓	✓	HYBRID	VOL-SFC ? alter mod to strong, rock f.g. weakly por in places not seen in the holes before breccia in places. Sent 3754
2	3003	93 TD	NX		~95	≤1	2/1	5/1	+	✓			tr		tr	tr	tr	Gd por	very fresh, with Kspar veinlets alter weak, minor ve chlorite.

CHS #3 Assays

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

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbeck
Arizona Registered Assayer No. 9425

CERTIFICATE OF ANALYSIS

ITEM NO.	SAMPLE IDENTIFICATION	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	Mo ppm
1	Chs-3 201-211	<0.02	<0.2	220	140	165	2
2	602-610	<0.02	<0.2	110	65	65	8
3	948-958	<0.02	<0.2	60	70	80	8
4	1213-1223	<0.02	<0.2	50	30	45	2
5	1486-1496	<0.02	3.2	870	820	1850	14
6	1577-1587	<0.02	0.2	185	35	110	6
7	2167-2176	<0.02	<0.2	295	40	50	16
8	2789-2799	<0.02	<0.2	940	70	55	12

American Smelting & Refining Company
Southwestern Exploration Division
P. O. Box 5747
Tucson, Arizona 85703
Attn: Mr. John R. King

REMARKS: Trace analysis

CERTIFIED BY: REGISTERED ASSAYER CERTIFICATE NO. 9425 WILLIAM L. LEHMBECK ARIZONA U.S.A.

DATE REC'D: 8/13/75

DATE COMPL.:

JOB NUMBER:

MISC CORE REC.
TO DRILLING

Gen Drilling

354

July 10, 1980

Mr. Nino Trujillo
Joy Manufacturing Company
750 E. Evans Blvd.
Tucson, Arizona 85713

Dear Mr. Trujillo:

RE: Diamond Core Drilling for Apache, Stewart and Suiter Claims

As per our telephone conversation this morning, I am writing to you concerning the possibility of your company doing some diamond core drilling work for us. This work would be done on our federal and state mining claims located in the vicinity of the old Charleston Lead Mine near Tombstone. I am enclosing a topographic map of the area. I have indicated on the 3 locations (red) where we need to have holes core drilled and also the location of our water well (blue). The holes need to be of sufficient diameter, so that we can eventually drill down to 4,000 feet.

We need to do $28,700 worth of assessment work. Ideally, we would like to do one-half of the work before September 1, 1980, and the balance thereafter. However, if obtaining a drilling rig appears to be difficult, we would like to have $15,900 worth of assessment work done between now and September 1, 1980.

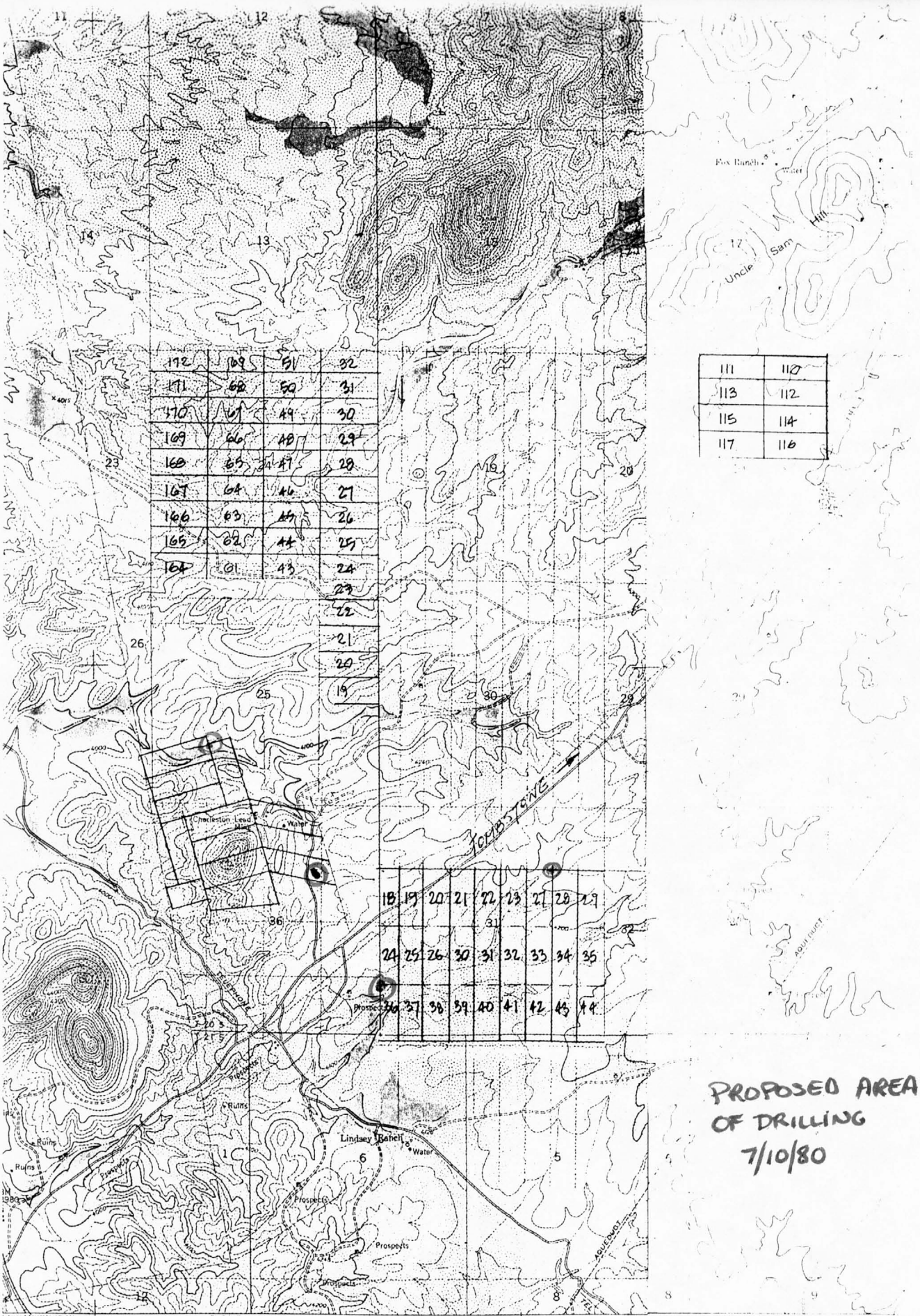
Please send us your bid for this work.

Sincerely,

Roger P. Smith
Property Manager

RPS:jts
Encl.

355



111	110
113	112
115	114
117	116

172	69	51	32
171	68	50	31
170	67	49	30
169	66	48	29
168	65	47	28
167	64	46	27
166	63	45	26
165	62	44	25
164	61	43	24
			23
			22
			21
			20
			19

18	19	20	21	22	23	27	28	29
24	25	26	30	31	32	33	34	35
36	37	38	39	40	41	42	43	44

PROPOSED AREAS OF DRILLING 7/10/80

● WATER WELL LOCATION

● LOCATIONS OF HOLES TO BE CORE DRILLED

JAMES STEWART COMPANY

REAL ESTATE INVESTMENTS AND DEVELOPMENT

707 MAYER CENTRAL BUILDING

3033 NORTH CENTRAL AVENUE • PHOENIX, ARIZONA 85012

602-264-2181

August 10, 1976

Mr. D. Clark Hughes
Box 141
St. David, Arizona 85630

Dear Clark:

RE: Drilling at Charleston Mine

In confirmation of our telephone conversations today, here is a summary of our drilling program for August and September, 1976:

1. Joy Manufacturing will be doing our drilling work this year. Our contact with them is Mr. Jack Lloyd in Tucson. His office phone number is 294-2931, and his home phone is 294-6260. I have instructed Joy to move onto the property on Thursday, August 12, and they expect to arrive between 10 a.m. and 12 noon. They expect to have a man meet you on the property on Wednesday, August 11 for a preliminary survey. He will contact you.

2. We must do at least $2,000 work on the "AIR HOLE" which is located on the southern base of the State claim "STATE NO. 6". This is within 10 or 15 feet of the dirt road going north into the property, and is approximately 300' to 400' north of the cattle guard entering from the paved highway. This hole on State property must be the first hole drilled. You are preparing the pad and the sump hole, and you have verified that our pump has power and is delivering water. You will deliver water via pipes or hoses to the site of the AIR HOLE. Determine whether this hole is cased or not. We do not desire permanent casing on the drilling we are doing this year. However, it may be necessary for Joy to put in temporary casing in order to get a core. Clarence Cosgrove suggests that the hole be drilled Size NX.

3. After the work is completed on the AIR HOLE, the rig and drilling operation should be moved to Hole #8 on Federal ground. This hole is already approximately 900' deep, and is to be deepened but not cased. We believe the size of this hole is BX. It should be deepened in the same size as the original hole. This hole is located in the southeast corner of the Mary Jo Federal claim as indicated on the various maps and diagrams which accompany this letter. It is within 15' of the dirt road going north through the property past the air strip and down in an arroyo.

   We are going to perform the Federal annual work for 1976 and 1977 back-to-back on this hole. Therefore, it is required that $12,000 of work be done in August and $12,000 of work be done in September without removing the drilling rig. You are to prepare the pad and sump hole for Hole #8. You are to provide water from our pump via hose or pipes to the site of Hole #8.

357

4. If you need a backhoe or tractor of some kind, you may contract for this. If you have difficulty, it has been suggested that we call Mr. J. T. Murphy in Tombstone whose phone number is 457-3382.

5. You can contact me any hour day or night at 264-2181 (office) or at 838-9776 (home) with any questions or problems. If you cannot reach me, the phone number for Clarence Cosgrove in Fairfax, Virginia is (703) 591-5074 (office) or at (703) 671-3287 (home). They are three hours later than we are.

6. The usual procedures are to be carefully observed with respect to the confidential nature and protection of the secret cores, proper labeling, boxing and storing of cores, etc.

I appreciate your assistance and willingness to go right to work after my first phone call.

Very truly yours,

Roger M. Horne

Roger M. Horne

RMH:ef
Encls.
cc Jack Lloyd
Clarence Cosgrove

To • M S Horne
• 707 Mayer Bldg
• Phoenix

FROM C R Cosgrove

358

Subject Charleston Core.

Date 9/30/75

MESSAGE:

On this visit to Charleston I met with Continental Oil Geologist & found Core Boxes of Hole ~~Osarko~~ #3 in considerable disarray and a section of Core 4-8 inches missing from considerable Number of Boxes ± > 60

also - similar condition at Charleston Mine with Hole #4. There the Boxes had the end Corners cut and the available piece withdrawn. ± 40 Boxes

Signed

Rediform 4S 468 ☐ NO REPLY NECESSARY ☐ REPLY REQUESTED—USE REVERSE SIDE

To • M S Horne
• 707 Mayer Bldg.
• Phoenix

FROM C A Cosgrove

359

Subject Charleston - Core - Protection

Date 9/30/75

MESSAGE: Last Week is Wednesday & Thursday I spent the most of my time straightening out Core & Core Boxes on Haber ASARCo #3, Hole 7, 8 & 4. We need ± 40 New Core boxes for replacement of Weather damage. By Restacking #4 & Moving out The Big Table, I can stack Hole #1 in our metal Bldg. That will put 1-2-4 & 6 in that Bldg. It needs ± 4 new glass panes installed. I propose to place the Asarco Core (1400 Boxes) in stacks inside Fence at Mill Site. This will Place 7, 8, 9, & Asarco 1, 2, 3 in that location. Note - Roof Framing & Metal has been Blown off. Weather Protection must come from Plastic tarps. Core on Hole 3 & Berths #1 are stacked along Fence under Ore Bins - Need some restacking & New Tarps. Advise on Proceeding & Timing.

Signed CAC

Rediform 4S 468

[ ] NO REPLY NECESSARY

[X] REPLY REQUESTED — USE REVERSE SIDE

G.C.

360

NO INFORMATION FOUND

AMERICAN EXPLORATION & MINING CO.

December 15, 1972

MEMORANDUM TO: C. B. Gillette

FROM: R.A. Rivera

SUBJECT: Assay Data from Charleston Mine, Arizona

Enclosed is a listing of Cu, Pb, Zn, MoS_2, Au and Ag assays on holes DDH 1, 2, and 4 obtained from an assay list accompanying a report by Hewitt Enterprises dated August 10, 1970, on the Charleston Mine property.

I have calculated an approximate equivalent dollar value for each assay interval making the assumption that one foot was assayed in those intervals for which only one depth was given in the logs. The net smelter recoverable values per unit used are as follows:

Copper	$6.30 per short ton unit (20 lbs.)
Lead	1.30 " " " " "
Zinc	1.60 " " " " "
MoS_2	15.00 " " " " "
Gold	50.00 per ounce
Silver	1.50 per ounce

Because of the poor state of the assay data (duplicated and overlapping assay intervals) it was not possible, without some difficulty, to make an automatic composite interval calculation on the computer. The enclosed list of dollar equivalents will, however, make a manual compositing calculation less time consuming.

Robert A. Rivera

RAR:ea

Enc.

-1E 36'

September 25, 1970

Mr. H. Clyde Davis
Director, Mineral Development
Brigham Young University
A-362 Smoot Adm. Building
Provo, Utah 84601

Dear Clyde:

When you were here, you advised that there would be a meeting of the Mineral Development Committee at Conference time. I haven't heard anything further from you, and therefore know nothing about the time or place.

Maurine and I are flying up Wednesday evening, September 30, and will be staying at the Travelodge at 161 West 6th South. If I do not hear from you before we leave, you might leave a message at the Travelodge as to where and when the meeting is to be held.

I got a report this afternoon from Garry Hewitt that Hole #5 is down to 1891'. There has been nothing of any particular interest for the last 250'. We had 10' of good ore (4' very good) between 1665' and 1676'. Phelps Dodge is doing the logging and assaying, and making whatever other studies seem to be warranted. Bud Walker and another chap are the two who are doing the logging and other on-site work. I had a very nice chat with Ray Ludden. I am sure that they are going to do a good job for us. They are very interested in getting another look at our cores.

I will look forward to seeing you at Conference time.

Sincerely,

M. S. Horne
President

MSH:ef

P. S. It appears that our St. David project is a dud. Do you have any other worthwhile no-good, money-wasting projects to be explored?

M. S. H.

362

September 21, 1970

Mr. R. W. Ludden, Jr.
Chief Geologist
Phelps Dodge Corporation
Western Exploration Office
Drawer 1217
Douglas, Arizona 85607

Dear Mr. Ludden:

RE: Charleston Mine - Tombstone

This will confirm the telephone conversation you had this date with Harlow Jones pertaining to our drilling at Charleston.

You are authorized to log the core on Hole #4 and also the one we are presently drilling, Hole #5. It is also our understanding that you will do what additional assay work appears to be necessary on Hole #4, and also assaying that is warranted for Hole #5. In addition, it is our understanding that we will promptly receive the results of all assays, logs and other information that is developed by your organization.

Mr. Clark Hughes lives on the project. He is going to split the cores, and will make the samples available to you for assaying. We will be guided by your recommendations as to what should be assayed.

We appreciated working with you on our prior drilling program, and we are glad that we have this opportunity to do so again.

Very truly yours,

JAMES STEWART COMPANY

M. S. Horne
President

MSH:ef
cc Harlow L. Jones
Clark Hughes

OFFICE CORRESPONDENCE

JAMES STEWART COMPANY

363

MEMORANDUM July 14, 1969

TO: M. S. Horne

RE: Charleston Mine - Hole #4

On Saturday, July 12, Hole #4 was located in the field.

From configuration 4 bearing S 27°40' West, a distance of 600' to stake set in field. This stake is positioned west of pipe line about 50 feet, on State Mining Claim in Section 36, T 20 S, R 21 E. Stake was marked Hole #4.

A measurement was taken to Hole #2 lying slightly west of north, a distance 1,050±.

A measurement was taken from configuration 4 to the #3 corner Father Lode Claim corner, a patented survey metal stake (68' South 15° W ±).

Clark Hughes and Roger Horne were present. They were both taken to the north end Center Corner of Claim Apache #7 which is the position recommended for the 200 foot hole for location work recommended for Claims Apache #1 through #17, and Apache #21 through #23.

A 60 foot hole can be drilled anywhere along the road on Claim #18 or #19.

Sampling of the bottom 150 feet of the 200 foot hole should be undertaken. This hole should be protected with a capped starting casing and then can be used for deeper core work at an opportune time.

On completion a post should be erected and a description of the location work naming the claims covered attached. A copy of this should be recorded. This is a practice (a good one) now being followed by the majors.

Actual hole location (200') described to Clark Hughes was 10' plus south of location and within 30 foot radius of end center post.

Quotations will be asked for to cover this drilling.

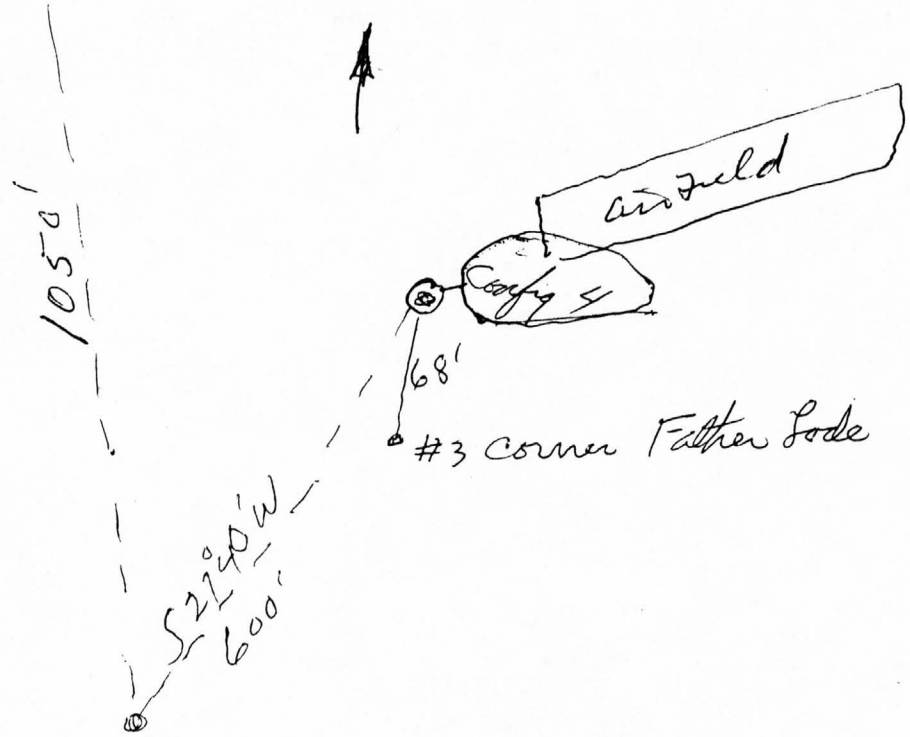
Clark Hughes was authorized to obtain a back hoe to dig the necessary mud sump. Its boundaries were marked on the ground at Hole #4 location.

C. A. Cosgrove

CAC:ef
Attachment

Field Notes

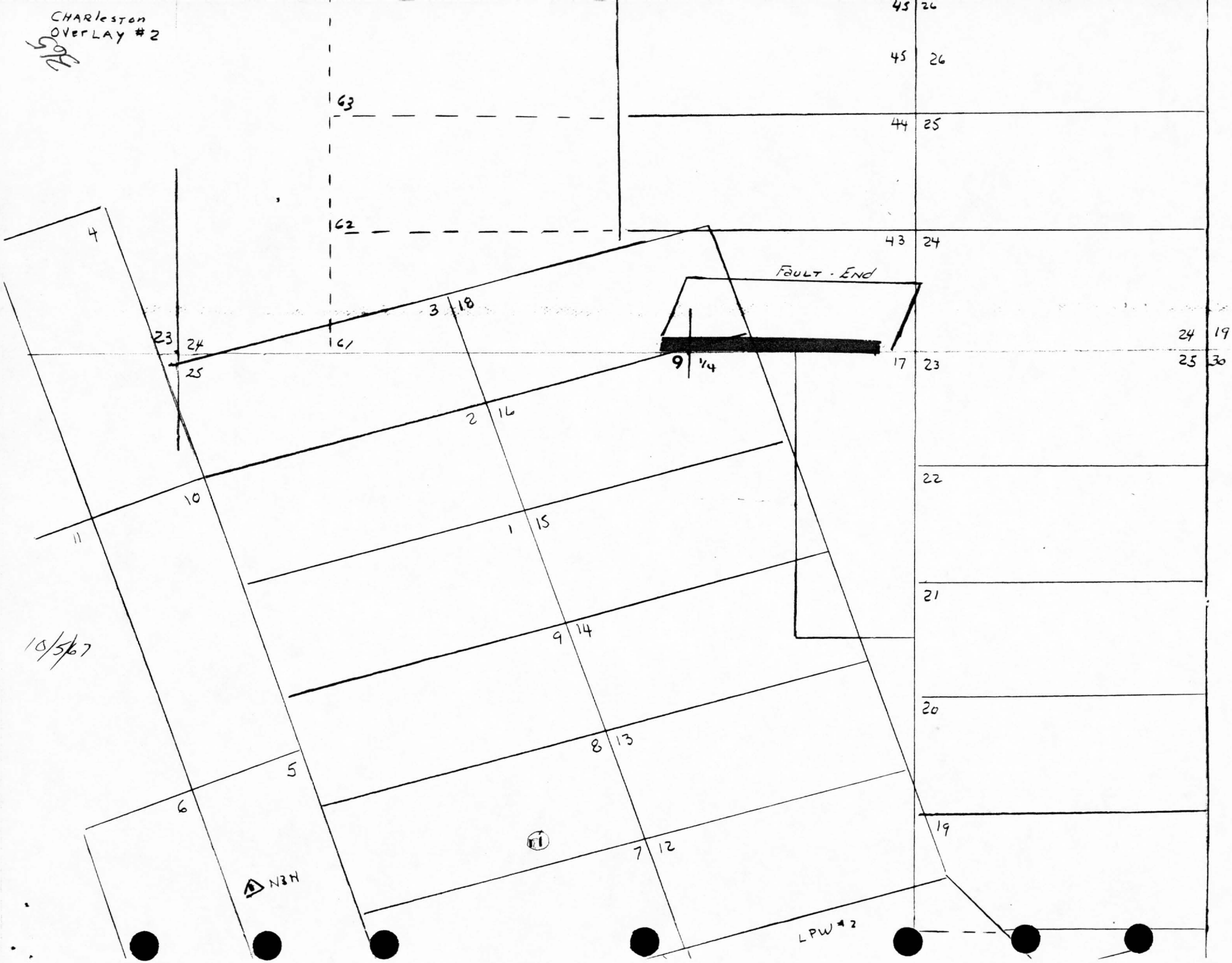
~~Configuration~~
Hole #2 Charleston



CHARleston
OVERLAY #2

A65

10/5/67



366

MEMORANDUM TO FILE July 11, 1969

RE: Charleston Mine

I called Joy Drilling in Tucson. There is no rig for about ten days. Jack Lloyd will notify us as soon as possible as to the exact date.

Location of Hole #4 will be done on Saturday, July 12, by the writer and Roger Horne within the bounds of location circle given by Loyd Hewitt. Scaled dimension and bearing from configuration 4 is South 27° 40' West, a distance of 600 feet to center point of a 450 diameter circle.

The drilling company requires a mud sump constructed closest point to the hole to be 6' to 10' away.

Drilling for claim location has been approved this date for 26 claims on the Apache group. No driller has been located yet for this work. It has been suggested that a location along the south line of Section 30 eithin the highest metal content prognosis given on the Loyd Hewitt preliminary map of equal sulphide content contours, received July 3, 1969.

The 200' hole should be located 100' to 1400' west of the SE 1/4 Section corner, Section 30, and slightly south of the section line. This area will be reviewed on Saturday. Further study will be made on this.

C. A. Cosgrove

CAC:ef

367

July 1, 1969

Mr. D Clark Hughes
P. O. Box 336
Tombstone, Arizona

Dear Clark:

RE: Charleston Mine

Preparation for resumption of core drilling will be needed within the next three weeks. If you can arrange the time, we would like you to handle the following items, submitting a billing for the time involved:

Lab Building: *Remove core of Hole 3 to shed area of mill and cover with plastic.
*Restack Core of Hole 2 on east side of Lab.
*Clear Lab of all material except core of Hole 2 - desk - table and benches.
*Core of Hole 4 will be delivered to Lab and stacked by drill crew. As this will be a tight hole, access to core will be restricted to those specifically authorized by me.

Water Line: Have available a connector tee with adapter and sufficient plastic pipe for 200' maximum run. We will need a valve at end or in plastic line. Notify us if purchase of any of this is required.

Dozer Work: Locate name and phone number of small dozer operator for mud tank work, if possible.

Water Pump: We would like pump check and any packing or other maintenance items handled before drilling starts. Notify us if there are any pump problems.

I appreciate your cooperation in handling these items. If you cannot handle these items, please let us know.

Very truly yours,

JAMES STEWART COMPANY

M. S. Horne
President

MSH:ef

368

December 23, 1968

To Whom It May Concern

Re: The holdover of the diamond drill rig on Hole 3, Charleston Mines

At the time Mr. Clarence Cosgrove was instructed by Mr. Horne to notify Boyles Bros. to discontinue the drilling on Hole 3, I contacted Mr. Roberts of Boyles Bros. and advised them that if they were willing at no cost to leave the equipment on the site I would endeavor to raise the monies from my group in Albuquerque to continue drilling Hole 3 deeper.

At that time I specifically told Boyles Bros. that this was no further obligation of Mr. Horne's or of James Stewart Company and if they wanted to gamble the time I would do the same and try to continue the drilling.

Upon talking to Mr. Janko the following week, I made mention of the fact that the monies were available provided suitable arrangements could be worked out with Mr. Horne. It was about that time or shortly thereafter that I was advised by Mr. Horne that he did not feel the hole should be deepened.

As for the charges incurred I did not personally agree to pay them nor did I agree that the James Stewart Company had anything whatsoever to do with this equipment after they told Boyles Bros. to remove it.

Hoping that this clears the matter up for all concerned.

H. L. Jones

H. L. Jones

HLJ:jm

(Original letter in "Boyles Bros - Acct Payable" (Acctg)

369

August 8, 1968

Mr. Charles H. Suiter
5008 West Weldon
Phoenix, Arizona 85031

Dear Mr. Suiter: RE: Assessment Work
Charleston Mine - 1968

Assessment work required to cover the twenty mining claims in the Charleston group was performed by Diamond Drilling accomplished by Boyles Bros. Drilling Company.

$2,000 was expended for this drilling during the period September 1, 1967 through December 31, 1967 on a diamond drill hole located on the Father Lode Claim.

Please advise if you require any further data for your necessary filing.

Yours very truly,

JAMES STEWART COMPANY

C. A. Cosgrove

CAC:ef

C 370

June 3, 1968

Mr. H. Clyde Davis
Director, Mineral Development
Brigham Young University
A-362 Smoot Adm. Building
Provo, Utah 84601

Dear Mr. Davis:

At Mr. Cosgrove's request, you will find enclosed two geologic logs from Phelps Dodge for Holes B-1 and Horne No. 3 by W. J. Walker. These reached our office on Saturday, June 1.

Very truly yours,

Secretary to
Mr. Cosgrove

ef
Encls.

6 371

PHELPS DODGE CORPORATION

WESTERN EXPLORATION OFFICE
DRAWER 1217
DOUGLAS, ARIZONA 85607

TEL. 602-364-8414

May 31, 1968

RECEIVED
JUN 1 1968
JAMES STEWART COMPANY
PHOENIX, ARIZONA

James Stewart Construction Company
3033 North Central Avenue
Phoenix, Arizona 85012

Attention: Mr. Clarence Cosgrove

Dear Mr. Cosgrove:

Attached are two geologic logs for holes B-1 and Horne #3 by Mr. W. J. Walker.

Very truly yours,

R. W. Ludden

R. W. Ludden, Jr.
Chief Geologist

RWL:g
Encls

Copy to Clyde Davis
6/3/68

7 372

MEMORANDUM TO FILE April 8, 1968

RE: Mining - Week Ending April 5, 1968

Drilling at Charleston Hole #3 has still not progressed. During this week another bit wore through from side in caved area. This hole was cemented again, and on Friday at 3:30 p.m. they had not reached the bottom of the hole, although they anticipated this for swing shift Friday.

Limestone is drilling without circulation using Bentonite Mud. They anticipate casing the hole approximately at 1400'. Hopefully this will restore circulation. No significant change in Porphry.

Bertha drilling hit a bad water course area at 1820' - 1826' and lost circulation on swing shift Thursday. Preparing to cement hole on Friday.

Two samples of core from Bertha were taken to Phelps Dodge at Douglas. Ray Ludden examined the core under microscope. He said he preferred to wait for return of Sid Williams on next Wednesday to give a report on these cores. One comment Ray Ludden made was the amazing amount of extremely fine sulphides in the core.

A sample -- Mixed area -- 1750' - 1800'. Not the best material. Was left at Douglas Assay office. Should mail results on Monday. Being assayed for Au, Ag, Cu, Pb, and Zu.

Dal Peterson did not get down to do any work this week.

Claim notices were posted on Claims Bertha 115 through 126; 99, 100, 85, 86, 79 and 93. The latter two were replacements.

C. A. Cosgrove

CAC:ef

373

March 25, 1968

Mr. H. Clyde Davis
~~Director, Mineral~~ Development
A-362 Smoot Adm. Building
Provo, Utah 84601

Dear Clyde:

Enclosed for your records are the following:

Phelps Dodge Log - Hole 3
Sheets 1, 2, 3, 4 (3/8/68
Also Sheet 4 (3/15/68)

Phelps Dodge Log - Hole 2
4 Sheets from Depth
2035' to and including 3212'

Very truly yours,

C. A. Cosgrove

CAC:ef
Encl.

374

March 19, 1968

Mr. H. Clyde Davis, Director
Mineral Development
Brigham Young University
A--362 ASB
Provo, Utah 84601

Dear Clyde:

Enclosed are assay results received from Phelps Dodge for Holes 2 and 3, dated March 11, 12, 13, 1968.

Also enclosed is an assay report from Arizona Assay Office (2037 ST) dated March 18 on Bertha and Charleston.

Very truly yours,

C. A. Cosgrove

ef
Encls.

375

March 6, 1968

Mr. H. Clyde Davis
752 East 2550 North
Provo, Utah

Dear Clyde: RE: Hole 2 - Log and Assays

Enclosed is a Xerox copy of the Phelps Dodge log 2553' to 3062', together with 54 assays ranging to 2630' depth from Rochin Engineering and Assay Office.

Regards,

C. A. Cosgrove

CAC:ef
Encls.

JAMES STEWART COMPANY

GENERAL CONTRACTORS

707 MAYER CENTRAL BUILDING

3033 NORTH CENTRAL AVENUE • PHOENIX, ARIZONA 85012

602-264-2181

376

February 21, 1968

TO: H. L. Jones or Assignee

RE: Drilling - Charleston Mine

This letter is to authorize you to furnish to the James Stewart Company rock bit drilling on the Charleston Mine property, holes not to exceed 300 feet deep, location and amount as directed on an individual basis. Payment will be made on the basis of $3.50 per linear foot.

No water will be furnished.

Drill cuttings from the Hole(s) shall be collected and bagged, tagged and delivered to the laboratory at our Mine headquarters on the basis of 5-foot intervals.

Payment will be made on the basis of footage completed and approved monthly.

Prior to start of drilling operations, you will provide evidence of insurance coverage with a hold harmless clause in favor of the undersigned. Liability amount of insurance shall be a minimum of $300,000/$100,000.

Evidence of payments for labor, material and equipment may be required by the undersigned as a prerequisite for progress payments.

This contract authorization can be cancelled without penalty to the undersigned for lack of performance, failure to provide insurance or evidence of non-payment of obligations.

Very truly yours,

JAMES STEWART COMPANY

M. S. Horne
President

MSH :ef

377

December 18, 1967

Mr. H. Clyde Davis
A-362 ASB
Brigham Young University
Provo, Utah 84601

Dear Clyde:

Enclosed you will find the results from Phelps Dodge on holes 1 and 2. They have additional information, but we have not received it as yet. Clarence and Seth are out of the city and requested that I forward this material to you this morning.

We will see you after the holidays, so have a nice Christmas.

Sincerely yours,

Harlow Jones

HJ;jm

Enclosures

P.S. Clyde, U. S. Gypsum's geologist will be on the property January 9.

378

October 19, 1967

Mr. H. Clyde Davis
752 - East 2550 North
Provo, Utah

Dear Clyde: RE: Charleston Mine

I returned from a trip to the Mine on Tuesday. During the course of checking on claim location work, I observed a limestone plug at the west edge of Section 7 approximately 6/10 mile due south of Dal's highest reading for the north area.

This limestone is surrounded by highly altered porphry. Looks good. The present hole is showing marked improvement. Metals started showing disseminated through the rock at about 650'.

Enclosed is the final sheet of the Drill Log for Hole #1. Should there be any corrections, please advise.

Our books finally came and your copy will be in the mail under separate cover today.

Regards,

C. A. Cosgrove

CAC:ef
Encl.

BRIGHAM YOUNG UNIVERSITY
PROVO, UTAH
84601

ERNEST L. WILKINSON, PRESIDENT

OFFICE OF UNIVERSITY DEVELOPMENT

September 15, 1967

Mr. Clarence Cosgrove
James Stewart Company
Suite 707
3033 North Central Avenue
Phoenix, Arizona 85012

Dear Clarence:

Hole #1 9 thru 1

I spent an hour with Lamar Evans of the U. S. Bureau of Mines, Salt Lake City, pertaining to the spectographic analysis of Samples 1 through 4 which I sent to you.

Titanium would be of interest if it were of the rutile type, which this was not. It would be necessary for you to benificiate it and upgrade it to give you something of commercial value. Then it is worth around 30¢ a pound. The strontium and zirconium and chromium are too small, and you couldn't afford to crush it for these minerals.

The only minerals that would be of value at this time in the spectographic analysis is the total values of copper, zinc, silver, gold, nickel, and lead.

I wish I could have been of more help on this other.

Best regards,

Clyde Davis, Director
Mineral Development

HCD:cc

38

JAMES STEWART COMPANY

GENERAL CONTRACTORS
707 MAYER CENTRAL BUILDING
3033 NORTH CENTRAL AVENUE • PHOENIX, ARIZONA 85012
602-264-2181

September 13, 1967

Mr. Clyde Davis
752-East 2550 North
Provo, Utah

Dear Clyde:

RE: Charleston Mine

We understood you were going to send us the rough draft of your logging of the core to date. Even though it is preliminary, we feel it would be of value to us.

We are continuing drilling. They can go to about 1750' with their present cables, and can go to as deep as 4000' with the present rig. Whereas above 1000 feet we had continuous changes in color and type of rock, from almost 1000 feet down, with a few intrusions, we have had generally a blue-gray rock, all of which carries pyrites or fine metal crystals, some areas more so than others. Clarence seems to feel that we are getting more seams, although no larger than we had, even as shallow as 300' or 400'.

* At 1548' we have intersected a massive crystalization of stibnite. At 1484' we have a calcite vein carrying galena with pyrites associated. At 1437' we had a very narrow band of black sericite extremely heavy with metals. The drillers report that there has been some indication of some other small sericite seams, but we have had no recovery of such below 1437'. We are having an assay for the metals at 1541' and a spectograph run at 1503'.

It appears to us that we might well use the instrument on each core box starting from the top of the hole on down to the basement to isolate those areas which seem to warrant assays or further definitive studies. This information might assist you in your logging of the hole.

We are somewhat at a loss as to know just what further analysis or study should be made of the core, the hole and the area surrounding the hole to determine what, if anything, we might have and what further should be done, keeping costs in mind. It does seem to us that if we could follow the sericite veins definitively, and particularly at depth or where that might lead us to a large body of ore, that we would be accomplishing something since the sericite seems to gain in metal value at depth. You might discuss this with Dal and see if some means could be evolved to trace the sericite vein structures.

We have had copper occurrences from almost the top of the hole to the bottom to some extent, except that some areas are quite barren and some areas are slightly richer. What might this indicate? Clarence feels that we are continuing to get an increase in mineralization (not necessarily copper) at depth in the rock dispersons.

At this moment we still have not heard from Dal regarding his program. We are anxiously waiting the arrival of you and Dal.

We would also appreciate your comments regarding the memorandum of September 5, 1967 titled "Data Required for Charleston Tract and Fairbanks Tract from Dal Peterson et al". It is recognized that this memorandum sets forth objectives that cannot be fully achieved, but the purpose of the memorandum was to summarize a complete set of objectives that would be desirable to achieve, if possible. If we have overlooked certain factors or items, we would like to have them added to this basic memorandum so that Dal and we can continually strive towards achieving desirable objectives insofar as possible.

There is some question in our office whether or not we sent you a copy of this memorandum; therefore another copy is enclosed in case we failed to send you one on the 5th.

Sincerely yours,

M. S. Horne

MSH:ef
Encl.

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September 11, 1967

Mr. H. Clyde Davis
752 East 2550 North
Provo, Utah

Dear Clyde:

RE: Spectograph Analysis for Samples 1 through 4

We note that in the above samples, your spectographic shows appreciable titanium, strontium, zirconium and chromium.

In view of the price of the metal titanium, we would be very interested in your reaction to the value of this ore in connection with these metals.

Our results from the new assays on the diabase material indicate nil on gold, negligible on copper and silver.

Regards,

C. A. Cosgrove

CAC:EF

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August 23, 1967

Mr. Clyde H. Davis
752 - East 2550 North
Provo, Utah

Dear Clyde:

There is enclosed a sample of the pulp from No. 102 which is from a depth of 864.5 to 869.5 feet. This is the material that assayed 0.4 ounces of silver and 0.055% copper. This sample also showed 1.00% zinc.

When we mentioned the analyser to the assayer, he said they are just about as dependable as "a baby's bowels." He further stated that his process is the same process that would be used in the recovery of the materials by a smelter. Furthermore, he said that he is satisfied that this material does not contain the amount of copper that you have indicated just from a visual examination. Please let us know the results of your analyser on the sample enclosed.

The drill rig is still broken down; we hope they will have it back in operation some time today.

There is enclosed a few chips of the crystalline material (not limestone) below the diabase contact. The diabase material for the 40 feet above contact shows increasingly good mineralization in the coppers.

We will continue to keep you advised.

Sincerely yours,

JAMES STEWART COMPANY

M. S. Horne
President

MSH:sjm

Enclosures

cc Mr. Dal Peterson

G. C.

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January 10, 1963

Mr. Charles H. Suiter
5008 West Weldon
Phoenix, Arizona

Dear Mr. Suiter:

Reference is made to your request for information on the drilling at Charleston Mine in the year 1957.

Please be advised that we drilled one eight inch churn drill hole on the Passover Claim located in the gulch near the westerly boundary of the claim.

Depth of hole was two hundred fifty feet.

Hole was drilled by O. C. Robinson, of 1918 Jason Vista, Tucson, Arizona, at a cost of two thousand dollars.

Hole was drilled between the dates of July 29 and August 7.

Very truly yours,

JAMES STEWART COMPANY

CAC:da

C. A. Cosgrove

Drill Hole No. 4 | Horne - Charleston Project | Page 1
Collar Elevation | Cochise County ARIZONA | By C. DAVIS
Coordinates | Scale
Bearing | Started Aug - 69
Depth | Completed
Inclination 90°

Original - Home's Copy

% Core Recovery	Structure	Alteration	Mineralization	Rock Type	GEOLOGY	CORE ASSAYS INTERVAL From	To	MINERAL Cu%	MoS_2	Ag	Au
NX					0'						
					50' Andecite - volcanic						
					100'						
					148 150'						
NX					200' Altered Latite - Andecite volcanic						
					250'						
					300'						
					350'						
NX											
NX					400 + Andecite						
					450' Altered Andecite - Latite Brown - Grey volcanic						
					500' + Latite -						
					++ Latite						
NX			None		560' 563						
					600' Latite - Volcanic phenocrystic plagoclase Altered						
					650'						
					700'						
NX					750'						
NX					800 Latite - Alt. plagoclase Grey						
					840 850' Andecite - Brown Altered						
					900' Latite - Andecite - chlorite -						
			None		942 950' Broken - faulted Sericite						
					60 Highly Broken - Latite						
					72 Brec. Andecite Large Cry.						
					82 Latite Qtz filled - Calc.						
NX					1000' Andecite - chlorite						
					Large Breccia - Alt						
					1038 Andecite - volcanics						
			Pyrite		1050' 59 Dibase - fine grained						
					65 Andecite Breccia						
					73 Latite Highly Altered						
					85 Latite - fine grained Broken						
					1100' 05 Sericite - Broken - Latite						
					20 Andecite - Broken						
					32 Qtz - Breccia - Andecite						
					37 1150' Qtz						
NX					56 Latite Breccia						
					78 Latite	1180-1184	.005	.010	.005	4	.20	.001
NX	S				1200 Latite - Alto - Med-Sed Pyrite in Seam						
					32 41 Qtz - darker material						
					1250' ARKOSE - Qtz						
					76 Med. Sediments						
					1300' Broken Dark Material						
					Qtz - ss						
NX					38						
					1350' 55 ARKose						
					Arkose						
					1400'						
NX					19 DARK - fine grained Material						
					Broken						
					ARKose						
					1450' 55 Transition Zone - Change in Sediments						
					71 78	1478 - 1480	1.160	9.200	.350	2	.90	.001
						1479.5 - 1481	.022	.100	.008	2	.15	.001
						1481 - 1486	.031	1.600	.049	25	.30	.001
						1486 - 1487	1.345	2.800	.056	1	.10	.001
						1487 - 1494	.060	.310	.006	3	.10	.001
						1494 - 1496	1.090	1.600	.140	10	.15	.001
						1496 - 1498	.051	.086	.015	5	.10	.001
						1498 - 1501	1.275	2.400	.220	10	.40	.001
					Mineralization - good Values (25) Zn, Pb, Cu, Fe.							
					1500' 01	1532 - 1534	.210	.400	.029	13	.50	.001
NX					1550' Porphry - Intermediate - Ni values	1590 - 1591	.142	.440	.029	6	.20	.001

ALTERATION: Sericite, Kaolin, Silica, Chlorite, Garnet, Serpentine, Biotite, K Feldspar

MINERALIZATION: Pyrite, Chalcopyrite, Chalcocite, Molybdenite, Magnetite, Galena, Sphalerite, Specularite