Redding, California

Log of Drill Hole Al-1

Bully Hill & Rising Star Mines

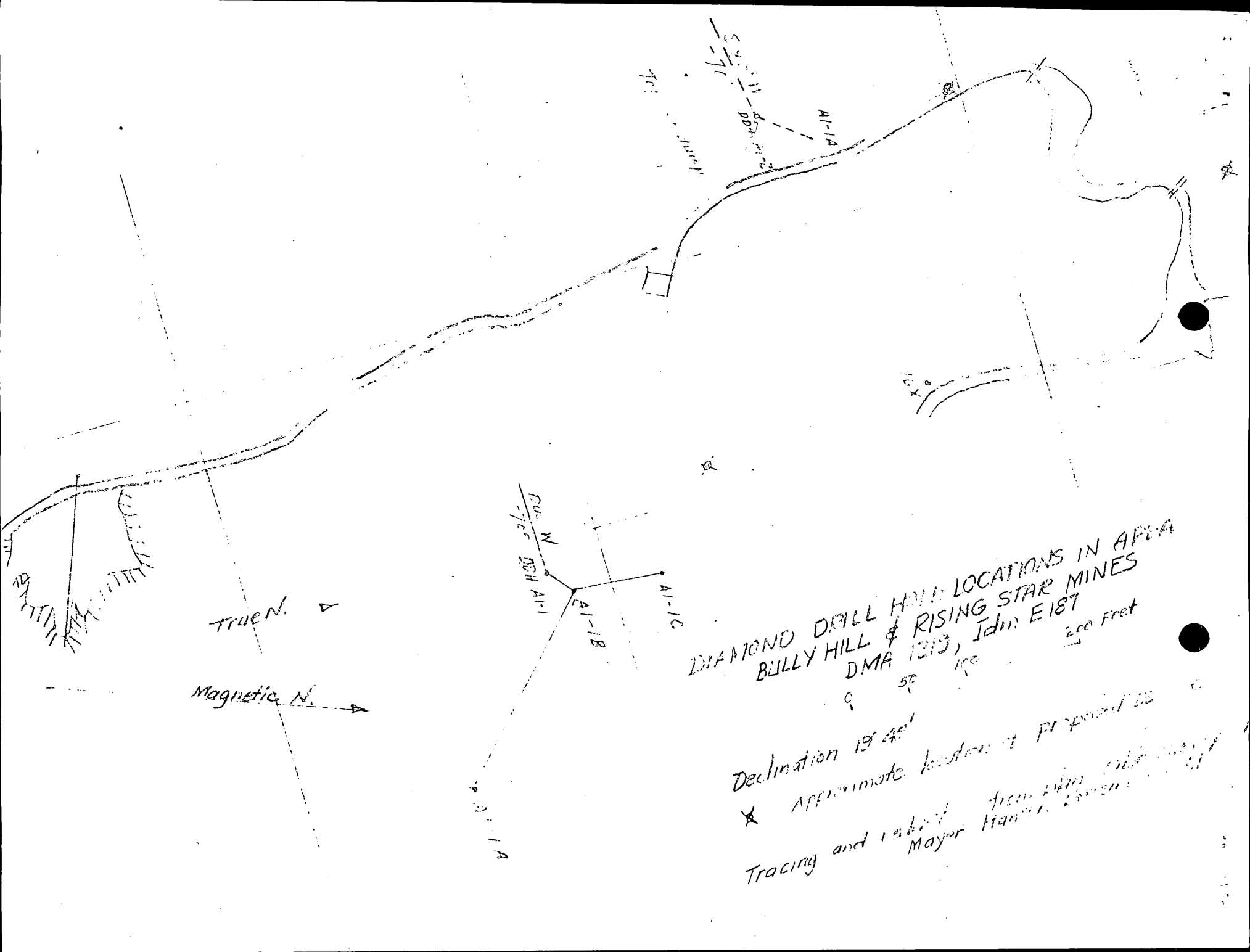
Bearing: Due West

Inclination: "0"

Interval Drilled From	To	Feet	Core Recovered Feet	%		Description
0	10	10	0	0	0-10	Bully Hill Rhyolite "gravel". Mostly as fragments of rock averaging ½ cm (¼ in.) size with maximum 1½ cm (3/4 in.) size, Quartz phenocrysts are few and small. Rock is gray with brown spots. Medium hard.
10	20	10	0	0	10-20	Bully Hill Rhyolite sand, with grains mostly 1mm or smaller in size. Greenish gray color. Grains are mostly quartz. This may be a fault zone but no clay apparent.
20	24	4	0	0	20-24	Same as 0-10, perhaps smaller size average.
24	27	3	0.5	15	24-27	Bully Hill Rhyolite. Mostly black, a few pieces of leached white. Hard and silicified. No phenocrysts, no mineralization.
27	30	3	0	0	27-30	Bully Hill Rhyolite sand, same as between 10-20.
30	34.7	4.7	1.3	20	30-42	Bully Hill porphyritic Rhyolite. Brownish tinge on gray rock.
34.7	39	4.3	0.7	15		Phenocrysts plus or minus 2mm.
39	42	3	0.7	25		Small scattered grains of Mn stain are present. Medium hard, Slightly silicified. A few veinlets of Quartz-Carbonate (¼ in.) cuts the core. Slightly vuggy.
42	47.3	5.3	3.7	70	42-45	Bully Hill porphyritic Rhyolite, gray to black with white altered feldspar grains. Core is more solid, harder and more silicified. Phenocrysts are very few and small plus or minus 1mm. A very little fine grained pyrite scattered. Some slight scattered fine grained black Mn (?) specs. Also several small gash veinlets and some ¼ in. seams of Quartz-Carbonate
					45-48	Rhyolite Breccia, hard cemented, silicified broken, gray in color. An increased amount but still slight amount of fine grained pyrite. Fragments in rock are up to ¼ in. size.

Interval Drilled From	To	Feet	Core Recovered Feet	%		Description
47.3	52	4.7	4.7	100	48-52	Mixed porphyritic Rhyolite and Rhyolite breccia (this could even be a silicified tuff), gray mottled with white feldspars showing. At 51 to 51½ is considerable pyrite, perhaps 2% of rock for a few inches
52	56.7	4.7	3.5	70	52-63	Mixed porphyritic Rhyolite and Rhyolite breccia-somewhat more altered and broken than between 48-52
56.7	65.7	9	6.7	75	63-82	Bully Hill porphyritic Rhyolite, gray with white grains of feldspar
65.7	68	2.3	1.8	80		The core is more solid but still broken. There are a few scattered spots of fine grained pyrite.
68	76.1	8.1	0.5	5		A few seams of calcite cuts the core mostly at 60°. The phenocrysts are few & small. It does not have much if any added quartz or silica.
76.1	82	5.9	4.3	75		The size of the grains of the feldspar is also small. There are quite a few limonite stained cubical cavities indicating leached pyrite. From 76 ft. the phenocrysts are becoming larger plus or minus up to 3mm.
82	85	3	2.7	90	82-83	Rhyolite breccia, cemented. Part of core is vuggy from being incompletely cemented. No pyrite.
85	89	4	0	0	83-98	Same as between 63-82, this is
89	93	4	0.8	20		Bully Hill porphyritic Rhyolite,
93	97	4	4	100		All gray, medium hard. Occasional
97	98	1	1	100		spots of slight pyritic mineralization.
98	102	4	3.8	95	98-124	Bully Hill porphyritic Rhyolite.
102	106	4	3.8	95		Fairly fresh but still quite broken
106	109	3	3	100		To 113 no piece longer than 6 in.
109	113	4	2.5	60		Some late Quartz-Carbonite veinlets
113	117	4	4	100		most cut core at 60° but some at
117	120.5	3.5	3.5	100		45°. An occasional veinlet is pale
120.5	124	3.5	2.5	70		green colored suggesting fluorite
						It also contains chlorite. In general the rock is average rhyolite grayish colored, getting more solid as depth is gained. It is medium grained. Small phenocrysts of quartz are present.
124	125	1	1	100	124-139.5:	Bully Hill porphyritic Rhyolite medium grained, fresh, gray, mottled
125	128.5	3.5	3.1	90		with white feldspars. Small amount of fine grained scattered pyrite (or marcasite?)
128.5	135	6.5	6.5	100		Quartz-Carbonite cuts core at plus or

Interval Drilled From	To	Feet	Core Recovered Feet	%	Description
					minus 2 ft. intervals at 55°
135	139	4	4	100	to 70° to core, but does not seem to carry extra amounts of pyrite
139	145	6	5.3	90	139.5-143.5: Rhyolite breccia. Rock is very similar to above described but has angular fragments of about 3/8 to ½ in. maximum size. Appears to be a flow breccia. It contains an increased amount of Quartz-Carbonite veinlets but no extra mineralization, and in fact contains less pyrite. Fragments are generally more basic and might be a volcanic breccia interbedded with Rhyolite flow. It is too coarse to be a tuff.
145	154	9	7.8	85	143.5-155: Bully Hill porphyritic Rhyolite same as between 124-139. No mineralization.
154	161	7	6.2	90	155-170 Rhyolite breccia, same as between 139.5-143.5. Slight mineralization Some chlorite.
161	163	2	1.2	60	
163	169	6	5	85	
169	173	4	2.6	65	170-177 Bully Hill porphyritic Rhyolite, same as before (see interval 124-139). This portion seems to be a
173	177	4	3.3	85	normal occurrence with small phenocrysts, and few if any inclusions of fragments.
177	179	2	1.9	95	177-204 Volcanic breccia. Light grayish green, medium hard rhyolite breccia
179	182	3	2.7	90	Fragments are in general too large
182	188	6	6	100	(up to 25mm) to be a tuff. However
188	191	3	3	100	there are many smaller lapilli
191	194	3	3	100	1x5mm in size. There does not seem
194	201	7	6	85	to be definite bed or parting and suggests that a flow was still
201	204	3	3	100	liquid when airborn volcanic fragment where drop into the still plastic flow. The fragments for the most part are sharp cornered and very few are rounded, though some are.
					204-371 Bully Hill Rhyolite.


A1-1A
A1-1B
A1-1C
A1-1
True N.
Magnetic N.
DIAMOND DRILL HOLE LOCATIONS IN APIA
BULLY HILL & RISING STAR MINES
DMA 1210, Idn E187
Declination 19 45'
Tracing and related from

Redding, California
January 31, 1952

Log of Drill Hole A1-2

Bully Hill & Rising Star Mines

Bearing: 5.80°W. Inclination: -70°

Interval Drilled From	To	Feet	Core Recovered Feet	%	Description
0	45	45	0	0	No core, all sand
45	55	10	8.5	85	45-115 Andesite Tuff (?)
55	57	2	1.5	70	
57	61	4	0	0	
61	68	7			
68	71	3			
71	78	7	0	0	
78	87	9			
87	95	8			
95	100	5			
100	105	5			
105	107	4			
107	115	8			
115	120	5			115-120 Tuffaceous mudstone
120	121	1			120-121 Rhyolitic rock, probably tuff.

Redding, California

Drill Hole A1-2
Consecutive #2

LOG OF DRILL HOLE NO. 2
BULLY HILL & RISING STAR MINES

Interval Drilled From	To	Feet	Core Recovered Feet	%		Description
0	45	45	0	0	0-45	No core.
45	55	10	8.5	8.5 85%	45-57	Andesitic Tuff, fine grained, gray greenish, in upper part also blue gray greenish, mostly weathered, with brownish and dark brownish iron-oxide spots, especially on the slickenside faces and along fissures and fractures. Calcite and quartz amygdules fill the lava holes. The calcite amygdules are mostly dissolved out and quartz amygdules remain. The upper part of core is squeezed and has many slickenside planes. Chlorite is present. White soft kaoline occurs in the fractures. In very few places fresh pyritic mineralization can be observed. Near 54' there is 1-2" thick, black, silicified mudstone layer. The core is very broken.
57	61	4	0	0	57-61	No core.
61	68	7	2.1	30	61-68.5	Same andesitic tuff, blue gray greenish, but almost unweathered, silicified. Little pyrite mineralization along very small fissures. Also disseminated pyrite as very fine grains in the rock itself. Quartz-calcite fills the fissure openings, as veinlets. The core is less broken than above.
68	71	3	0.5	20	68.5-71	Same andesitic tuff as between 45-57, except larger fragments. A brecciated character of the material can be observed. Piece of mudstone in the contact with the tuffaceous rock was seen. Little mineralization spots and groups occur along the contact at 68.5'. The contact (bedding) is parallel to the hole.
71	81	10	0	0	71-81	No core.
81	87	6	2	30	81-100	Andesitic tuffaceous fine breccia. The size of quartz-phenocrysts is about 1/5 mm. Sharp-cornered pieces of black mudstone are present. (size 2 mm and less). Also bigger components up to 1 mm. The breccia components are larger in one direction than in another. The rock is broken, being cut by many fissures with manganese-oxides and limonite. Some pyrite grains.
87	95	8	3.6	45		
95	100	5	3	60		
100	103	3	0	0	100-103	No core. Sandy cave.

Redding, California

Drill Hole Al-2
Consecutive #2

LOG OF DRILL HOLE NO. 2
BULLY HILL & RISING STAR MINES

Interval Drilled From	To	Feet	Core Recovered Feet	%		
103	107	4	0.5	10	103-107	Same fine breccia as before, only with more manganese-oxides in the fissures and fractures. The rock is very soft and broken, of greenish buff color. Cavities and holes formerly calcite-filled. The altered feldspar phenocrysts are of the size of 2-3 mm. No mineralization.
107	115	8	0	0	107-115	No core.
115	120	5	0.3	5	115-120	Andesitic tuff of uniform fine crystalline texture, dark bluish gray, unweathered. The core is very broken; no pieces over 3/4". The rock is quite hard. No porphyritic inclusions. Fine disseminations of pyrite, also pyrite films. Little hard black mudstone layer in contact with tuff. Hairline quartz-calcite veinlets cut the core at 40°.
120	121	1	0.9	90	120-121	Andesitic tuff of trachitic texture and gray greenish color. Planes of schistosity at 75°. Chlorite is present. Pyrite scattered thru the core in form of little lenses and spots along the quartz-carbonate veinlets or near them. The quartz-carbonate cut the core at 75° parallel to the schistosity. The lower part of the rock is not crystalline but of almost crypto-crystalline texture. No phenocrysts.
121	125	4	3.5	90	121-124	Same andesitic fine crystalline tuff as between 115-120. Change of flow material can be observed. 1/2 cm layers of probably cherty mudstone. The angle of schistosity is 75°. No phenocrysts. Direction of pitch (measured on cleavage planes) or slickenside is about 25° (angle measured on the cleavage face between striae and core). Few porphyritic inclusions in the rock are calcite crystals. Their orientation along schistosity indicates their possible late-hydrothermal origin. Hairthin quartz-carbonate veinlets of younger age cut the core and older calcite veinlets at an angle of 10-12°. Both vein systems have pyrite. At 124' there is a concordant black mudstone layer.
125	127	2	1.5	75	124-126	Aphanitic, partly vesicular rhyolite tuff. On the contact with mudstone continuous change from mixed mud and rhyolite tuff flow to pure rhyolitic material can be seen. The rhyolite tuff is of light muddy greenish color. White porphyritic inclusions, 1 mm in size or so, are calcite crystals. The quartz-phenocrysts, mostly smoky quartz, are about 1/10 mm or less (can be seen better with the lens). At 126' there is a small fracture, filled with the quartz-carbonate and broken mudstone

Redding, California

LOG OF DRILL HOLE NO. 2
BULLY HILL & RISING STAR MINES

Drill Hole A1-2
Consecutive #2

Interval Drilled From	To	Feet	Core Recovered Feet	%		Description
						material (so-called tectonic breccia). It is possible this is a zone of small local dislocation. Jointing, slickensiding, displacement in small scale occur.
127	131	4	4	100	126-157.5	Same vesicular rhyolite tuff as above only with more developed
131	133	2	2	100		crystallinity of the matrix. The size of black xenoliths less as
133	135	2	2	100		1 mm. These are longer in one direction than in another (along flow
135	137	2	1.5	75		direction). Calcite phenocrysts are 1-2 mm. in size. The rock is
137	141	4	4	100		massive, no bedding or cleavage can be recognized. The xenoliths are
141	142	1	1	100		aligned at an angle of 70° with the core. At 132 there is a 2"
142	144	2	1.5	75		quartz-carbonate vein at 10-12° to the core. More veins at 137',
144	147	3	2.8	90		149', 150.5'. Fractures filled with tectonic breccia and cemented
147	151	4	4	100		by quartz-carbonate can be seen at 137.5, 139 and between 140-141.5.
151	154	3	3	100		Matter is brecciated throughout and is refilled with hydrothermal
						cementing material. The zone has very little pyrite mineralization,
						whereas at the following depths there is significant pyrite mineral-
						ization: at 133, 140.5-147, 148. The rock between 143-148 has only
						a few calcite amygdules. The core is cut by many quartz-carbonate
						fissures and veinlets of irregular shape, direction and size. At
						the depth of 150' there is a cracked zone, filled with idiomorphic
						calcite of tabular and equidimensional rhombic shape with some clay.
154	161	7	7	100	157.5-161	Tuffaceous rhyolite vitrophyr. A change in flow material can be seen
						at 157.5. The tuffaceous rock is almost glassy (hyaline). The quartz-
						phenocrysts are at first very little, and of very small size, less
						than 1/4 mm. They are rounded and have globulite form. Then follows
						a zone where quartz-phenocrysts are 1/4 to 1/2 mm. Also xenoliths
						(possible xenocrysts too) of 1/2 to 1 mm. in size. They are dark
						green, brownish green and black in color, rounded to angular. Zones
						of quartz-phenocrysts, of rock fragments, and of calcite amygdules lie
						at angles of 65° to core. At 158° small veinlets cut the core at 45°
						causing a displacement of 1/4". Also here two ages of hydrothermal
						attackings can be recognized. The oldest one generally follows flow
						direction and has fine-grained pyrite films and is cut by another

Redding, California

LOG OF DRILL HOLE NO. 2
BULLY HILL & RISING STAR MINES

Drill Hole A1-2
Consecutive #2

Interval Drilled From	To	Feet	Core Recovered Feet	%		Description
						younger vein at an angle of 70° (or at an angle with the core of 45°). The older one is filled with black muddy material, the younger is pure quartz-calcite. An increase in crystallinity can be observed from depth of 159-161'.
161	163	2	1.5	75	161-170	Same rhyolite tuff as between 126-157.5. At 162' there is a quartz-carbonate vein 1.5-2" thick that contains a few grains and cubes of pyrite 1 mm. and less in size and also black glassy and very brittle obsidian inclusions.
163	165	2	1.5	75		
165	168	3	3	100		
168	171	3	1.5	50		
171	171.5	0.5	0.5	100	170-181	Almost same rhyolite vitrophyr as between 157.5-161. It is light greenish gray, hard rock. Quartz phenocrysts and calcite amygdules irregularly scattered. Size of latter is up to 3-4 mm; quartz phenocrysts are 0.1-0.9 mm. in size. Little pyrite mineralization along the fissures, also small amount of disseminated pyrite thru the core. Quartz-CO_2 veinlets and fissures of irregularly shape, size and direction cut the core at different angles. Two ages of Qtz.-CO_2 outpouring can be recognized. The oldest took place as rock was not hardened yet. Younger quartz calcite intersect the core at different angles (at 180.8 at 40-45°). The core interval between 177-178 is very typical for studying of this kind of mineralization. The interval is a breccia with irregularly mixed Qtz.-CO_2 and Rhyolite material. Pyrite was deposited with Qtz-CO_2 at same time. At 177 there is 1x3" piece of mudstone in the Rhyolite material.
171.5	176	4.5	4.2	93		
176	181	5	5	100		
181	182	1	0.1	10	181-182	Rhyolite felsphyr, dark gray, hard, pyrite containing, with no $CaCO_3$ amygdules.
182	184	2	0.2	10	182-184	Rhyolite vitrophyr, light greenish, hard, broken. Qtz. phenocrysts of very minimum size, less than 0.1 mm. Mudstone fragments can be seen in the material (0.75 cm wide and over 4 cm long). Little fine grained pyrite occurs. Core is broken with limonitic clayey material in between some of cracks.
184	185	1	0.2	20	184-184.2	Rhyolite felsophyr, light grayish with few pyrite stringers, also scattered pyrite.

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Drill Hole Al-2
Consecutive #2

LOG OF DRILL HOLE NO. 2
BULLY HILL & RISING STAR MINES

Interval Drilled From	To	Feet	Core Recovered Feet	%		Description
186	187	2	0.4	20	184.2-198	Rhyolite vitrophyr, light greenish gray to gray, hard, with and with-
187	189	2	0.2	10		out calcite amygdules (as between 170-181). In upper part with less
189	190	1	0.8	80		developed crystallinity of the matrix. Between 196-196.5 there is
190	195	5	1.1	22		some mixed flow breccia material as above between 177-178. Some
195	197	2	2	100		mudstone fragments and inclusions occur. Qtz. phenocrysts of mini-
197	198	1	0.9	90		mum size. Little pyrite scattered throughout the core.
198	201	3	1.8	60	198-209.7	Rhyolite felsophyr, greenish gray to gray, with Qtz. phenocrysts
201	205	2	1.4	70		(up to ½mm and 1-2mm), calcite amygdules (up to 0.5cm), and with
203	209	6	6	100		xenoliths (up to 1-2mm), with fine crystalline matrix. Little pyrite
						is scattered in the matrix and along the fissures. At 206 there is
						a small barite lense with fine grained pyrite around it and in the
						surrounded rhyolite material. Few Qtz.-CO_3 veinlets, slickensides.
						The interval ends with Qtz.-CO_3 vein, 2-3cm thick.
209	216	7	3.5	50	209.7-216	Rhyolite vitrophyr, light greenish gray to light gray, medium hard.
						Typically is the often change in the flow material. Darker and
						lighter layers of same material repeat. Light material predominant.
						Core is cut by many young Qtz.-CO_3 veinlets and veins. Very little
						or no pyrite.
216	221	5	3.5	70	216-301	Rhyolite felsophyr, gray, grayish, light greenish gray, light grayish
221	226	5	4.5	90		blue-green, etc. Qtz. phenocrysts up to 1-2mm. oftener less. They
226	236	10	8	80		are long in direction of material flow. Xenoliths and xenocrysts up
236	239	3	2.7	90		to 2mm, also mudstone fragments. Some Qtz.-CO_3 amygdules up to
239	246	7	6.6	94		
246	251	5	5	100		0.5cm in size here and there. The bedding is similar to direction of
251	252	1	1	100		flow. Schistosity can be seen in upper portion of core at
252	257	5	4	80		Matrix is very fine grained and of light color. In some places it is
257	263	6	5.9	98		holocrystalline and the material may be called Rhyolite vitrophyr.
263	269	6	2.4	40		(See intervals 263-264.8 285-289. etc.). No sharp and rapidly change
269	276	7	5	70		in the flow material was observed. Coarse pyrite mineralization can
276	277	1	1	100		be seen at 226,257, etc. Also some galena and chalcopyrite was ob-
277	280	3	3	100		served here to first time in form of little veinlets filling. (see

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Drill Hole A1-2
Consecutive #2

LOG OF DRILL HOLE NO. 2
BULLY HILL & RISING STAR MINES

Interval Drilled From	To	Feet	Core Recovered Feet	%		Description
280	285	5	4.5	90		end of cored interval or pul 221-226). Some sericite and kaoline in
285	290	5	3.5	70		the cracks and fissures. Core between 246-248.5; 295-301 is typical
290	295	5	2	46		thru regular size of Qtz.-CO_3 amygdules (½-1mm) and their large
295	301	6	6	100		Quantity. Core is cut by two systems of veins: elder and younger as above. At 246 there is 10cm thick Qtz.-CO_3 vein without any pyrite, also at 277, etc., but of smaller size. At 299.5 there is about 2.5-3" thick zone refilled with brecciated wall rock and cemented by Qtz.-CO_3 - Baryte hydrothermal solution. This contains only few grains of pyrite.
301	309	8	7.2	90	301-307	Rhyolitic fine flow breccia, grey to dark greenish grey. Breccia fragments up to 1-2cm. Rock is hard, what gives solid core. Few slickensides. Direction of movement can be read as upper part downwards, lower part upwards. Slickenside scratchings at to the core. No or unsignificant pyrite occurrence.
309	314	5	4.2	84	307-310.5	Rhyolite felsophry as before.
					310.5-311.4	Rhyolitic fine breccia flow as above.
314	319	5	5	100	311.4-327.4	Same Rhyolite felsophyr as above, only with base partly crystalline,
319	321	3	1.8	60		partly holocrystalline to glassy. The core is cut by many veins and
321	326	5	3.2	65		veinlets of Qtz.-CO_3 material. Only few of them are of young age. Most of them are mixed with Rhyolite. Core is partly broken more intensively in lower portion. Few slickensides. Very little or no pyrite mineralization.
326	333	7	5	70	327.4-346	Rhyolitic flow breccia. Flow lines are very good recognisable and at
333	335	2	2	100		to core. Size of fragments up to 1-2cm, otherwise much less.
335	340	5	1	20		Core is partly broken. Little fine grains of pyrite at 334.5.
340	346	6	3	50		Rhyolite felsophyr to Rhyolite vitrophyr, as above. Few Qtz.-CO_3
346	350	4	2.8	70	346-351	amygdules up to 1-1.5mm.
350	356	6	3	50	351-594	Rhyolite flow and Rhyolitic flow breccia. It is rhyolitic flow
356	362	6	3	50		material of vitrophyric, seldom of felsophyric character of the ground-
362	366	4	2	50		mass, but of different mineralogical composition and color of the
366	370	4	2.4	60		flow layers and fragments. Brecciated character of material will be

Redding, California
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Drill Hole A1-2
Consecutive #2

LOG OF DRILL HOLE NO. 2
BULLY HILL & RISING STAR MINES

Interval Drilled From	To	Feet	Core Recovered Feet	%
370	377	7	3.1	43
377	381	4	2.6	65
381	387	6	5.3	85
387	389	2	2	100
389	394	5	4	80
394	398	4	2	50
398	401	3	0.9	30
401	406	5	1.2	24
406	408	2	0.6	30
408	412	4	1.6	40
412	416	4	0.8	20
416	421	5	0.5	10
421	428	7	0.5	7
428	432	4	0.5	12
432	437	5	0.5	10
437	441	4	0.5	12
441	446	5	0.3	6
446	451	5	0	0
451	453	2	0.5	25
453	455	2	0.6	30
455	458	3	1.2	40
458	461	3	0.9	30
461	463	2	1.5	75
463	466	3	2.5	83
466	468	2	0.1	5
468	470	2	1/4	70
470	473	3	0.6	20
473	478	5	0.8	16
478	481	3	1	33
481	487	6	1.5	25
487	493	6	0	0

Description

lost downwards, where rock is rather vitrophyr to felsophyr. Core is very broken between 350-356, 398-402, and elsewhere. No or very little pyrite occurs. More pyrite in form of very fine grains in the rhyolite itself and also as up to 1cm large black lenses and spots of fine grained pyrite occur from 546 down. These mudy lenses and concretions of pyrite have no age relation to the posterior hydrothermal outpour of minerals and are deposited in the flow primarily. Chlorite and sericite are present. Slickensides in several places. Core is generally not very often cut by Qtz.-CO_2 veinlets. Whole interval is slightly, on some places more intensively silicified. This silicification is rather primary. Very few white feldspar phenocrysts and Qtz.-CO_2 amygdules were seen.

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Drill Hole Al-2
Consecutive #2

LOG OF DRILL HOLE NO. 2
BULLY HILL & RISING STAR MINES

Interval Drilled From	To	Feet	Core Recovered Feet	%		Description
493	498	5	0.8	16		
498	503	5	0.8	16		
503	506	3	0.7	23		
506	510	4	0.4	10		
510	514	4	0.2	5		
514	521	7	1.4	20		
521	526	5	2	40		
526	529	3	2.7	90		
529	536	7	0.7	10		
536	541	5	1	20		At 541 end of AX core and start of EX core.
541	545	4	2	50		
545	555	10	7	70		
555	563	8	6	85		
563	569	6	6	100		
569	574	5	4.5	90		
574	581	7	7	100	EX	
581	587	6	4.8	80		
587	589	2	1.4	70		
589	594	5	1.6	32		
594	596	2	1	50	594-621	Rhyolite felsophyr and Rhyolite vitrophyr, Rhyolite flow breccia and Rhyolite eruption breccia, mixed together or stratified after each other. Rhyolite outflow accompanied by an intensive hydrothermal outpouring of Qtz.-CO_2 material, so that calcite became mixed with the Rhyolite flow material, volcanic mud, etc.,- if the outpouring was at same time. But if the out-pouring of the Qtz.-CO_2 material was afterwards, it played a role of a cemented medium for not yet completely hardened Rhyolite flow material in form of brecciated fragments, etc. (see also intervals between 177-178, etc.). Little pyrite mineralization occurs. Slickensides along bedding. Chlorite, sericite are present.
596	606	10	9	90		
606	616	10	10	100		
616	621	5	5	100		

Redding, California
April 10, 1952
Drill Hole Al-2
Consecutive #2

LOG OF DRILL HOLE NO. 2
BULLY HILL & RISING STAR MINES

Interval Drilled From	To	Feet	Core Recovered Feet	%		Description
621	631	10	9	90	621-622	Rhyolite felsophyr. Solid rock. Upper contact with breccia can be seen. Lower contact is not rapidly but thru the rhyolite vitrophyr of light greenish color.
					622-624	Rhyolite flow breccia with less or no calcite interflow.
					624-627.4	Rhyolite felsophyr, gray or greenish gray with some calcite amygdules. Solid rock. Xenocrysts and xenoliths up to 1 mm.
					627.4-626.3	Rhyolite flow breccia as above, see 622-624.
631	640	9	9	100	626.3-647	Rhyolite, green to grayish green, solid, with very few calcite amygdules (up to 2-4mm), with many xenocrysts and xenoliths up to 2-4 mm (see section 635-645). Rock is relatively more basic as can be suspected from rhyolitic material. Downwards it takes on the darker components and passes into the material of almost andesitic composition. Close to 638, 641, 645 etc. there are little veinlets of light flesh colored Qtz.-CO_3 material.
640	650	10	10	100	647-656	Same probably rhyolite material as above, only broken to breccia and recemented with Qtz.-CO_3 solution (See also 594-621). $CaCO_3$ amygdules in size up to 4mm can be seen here and there. The calcite in the veins is black due to presence of the volcanic mud in hydrothermal solution. In some vein material a black very brittle obsidian inclusions occur. No or very little pyrite as disseminated grains.
650	660	10	10	100	656-660	Rhyolite, green or grayish green, with many xenoliths and xenocrysts (up to 2mm in size). Some are long in flow direction, what is at 10° to the core. Clear quartz phenocrysts as seen in some rhyolite cannot be seen here. These almost round or elliptical phenocrysts, 1-2mm in size, are dark to light green grains of probably more siliceous composition as the matrix itself. Rock is rather intermediate betwen andesitic and rhyolitic lava. Downwards, already below 660 material is more acidic. Quartz phenocrysts are less as 1mm. Matrix is holocrystalline. Rock is firm, medium hard to hard.

Redding, California
April 10, 1952
Drill Hole A1-2
Consecutive #2

LOG OF DRILL HOLE NO. 2
BULLY HILL & RISING STAR MINES

Interval Drilled From	To	Feet	Core Recovered Feet	%		Description
660	670	10	7.4	74	660-670	Anhydrite (?) and porphyritic rhyolite. Fine grained grayish green rock formed by precipitation of hydrothermal solutions in cavaties, open shear zones and as replacement of rhyolite. At beginning, near 660, it seems to hold a broken area together as cementing material and intermittantly thereafter contains rock fragments. Scratches easily with knife. Took specimen at 663.
670	680	10	10	100		
680	686	6	4.6	76		
686	696	10	10	100		
696	704	8	5.9	75		
704	714	10	10	100		
714	724	10	9.9	99		
724	734	10	9.9	99		
734	739	5	5	100	670-684	Porphyritic rhyolite flow breccia. Soft, altered, chloritized, re-cemented breccia. Rock is beginning to be sheared and schistose from pressure. Some of the rock inclusions or fragments are beginning to show a maroon color - do not know why - but it increased in amount rapidly to about 680. This could be a characteristic bed and a horizon marker. Fragments are soft.
739	749	10	10	100		
749	756	7	7	100		
756	763	7	5.6	80		
763	773	10	10	100		
773	779	6	5	85		
779	786	7	7	100		
786	793	7	7	100	684-696	Mixed porphyritic rhyolite and anhydrite (?) Rock takes on a schistose appearance containing wavy, green, soft mineral in the shear planes. Schistosity crosses core at from 10° to 45° in a ten inch length of core (see 688) (can not be bedding) and also has the maroon colored material which can make the fine maroon shale found on surface above Bully Hill tunnel #1. Rock is slippery like soapstone and is pre-sumably chloritic, sereeitic and altered from ore solutions.
793	799	6	3.3	55		
799	801	2	1.2	60		
801	811	10	9.0	90		
811	821	10	8.8	88		
821	826	5	3.5	70		
826	828	2	1.4	70		
828	833	5	5.0	100		
833	834	1	0.6	60		
834	840	6	2.4	40	696-698	Breccia fault. Mixed gray, green, soft, kaolinized rock. Solution or fault breccia contains considerable quantity of calcite veinlets.
840	844	4	1.5	37		
844	849	5	3.7	74		
849	855	6	3.0	50	698-701	Green schist - slippery, greasy feel. Chloritized, sereeitic and contains considerable clay and calcite.
855	858	3	1.6	53		

Redding, California
April 10, 1952
Drill Hole Al-2
Consecutive #2

LOG OF DRILL HOLE NO. 2
BULLY HILL & RISING STAR MINES

Interval Drilled From	To	Feet	Core Recovered Feet	%		Description
858	864	6	3.3	55	701-734	Andesite Dike (?) Gray-green, solid fine grained with no bedding.
864	874	10	8	40		Took specimen at 723. Contains considerable calcite - with flash
874	879	5	5	100		effervescence with HCl.
879	882	3	2.4	80		This may be a tuff similar to next portion.
882	884	2	2	100	734-778.5	Andesite tuff. Green, mottled, vesicular, fine grained. Vesicules
884	888	4	1.6	40		are filled with calcite. Many later veinlets of calcite. Rock solid,
888	894	6	1.4	23		good core recovery. Unusual quantity of calcite present - flash
894	898	4	12	30		effervescence.
898	901	3	0	0		Becomes brecciated, broken, schistose, slippery, chloritic and
901	911	10	0.2	2		sericitic. Bedding or banding is not readily apparent and in a few
911	918	7	1.1	16		places suggests cutting 45° to 50° across core. Specimen at 771 feet.
918	925	7	2.2	31		
925	930	5	2.1	42	778.5-786	Massive sulphide. At start, in a distance of about six inches, the
930	936	6	2.4	40		rock becomes increasingly replaced by sulfides until no schistosity
936	940	7	1.5	37		planes remain. In first few inches the core shows mostly pyrite and
940	946	6	4.5	75		chalcopyrite with a little zinc and possibly galena or some other
946	951	5	5.3	100		fine grained silver gray mineral (tetrahedrite (?)) The sulfide is
951	957	6	0.2	3		very fine grained and brassy and shows considerable chalcopyrite.
957	961	4	1	25		The schistosity, if not the bedding, cuts 30 degrees across the core.
961	967	6	1.7	28		Sometimes it runs parallel to the hole, but in such cases, I believe
967	971	4	0.7	17		schistosity or sulfide is circling an inclusion or rock fragment.
971	975	4	0.6	15		At 784 schistosity crosses at 45°. Believe the true bedding would
975	980	5	1.6	32		be about 35° in this area. At 784 is considerable galena. Would
980	985	5	4.9	98	786-787	estimate the 7.5 feet to run 5% copper. Chloritic black schist
985	996	11	0.6	5		(derived from porphyritic rhyolite). Contains about 10% sulfide,
996	1002	6	0	0		half of which is chalcopyrite. Also contains visible galena and
1002	1007	5	0.4	8		sphalerite. Would estimate this foot to run 2% copper.
1007	1014	7	0.8	11		
1014	1022	8	1.9	24		
1022	1031	9	0.7	8		

Redding, California
April 10, 1958
Drill Hole Al-2
Consecutive #2

LOG OF DRILL HOLE NO. 2
BULLY HILL & RISING STAR MINES

Interval Drilled From	To	Feet	Core Recovered Feet	%		Description
1031	1038	7	0	0	787-791	Massive sulfide. Probably contains 30% unreplaced porphyritic rhyolite, chlorite or quartz carbonate. Very favorable host rock for chalcopyrite replacement. Contains sphalerite and galena. Would estimate this footage to run 4% copper.
					791-799	Mineralized porphyritic rhyolite breccia. Contains about 35% mixed sulfide as replacement material and filling in and around brecciated fragments. Rock contains considerable chlorite. Most of the replacement bands cross core at from 20 to 40 degrees. Estimated copper content about 2%.
					799-858	Porphyritic rhyolite contains secondary quartz, is altered and contains about 5% sulfide to about 822. It is still in a mineralized zone. Rock is less chloritic and schistose in here but still is a favorable host rock. In places it is very brecciated. A gray rock with black schistose spots, quite soft and altered. Shearing is about 45° across core. From 822 to 858 rock contains less than 3% sulfide. This portion 799-858 is less broken than most of hole. Would estimate this footage to contain less than ½ of one percent copper.
					858-877	Bully Hill porphyritic rhyolite. It is a medium hard gray colored rock with about an average amount of silica. Slickensides cross the core at 50° in two places, indicating more of a shear than fault plane. Mineralization varies quickly. 860 to 862 contains probably 5% pyrite. 862 to 864 contains probably 15% pyrite. This strip also contains more silica. Quartz phenocrysts are 1 mm average with none over 2 mm. Sulfide is either uniformly disseminated or also serves as cementing material in brecciated areas. There does not seem to be any single direction to sulfide replacement. A generalized range would be from 0° to 45°. Judging from the core and slickensides, and pyrite feeders at 865 it may be deduced that the faulting ran north and south; that the sulfide stringers ran about north 20°-30° west; that the

Redding, California
April 10, 1952
Drill Hole Al-2
Consecutive #2

LOG OF DRILL HOLE NO. 2
BULLY HILL & RISING STAR MINES

Interval Drilled From	To	Feet	Core Recovered Feet	%	Description
					fault dipped east, and that the west side moved north. Most of the rock is brecciated and at 869 there is an inclusion of mudstone (?). The number of sharp cornered rock fragments seem to increase at 870. There is a small amount of chloritic alteration and some clay. Overall rock is not badly broken.
877-882					Massive sulfide (Note whenever the rock contains over 50% sulfides, it will be classified as massive sulfide). Rock originally was a porphyritic rhyolite breccia. First foot contains about 80% sulfide, pyrite and chalcopyrite and may run 2% copper. From 878 to 882 the sulfide content may average 90% sulfide, mostly pyrite, chalcopyrite and possibly some zinc. This 4 foot length may run 4 or 5% copper. Mineralization seems to be parallel to core.
882-885					Bully Hill porphyritic rhyolite. Rock is very mineralized, about 35% sulfide. Rock is chloritized, kaolinized, and sereticized. Contains sphalerite or black marmatite - some chalcopyrite. Would estimate 1% copper or less.
885-918					Bully Hill porphyritic rhyolite. Rock is gray, schistose, medium soft, slippery, chloritized, sereticized and altered with very little sulphide mineralization. There is a slight increase in pyrite at from 917 - 918. Rock is very broken and from 884 to 918, the core recovery is very poor. May be in a shear zone as broken core is also vuggy. Medium amount of silica. Shearing seems to favor about 45° to core. Small amount of pyrite disseminated throughout. Phenocrysts small, less than 1mm. Core more brecciated from 911 to 918. Hole should continue at least 100 feet.
918-921					Bully Hill porphyritic rhyolite. Very siliceous fg. practically solid quartz grayish white in color. Broken and but one a piece has rolled in the bit.

Redding, California
April 10, 1952
Drill Hole A1-2
Consecutive #2

LOG OF DRILL HOLE NO. 2
BULLY HILL & RISING STAR MINES

Interval Drilled From	To	Feet	Core Recovered Feet	%	Description
					921-930 Bully Hill porphyritic rhyolite. Gray to grayish green - chloritic - rather soft, very altered. Beginning of gypsum zone. At first only interstices, vugs, shear zones, etc., are filled with gypsum. All takes on a 30° bedding or shear plane across core. The gypsum gives the appearance (to me) of replacing porphyritic rhyolite. No sulfide mineralization. End of AX core. BX casing set to 925 feet.
					930-935 Gypsum or anhydrite. Relatively clean (80%) gypsum, with inclusions of unreplaced slivers of porphyritic rhyolite. Has rough surface like pieces of harder material (porphyritic rhyolite) standing out farther than softer gypsum matrix.
					935-980 Porphyritic rhyolite, gray, soft, altered, greenish tinge, chloritic, feldspars white and altered. All space, pores, vugs, shear planes, are filled with gypsum. In places as at 946, 957 to 961, are solid gypsum. At 951 rock is very clayey and is evidently in a strong major fault zone. Core is broken, but is more solid than previous or following portions. This is probably part of the zone in which ore can be expected and the SO_4, may have been derived from an earlier phase of pyrite mineralization. Either that or there might have been SO_2 gas seeping thru the shear zones following the outpouring of the rhyolite and after the folding.
					980-985 Bully Hill porphyritic rhyolite (BX size). Gray soft, kaolinized, broken, splintery rock. Core is rarely 2 inches long. It is chloritized, sereticized and kaolinized. Quartz phenocrysts which do not exceed 3 mm, in places stick out like frog eyes. All core has coating of clay which helps drilling. At 985 is a fault, and core is a gouge - sticky clay with pieces of porphyritic rhyolite in it. Very slight mineralization, practically barren - fine grained pyrite. Hole should continue to 1025.

Redding, California
April 10, 1952
Drill Hole Al-2
Consecutive #2

LOG OF DRILL HOLE NO. 2
BULLY HILL & RISING STAR MINES

Interval Drilled From	To	Feet	Core Recovered Feet	%	Description
					985-1038 Bully Hill porphyritic rhyolite. Slightly harder - more silicified - less kaolinized, slight pyritic mineralization. Increased amount of small specks of limonite from pyrite skeletons. Sandy fault at 996 to 1002. Evidently another fault at 1031 to 1038. Stopped hole 3-24-52. Broke off and left bit and shell in hole.

E. J. LONGYEAR COMPANY
BULLY HILL & RISING STAR MINES
Shasta County, California

TABULATION NO. I

DIAMOND DRILL HOLE DATA

MGH
8-1-52

USGS-DMA Location No.	Consec. No.	Area No.	PLANNED Bearing	PLANNED Angle	PLANNED Depth	PLANNED Coordinates* North	PLANNED Coordinates* East	ACTUAL Bearing	ACTUAL Angle	ACTUAL Depth	ACTUAL Coordinates# North	ACTUAL Coordinates# East	Cumulative Footage	Location of Mineral.
First Stage														
A1-1	2	A1-2	S 80 W	-70°	800	7215	6386	S 78 W	-70°	1038	11306	7986		
A1-2	3	A1-3	S 80 W	-60°	500	7361	6352	S 75 W	-59°	905	11454	7965		
A1-3	4	A1-4	N 85 W	-45°	750	7593	6535	N 86 W	-45°	(823)	11748	8204		
A1-4	1	A1-1	Due W	-70°	1050	6960	6693	Due W	-69°	1015	11034	8324		
A1-5			S 85 W	-66°	1000	7105	6660							
new	5	A1-5						N 88 W	-64°	(665)	11536	7963	4446	
A3-1		A3-1	S 89½W	-65°	700	6009	6170							
A3-2		A3-2	N 64 W	-65°	1000	5860	6515							
A3-3		A3-3	N 79 W	-61°	700	5870	6300							
A3-4		A3-4	N 67 W	-52½°	600	5696	6169							
A3-5		A3-5	N 66 W	-52°	600	5550	6111							
A3-6		A3-6	N 68½W	-55°	600	5390	6010							
A3-7		A3-7	N 55 W	-55°	600	5154	5886							

*Coor. System SE Cor. RS shaft = N5000 & E5000 USGS

#Coor. system old original origin copper pipe in concrete near office

E. J. LONGYEAR COMPANY
BULLY HILL & RISING STAR MINES
Shasta County, California

TABULATION NO. I
DIAMOND DRILL HOLE DATA

MGH
8-1-52

USGS-DMA Location No.	Consec. No.	Area No.	PLANNED Bearing	Angle	Depth	Coordinates* North	East	ACTUAL Bearing	Angle	Depth	Coordinates# North	East	Cumulative Footage	Location of Mineral.
A5-1		A5-1	N 68 W	-57½°	800	8454	5329							
A5-2		A5-2	N 73 W	-60°	700	5035	5353							
A5-3		A5-3	N 72½W	-60°	750	5165	5422							
A5-4		A5-4	N 87 W	-62°	500	5 390	5385							
A5-5		A5-5	N 84 W	-45°	750	5505	5570							
A2-1		A2-1	N 47½E	-38°	600	4416	4647							
A2-2		A2-2	N 47½E	-58°	850	4416	4647							
A2-3		A2-3	N 52½E	-33°	600	4368	4819							
A2-4		A2-4	N 52½E	-58°	850	4368	4819							
A2-5		A2-5	N 29½E	-33°	600	4308	5166							
A2-6		A2-6	N 29½E	-55°	800	4308	5166							
Second Stage														
A4-1		A4-1			800	Open	Open							
A4-2		A4-2			800	Open	Open							
A4-3		A4-3			800	Open	Open							
A4-4		A4-4			800	Open	Open							

*Coor. System SE Cor. RS shaft = N5000 & E5000 USGS

#Coor. system old original origin copper pipe in concrete near office

E. J. LONGYEAR COMPANY
BULLY HILL & RISING STAR MINES
Shasta County, California

TABULATION NO. I
DIAMOND DRILL HOLE DATA

MGH
8-1-52

USGS-DMA Location No.	Consec. No.	Area No.	PLANNED Bearing	Angle	Depth	Coordinates* North	East	ACTUAL Bearing	Angle	Depth	Coordinates# North	East	Cumulative Footage	Location of Mineral.
A6-1		A6-1			700	Open	Open							
A6-2		A6-2			700	Open	Open							
A6-3		A6-3			700	Open	Open							
A6-4		A6-4			700	Open	Open							
A6-5		A6-5			1200	Open	Open							
A6-6		A6-6			1200	Open	Open							
A6-7		A6-7			1200	Open	Open							
A6-8		A6-8			1200	Open	Open							
A5-6		A5-6	N 65 E	-67°	600	5594	4881							
A5-7		A5-7	N 64½W	-65°	1000	5700	5044							
A5-8		A5-8			900	Open	Open							
A5-9		A5-9			900	Open	Open							
A5-10		A5-10			900	Open	Open							

*Coor. System SE Cor. RS shaft = N5000 & E5000 USGS

#Coor. system old original origin copper pipe in concrete near office

E. J. LONGYEAR COMPANY

BULLY HILL & RISING STAR MINES

Shasta County, California

DIAMOND DRILL HOLE RECORD

Mine _____ Surface or Underground Area No. _____

Hole No. Consecutive _____ Area _____ Elevation _____ ft.

Date Started _____ Date Finished _____ Total Depth _____ ft.

Bearing at Collar _____ Dip _____ ° Coordinates _____ N _____ E

_____ Level _____ Block _____ Stope _____ Floor

Maas Compass Readings:

Date	Depth in Feet	Bearing	Condition of Reading
[illegible]	[illegible]		
[illegible]	[illegible]		[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

Hydrofluoric Readings:

Date	Depth in Feet	Dip in Degrees	Corrected Reading	Condition of Etching
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

By _____

E. J. LONGYEAR COMPANY

BULLY HILL & RISING STAR MINES

Shasta County, California

DIAMOND DRILL HOLE RECORD

Mine Bully Hill Surface ~~or Underground~~ Area No. 1

Hole No. Consecutive 2 Area A1-2 Elevation 1505.98 ft.

Date Started 1-3-52 Date Finished 3-27-52 Total Depth 1038 ft.

Bearing at Collar S 78 W Dip -70 ° Coordinates 11,306.0N 7,986.2 E

Level Block Stope Floor

Maas Compass Readings:

Date	Depth in Feet	Bearing	Condition of Reading
3-24-52	910		No good) 2 surveys
3-24-52	910		No good)

Hydrofluoric Readings:

Date	Depth in Feet	Dip in Degrees	Corrected Reading	Condition of Etching
3-11-52	300	73°30'	69°30'	OK
3-11-52	500	73°30'	69°30'	OK
3-11-52	700	73°	69°	OK
3-11-52	800	72°	67°	OK
3-24-52	910	72°	67°	OK

By

E. J. LONGYEAR COMPANY

BULLY HILL & RISING STAR MINES

Shasta County, California

DIAMOND DRILL HOLE RECORD

Mine _____ Surface or Underground _____ Area No. _____

Hole No. Consecutive _____ Area _____ Elevation _____ ft.

Date Started _____ Date Finished _____ Total Depth _____ ft.

Bearing at Collar _____ Dip _____ ° Coordinates _____ N _____ E

_____ Level _____ Block _____ Stope _____ Floor

Maas Compass Readings:

Date	Depth in Feet	Bearing	Condition of Reading

Hydrofluoric Readings:

Date	Depth in Feet	Dip in Degrees	Corrected Reading	Condition of Etching

By _____

E. J. LONGYEAR COMPANY

BULLY HILL & RISING STAR MINES

Shasta County, California

DIAMOND DRILL HOLE RECORD

Mine _____ Surface or Underground: Area No. _____

Hole No. Consecutive _____ Area _____ Elevation _____ ft.

Date Started _____ Date Finished _____ Total Depth _____ ft.

Bearing at Collar _____ Dip _____ ° Coordinates _____ N _____ E

_____ Level _____ Block _____ Stope _____ Floor

Maas Compass Readings:

Date	Depth in Feet	Bearing	Condition of Reading

Hydrofluoric Readings:

Date	Depth in Feet	Dip in Degrees	Corrected Reading	Condition of Etching

By _____

E. J. LONGYEAR COMPANY

BULLY HILL & RISING STAR MINES

Shasta County, California

DIAMOND DRILL HOLE RECORD

Mine _____ Surface or Underground _____ Area No. _____

Hole No. Consecutive _____ Area _____ Elevation _____ ft.

Date Started _____ Date Finished _____ Total Depth _____ ft.

Bearing at Collar _____ Dip _____ ° Coordinates _____ N _____ E

_____ Level _____ Block _____ Stope _____ Floor

Maas Compass Readings:

Date	Depth in Feet	Bearing	Condition of Reading
[illegible]	[illegible]	[illegible]	[illegible]

Hydrofluoric Readings:

Date	Depth in Feet	Dip in Degrees	Corrected Reading	Condition of Etching
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

By _____

Page ____ of ____

Hole No. A1-2 (2)

E. J. Longyear Company
Diamond Drilling Sample and Assay Record
BULLY HILL AND RISING STAR MINES
Shasta County, California

Sample No.	Interval From	Interval To	Length	Wt. of Sample	Rock Classification	Core Assays Total Cu	Oxide Cu	Zn	Pb	Au	Ag
1	778.5	781	2.5			2.01		25.29	0.20	.17	4.83
2	781	786	5.0			3.86		10.41	0.81	.065	4.95
3	786	787	1.0			2.31		7.45	0.20	.06	4.40
4	787	791	4.0			1.75		13.92	.35	.065	2.60
5	791	794	3.0			0.82		1.12	0.25	.03	1.30
6	794	799	5.0			0.20		0.26	0.04	.01	.40
7	799	804	5.0			0.28		0.37	0.38	.02	Tr
8	804	809	5.0			0.31		0.26	0.09	.005	Tr
9	809	814	5.0			0.23		0.31	0.40	Tr	Nil
10	814	819	5.0			0.10		0.05	0.03	Tr	Nil
11	819	824	5.0			0.04		0.03	0.02	.01	.10
12	824	829	5.0			0.01		0.02	0.09	.02	.08
13	829	834	5.0			0.02		0.11	0.03	.005	Tr
14	834	839	5.0			0.12		0.05	0.02	.005	Tr
15	839	844	5.0			Tr		0.02	0.02	Tr	Nil
16	844	849	5.0			0.02		0.10	0.02	Tr	Nil
17	849	854	5.0			0.05		0.05	0.03	.005	Nil
18	854	859	5.0			0.03		0.02	Tr	Tr	Nil
19	859	864	5.0			Tr		0.02	0.01	.005	Tr
20	864	869	5.0			0.03		0.10	0.01	.005	Tr
21	869	874	5.0			0.02		0.06	0.02	Nil	Nil
22	874	877	3.0			0.13		0.10	0.03	.01	.09
23	877	882	5.0			4.46		0.36	0.10	.02	.38
24	882	883	1.0			0.80		3.84	0.03	.02	.10
25	883	888	5.0			0.77		0.36	0.03	.005	Tr
26	888	893	5.0			0.18		0.12	0.02	.005	Nil
27	893	898	5.0			0.33		0.33	0.02	.005	Tr

Page ____ of ____

Hole No. A1-3 (#3)

H. J. Longyear Company
Diamond Drilling Sample and Assay Record
BULLY HILL AND RISING STAR MINES
Shasta County, California

Sample No.	Interval From	Interval To	Length	Wt. of Sample	Rock Classification	Core Assays Total Cu	Oxide Cu	Zn	Pb	Au	Ag
28	519.5	524	4.5			0.03		0.05	0.02	Tr	Tr
29	524	529	5.0			0.25		0.10	0.02	Tr	.10
30	529	534	5.0			0.72		0.16	0.10	Tr	.15
31	534	539	5.0			0.36		0.11	0.04	Nil	.10
32	539	541.5	2.5			0.03		0.02	0.01	Tr	Nil
33	541.5	546.5	5.0			0.12		0.05	0.03	Tr	.20
34	546.5	549.5	3.0			0.17		0.10	0.02	Nil	Nil
35	553	558	5.0			0.15		0.05	0.02	Tr	Tr
36	558	563	5.0			0.05		0.10	0.02	.005	Tr
37	563	568	5.0			0.01		0.05	0.04	.01	.09
38	568	573	5.0			0.01		0.05	0.01	Tr	Tr
39	573	578	5.0			Tr		0.02	0.01	.005	Nil
40	578	583	5.0			0.01		0.04	0.01	Tr	Tr
41A	583	588	5.0			0.01		0.05	0.08	001	Tr
41B						0.05		0.05	0.12	Tr	Tr
42	588	593	5.0			0.01		0.05	0.02	.01	Nil
43	593	598	5.0			0.02		0.03	Tr	Tr	Tr
44	598	603	5.5			0.02		0.02	0.01	Tr	Tr
45	603	608	5.0			0.02		0.11	0.02	Tr	Tr
46	613	618	5.0			Tr		0.03	Tr	.01	Tr
47	618	623	5.0			Tr		0.03	Tr	.01	Tr
48	623	628	5.0			Tr		0.03	0.01	.005	Nil
49	628	633	5.0			0.05		0.05	0.07	.005	Nil
50	633	638	5.0			0.02		0.04	0.08	Tr	Nil
51	638	643	5.0			0.02		0.21	0.10	.005	Nil
52	643	648	5.0			0.02		0.05	0.14	.005	Nil
53	648	653	5.0			0.02		0.05	0.13	Tr	Nil
54	653	658	5.0			0.45		0.31	0.25	.01	.10
55	658	663	5.0			0.02		0.02	Tr	.005	Tr
56	663	668	5.0			Tr		0.05	0.03	Nil	Nil
57	668	673	5.0			Tr		0.03	0.02	Tr	Nil
58	673	678	5.0			0.02		0.03	Tr	Tr	Nil
59	678	683	5.0			Tr		0.05	0.02	.01	Tr
60	683	688	5.0			0.02		0.05	0.10	Tr	Nil
61	688	693	5.0			0.02		0.05	0.10	.005	Nil
62	693	698	5.0			0.01		0.03	0.04	Tr	Nil
63	698	703	5.0			Tr		0.03	0.35	.015	.1
64	703	708	5.0			0.13		0.05	0.25	.005	Nil
65	708	712.5	4.5			0.01		0.05	0.02	Nil	Nil
66	712.5	715	2.5			1.45		0.05	0.21	Tr	[illegible]
67	715	720	5.0			0.02		0.05	0.02	Tr	[illegible]
68	725	731	6.0			Tr		0.02	Tr	Tr	

Page____ of ____

Hole No. A1-3 (#3)

E. J. Longyear Company
Diamond Drilling Sample and Assay Record
SUNNY HILL [illegible]
Shasta County, California

Sample No.	Interval From	Interval To	Length	Wt. of Sample	Rock Classification	Core Assays Total Cu	Oxide Cu	Zn	Pb	Au	Ag
69	731	734	3.0			0.63		0.05	0.03	.005	Tr
70	734	739	5.0			0.03		0.05	0.05	Tr	Nil
71	739	744	5.0			0.03		0.02	0.01	.005	Tr
72	744	749	5.0			0.03		0.03	0.11	Nil	Nil
73	749	752.5	3.5			0.16		0.05	0.10	.01	.10
74	752.5	756	3.5			0.11		0.05	0.02	.005	Nil
75	756	761	5.0			0.02		0.04	0.02	Nil	Nil

Redding, California
August 1, 1952
Drill Hole A1-4
Consecutive #4

LOG OF DRILL HOLE NO. 4
BULLY HILL AND MINING STAR MINES

Interval Drilled From	To	Feet	Core Recovered Feet	%	Hole Size		Description
624	629	5	4	80	EX	624-680	Same greenish-gray, tuffaceous Rhyolite breccia as above. Breccia fragments of different sizes and shapes. Pieces up to 2-3" in size occur. Quartz-phenocrysts 1-2mm. Dark-green chlorite contains pyrite. Some sphalerite and very little chalcopyrite can be seen at 634, 670.5-671. Besides - pyrite stains and possibly pyrrhotite at 640-642. Rock is partly secondarly silicified (at 643-646.550, 669, etc.). Very fine banding and flow lines can be observed between 650-661. These are at 50° and 45° to core. Core is solid.
629	636	7	6.3	90			
636	646	10	10	100			
646	656	10	10	100			
656	666	10	10	100			
666	669	3	2.7	90			
669	670	1	1	100			
670	680	10	3.2	32			
680-687		7	1.4	20	EX	680-740	Same Bully Hill Rhyolite breccia, as described above (see 624-680). Very broken core is between 696-702, 712-721, 725-728, 737.5-740. Secondary silicification in form of little Qtz-CO2 veinlets, cutting the schistosity at 70° - 80° at 703-705, 725-728, 728, etc. Very very few scattered individual crystals of sphalerite and chalcopyrite here and there (724, 733-736, etc.) Dotting at 15° at 710, at 25° at 734.
687	692	5	2	40			
692	693	1	0.7	70			
693	696	3	1.2	40			
696	698	2	1.6	80			
698	700	2	1.6	80			
700	701	1	1	100			
701	702	1	1	100			
702	706	4	4	100			
706	710	4	3.6	90			
710	712	2	2	100			
712	715	3	1.8	60			
715	717	2	0.9	45			
717	718	1	1	100			
718	721	3	2.7	90			
721	725	4	4	100			
725	726	1	1	100			
726	726.6	0.6	0.6	100			
726.6	728	1.4	1.2	86			
728	729	1	1	100			
729	730.5	1.5	1.5	100			

Redding, California
August 15, 1952
Drill Hole A1-4
Consecutive #

DRILL LOG No. 4

Interval Drilled From	To	Feet	Core Recovered Feet	%	Dip Size	Description
730.5	731	0.5	0.5	100		
731	733	2	2	100		
733	736	3	3	100		
736	738	2	2	100		
738	739	1	1	100		
739	740	1	1	100		
740	741	1	1	100	3"	740-740.1 Same Dully Hill rhyolite breccia as described before (see 0.0-740, etc.). Breccia fragments getting smaller in size downwards. Chlorite is present in increasing amount downwards. Some of it is of the same mineralogical appearance as rock from [illegible] 1. It is equal to that of rock from [illegible] (Dr. 2) etc., with very minute white phenocrysts (see chlorite at 740.0, 750-756, etc.). Some disseminations of chalcopyrite and sphalerite occur from 750' downwards. Secondary silicification in form of $Ba-SO_3$ veinlets at 761-762, 770, etc. Core is in general not too badly broken. Some clay between 741-740.1 in location of fault zone here.
741	744	3	3	100		
744	747	3	3	100		
747	749	2	1.5	75		
749	756	7	7	100		
756	760	7	4.0	60		
760	767	7	4	100		
767	769	2	1	50		
769	775	6	3.6	60		
775	780	5	4.5	90		
780	782	2	3.5	70		
782	787	4	3.5	70		
787	791	4	1.5	37		
791	795	4	0.2	5		
795	805	10	0	0		
805	809	4	0.2	0.5		
809	809.1	0.1	0.1	100		
809.1	814	4.9	1	24	3"	809.1-809.9 Dully Hill rhyolite breccia - same as above (740-809.1). Interval between 814-815 is fine breccia rock, almost tuff. Rather in very chloritic. Quartz-phenocrysts over 3-4 mm. Breccia pieces are not over 0.5" in size. Core is badly broken all over. Some pieces of andesite dike and pieces of rhyolite in contact with dike can be seen between 809.1-814. Small amount of fine disseminated pyrite.
814	815	1	0.5	50		
815	819	4	2	50		
819	823.0	4.0	2	40		

Redding, California
August 1, 1952
Drill Hole A1-5
Consecutive #5

LOG OF DRILL HOLE NO. 5
BULLY HILL AND RISING STAR MINES

Interval Drilled From	To	Feet	Core Recovered Feet	%	Hole Size		Description
430	434	4	4	100	DX	430-490	Bully Hill Rhyolite breccia, as described before (313-430). The Rhyolite is much more hydrothermally altered (secondarly silicified, chloritized, pyritized, carbonitized?, etc.) as most probably the same Rhyolite breccia material from D.H. A1-4, what is also of tuffaceous character, but less altered. Quartz-phenocrysts 2-3mm. Core is firm and solid mostly, if even broken in places. Some disseminations of pyrite and possibly chalcopyrite occur in chloritic part of rock in whole core. Dip of material: at 32° to core at 431', at 25° at 435', at 30° at 440', at 45° at 449', at 32° at 470, etc.
434	439	5	5	100			
439	440	1	0.9	90			
440	450	10	10	100			
450	459.5	9.5	7.6	80			
459.5	465.5	6	5.4	90			
465.6	475	9.5	8	84			
475	480	5	5	100			
480	490	10	2	20	DX	430-492	Bully Hill Rhyolite breccia, as described before (s e 313-430, 430-480). In lower part gets darker in color. Core is mostly broken. Dip at 40° to core at 480.
490	493	3	2.1	70			
493	496	3	0.9	30	DX	492-563	Bully Hill Rhyolite Tuff, gray to dark-gray rock, with some Qtz-phenocrysts not over 1mm in size. Tuff fragments are not over 5 mm in size, if recognizable. In places rock is more like breccia with the fragments 1 cm in size. (at 519,555, 560). Whole interval is very chloritic. Chlorite is of dark-green or dark greenish-gray clor and contains very, very fine grained pyrite and possibly chalcopyrite. Some intervals are intensively chloritized and might be called chloritic schist (519-521,522-528 545.5-552.5, etc.). Each of them contains approximately 50-60% chlorite as mineral. Such intervals are zone of the weakness,are intensively sheared and squeezed.) 519-520, 545.5-552.5).
496	500	4	0	0			
500	503	3	1.2	40			
503	506	3	1	33			
506	510	4	0	0			
510	515	5	0	0			
515	518	3	0	0			
518	518.5	0.5	0.25	50			
518.5	520	1.5	1.5	100			
520	521	1	1	100			
521	525	4	3.6	90			
525	529	4	2	50			
529	529.5	0.5	0.4	80			
529.5	530	0.5	0.5	100			
530	531	1	1	100			

Redding, California
August 15, 1952
Drill Hole Al-5
Consecutive 75

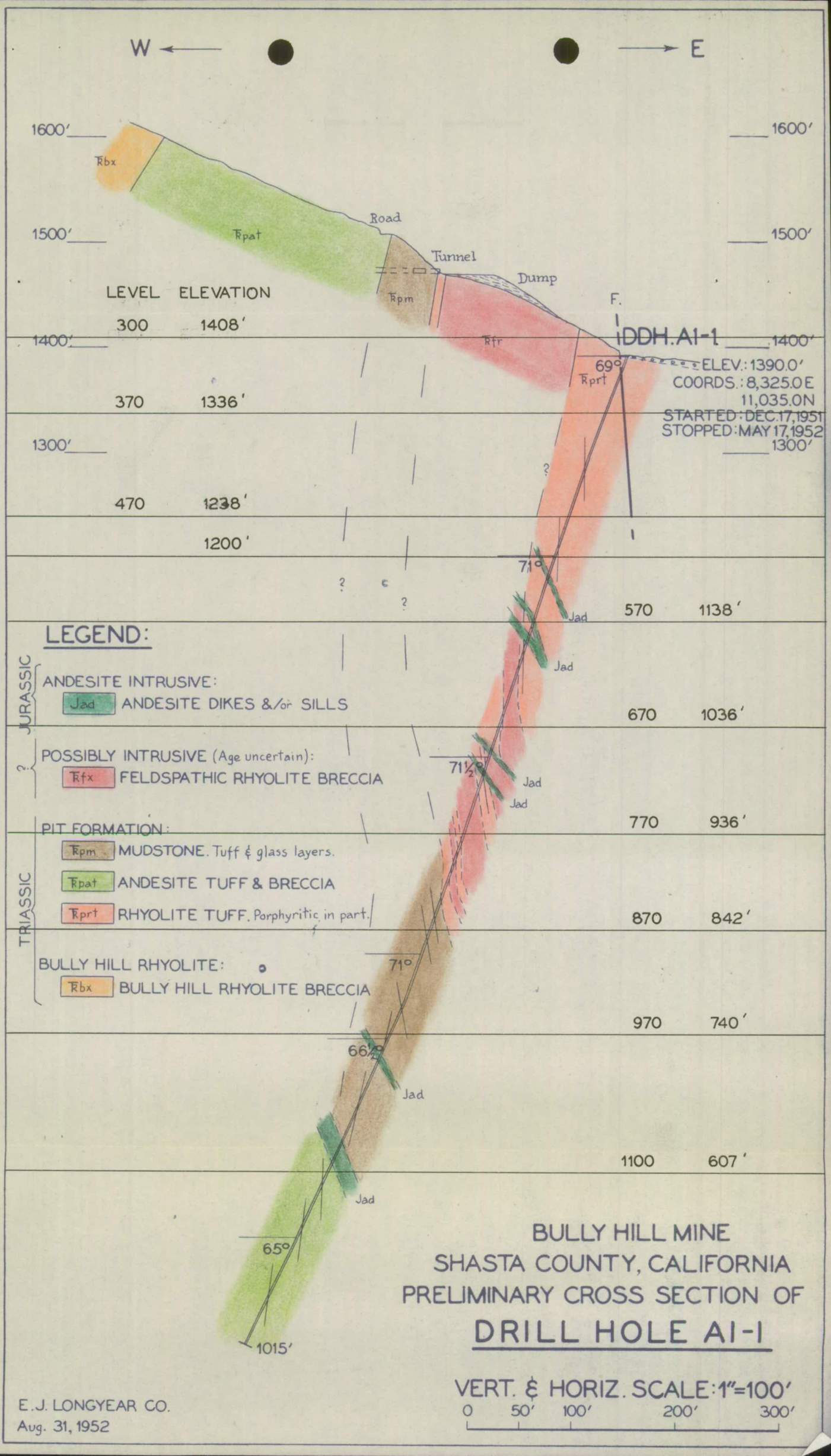
LOG OF DRILL HOLE NO. 5
BULLY HILL AND RYSLING [illegible] HOLES

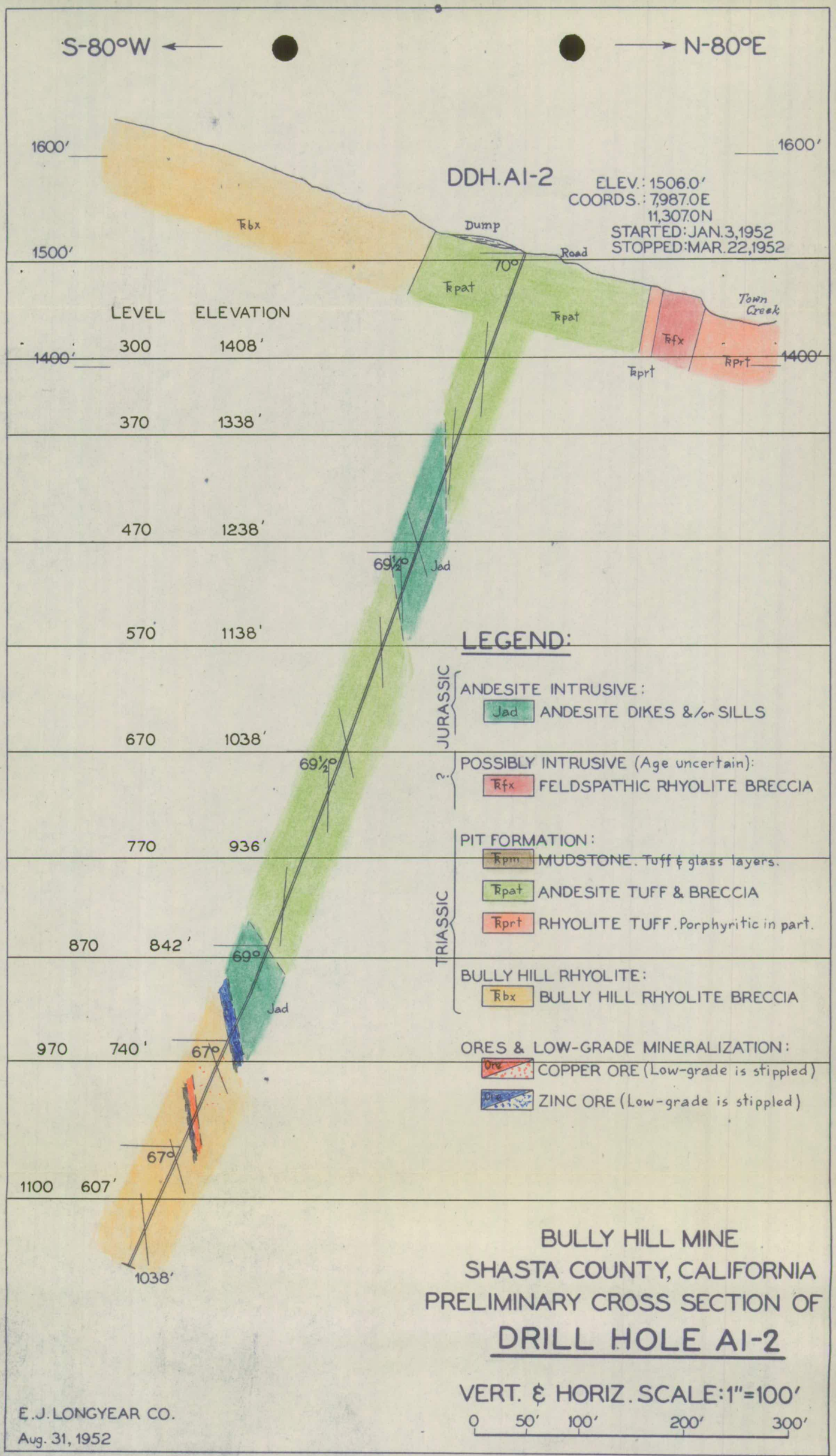
Interval Drilled From	To	Feet	Core Recovered Feet	%	Hole Size	Description
531	533	2	1.6	80		Clayey material was seen at 539, 540, 550-552.5, 545-546.5. Strong fault zone indicated this way can be seen at 550-552.5. Besides some min r faultings are as probable also at 539, 544.5-545.5, 562. Some disseminations of chalcopyrite and sphalerite in between 552.5-563. The core is broken all over. Dip at 30° at 520', at 25° at 547'.
533	536	3	3	100		
536	539	3	3	100		
539	540	1	1	100		
540	542	2	2	100		
542	545.5	3.5	3.1	90		
545.5	552.5	7	6.3	90		
552.5	557	4.5	4.5	100		
557	563	6	6	100		
563	564	1	1	100	BX 563-579	Tuffaceous Bully Hill Rhyolite breccia, gray greenish-gray in color. Breccia fragments up to 3-4 cm in size. Chlorite is present and is of light green color. Little chalcopyrite and pyrite as spots and groups of grains around the breccia fragments mostly. Downwards more like tuff, not coarse brecciated anymore. Core is broken in places only. Some clay in between the cracks and small fractures.
564	573.5	9.5	9.5	100		
573.5	583	9.5	9.5	100	AX 579-607	Bully Hill Rhyolite Tuff, as described before (see 492-563). The interval is very chloritic and soft, squeezed and broken. Upper contact is layed there, where the change in textural character of the rock is most pronounced. The contact itself is about 1 foot wide zone, highly penetrated by barren Qtz-CO_3. Below this zone is a fault zone in form of dislocation breccia recemented by clay (579.5-583), and quartz. Dip at 25°-27° to core at 600'.
583	593	10	0.9	9		
593	593.5	0.5	0.1	20		
593.5	600	6.5	0.3	5		
600	604	4	4	100		
604	605	1	0.9	90		
605	607	2	1.2	60		

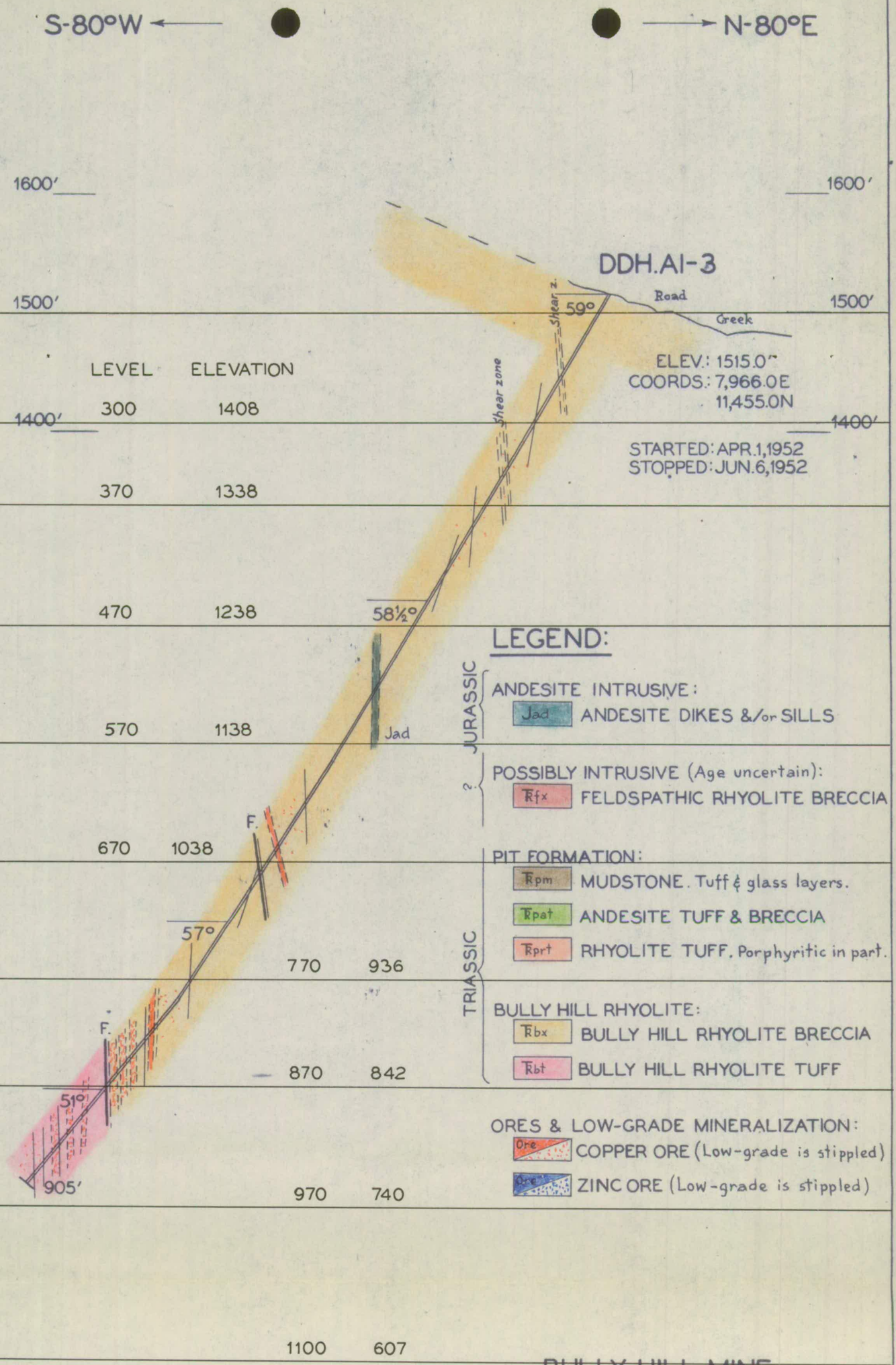
Redding, California
August 20, 1952
Drill Hole 81-5
Consecutive No. 5

DOG CREEK MINES, LTD. - 5
DIAMOND DRILL LOG

Interval Drilled From	To	Feet	Core Recovered Feet	%	Hole Size		Description
607	610	3	0.1	70		607-607.5	Ore zone. Host is mineralized rhyolite tuff. It is intensely silicified, chloritized and sericitized. It contains ½ - 2% Cu and ½ - 15% Fe or more.
610	612	2	1	50		610.5-650	Bully Hill Rhyolite Tuff, as mentioned above (see 570-607, etc). Very broken and/or soft core is all barren. Quartz-phenocrysts 1 mm or less in size. Pyrite occurs.
612	613	1	0.5	50			
613	614	1	0.7	70			
614	616	2	1	50			
616	620	4	2.4	60			
620	623.6	3.6	3.6	100			Tectonic or dislocation breccia, shearing, and clay, indicating fault zone, can be seen between 611-612, at 614, 615-616, 618-619, 636-637, 641-642, 646-649. Between 634-650 the rock is lighter in color, light-gray-greenish, siliceous, mostly hard and with quartz-phenocrysts over 1mm in size, also with light colored soft chlorite. Interval 38 - 41 is intensively chloritic with quartz-phenocrysts 1-2mm in size.
623.6	625.0	1.4	2	60			
625.0	626	1.0	1.0	100			
626	627	1	0.5	50			
627	634	6	1.5	30			
634	635	1	0.7	70			
635	637	2	0.9	45			
637	640	3	1.2	40			
640	642	2	1.4	70			
642	646	4	1	25			
646	650	4	1.0	50			
650	652	2	1.5	75		650-655	Some quartz-veinlets occur here and there. Slip of rock 400 to core at 652, what is an average dip of rock in whole interval described.
652	653.0	1.0	1.0	100			Rhyolitic tuff as above (610.5-650). The rock is not very chloritic, but siliceous. Between 653.5-655 it contains black fragments, chlorite and hairthin veinlets of some black material. Small amount of disseminated pyrite occurs. Core is broken all over.
653.0	653.5	.5	0.1	70			
653.5	655	1.5	0.9	60			
655	662	7	0.7	10			


W
E
1600'
1500'
1400'
1300'
Ŧbx
Ŧpat
Road
Tunnel
Dump
Ŧpm
Ŧfr
Ŧprt
F.
DDH.A1-1
69°
ELEV.: 1390.0'
COORDS.: 8,325.0 E
11,035.0 N
STARTED: DEC. 17, 1951
STOPPED: MAY 17, 1952
LEVEL ELEVATION
300 1408'
370 1336'
470 1238'
1200'
570 1138'
670 1036'
770 936'
870 842'
970 740'
1100 607'
71°
71½°
66½°
65°
1015'
Jad
LEGEND:
JURASSIC
ANDESITE INTRUSIVE:
Jad ANDESITE DIKES &/or SILLS
?
POSSIBLY INTRUSIVE (Age uncertain):
Ŧfx FELDSPATHIC RHYOLITE BRECCIA
TRIASSIC
PIT FORMATION:
Ŧpm MUDSTONE. Tuff & glass layers.
Ŧpat ANDESITE TUFF & BRECCIA
Ŧprt RHYOLITE TUFF. Porphyritic in part.
BULLY HILL RHYOLITE:
Ŧbx BULLY HILL RHYOLITE BRECCIA
BULLY HILL MINE
SHASTA COUNTY, CALIFORNIA
PRELIMINARY CROSS SECTION OF
DRILL HOLE A1-1
VERT. & HORIZ. SCALE: 1"=100'
0 50' 100' 200' 300'
E.J. LONGYEAR CO.
Aug. 31, 1952


S-80°W
N-80°E
1600'
1500'
1400'
DDH. A1-2
ELEV.: 1506.0'
COORDS.: 7,987.0E
11,307.0N
STARTED: JAN. 3, 1952
STOPPED: MAR. 22, 1952
Dump
Road
Town Creek
Trbx
Trpat
Trfx
Trprt
70°
LEVEL ELEVATION
300 1408'
370 1338'
470 1238'
570 1138'
670 1038'
770 936'
870 842'
970 740'
1100 607'
69½°
69½°
69°
67°
67°
Jad
Jad
1038'
LEGEND:
JURASSIC
ANDESITE INTRUSIVE:
Jad ANDESITE DIKES &/or SILLS
?
POSSIBLY INTRUSIVE (Age uncertain):
Trfx FELDSPATHIC RHYOLITE BRECCIA
TRIASSIC
PIT FORMATION:
Trpm MUDSTONE. Tuff & glass layers.
Trpat ANDESITE TUFF & BRECCIA
Trprt RHYOLITE TUFF. Porphyritic in part.
BULLY HILL RHYOLITE:
Trbx BULLY HILL RHYOLITE BRECCIA
ORES & LOW-GRADE MINERALIZATION:
Ore COPPER ORE (Low-grade is stippled)
Ore ZINC ORE (Low-grade is stippled)
BULLY HILL MINE
SHASTA COUNTY, CALIFORNIA
PRELIMINARY CROSS SECTION OF
DRILL HOLE A1-2
VERT. & HORIZ. SCALE: 1"=100'
0 50' 100' 200' 300'
E. J. LONGYEAR CO.
Aug. 31, 1952

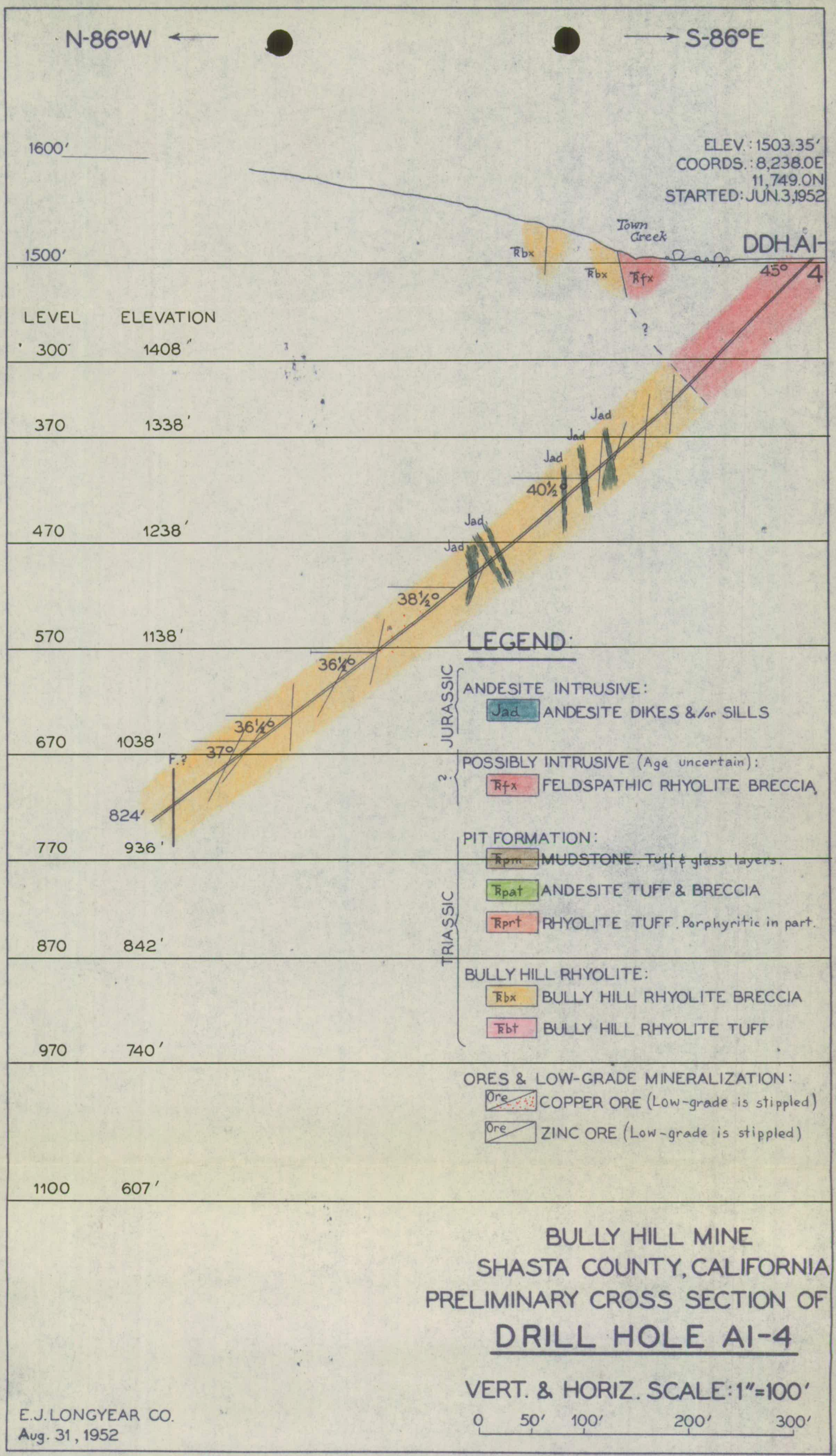


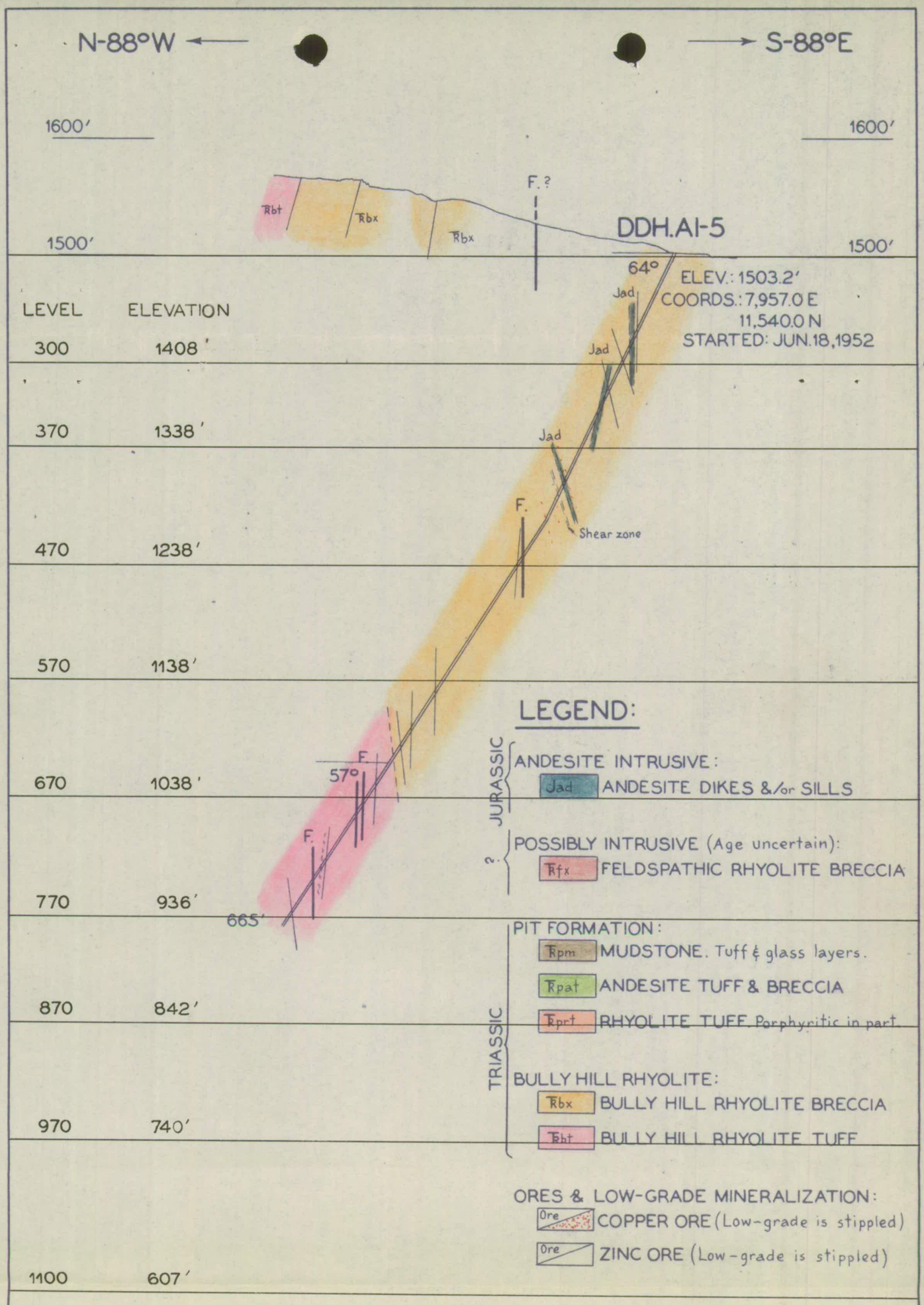
BULLY HILL MINE
SHASTA COUNTY, CALIFORNIA
PRELIMINARY CROSS SECTION OF
DRILL HOLE AI-3

VERT. & HORIZ. SCALE: 1″=100′

0 50′ 100′ 200′ 300′

E.J. LONGYEAR CO.
Aug. 31, 1952


N-86°W
S-86°E
1600'
1500'
ELEV.: 1503.35'
COORDS.: 8,238.0E
11,749.0N
STARTED: JUN.3,1952
Town Creek
DDH.AI-4
45°
Rbx
Rbx
Rfx
?
LEVEL
ELEVATION
300'
1408'
370
1338'
470
1238'
570
1138'
670
1038'
770
936'
870
842'
970
740'
1100
607'
Jad
Jad
Jad
Jad
Jad
40½°
38½°
36½°
36½°
37°
F.?
824'
LEGEND:
JURASSIC
ANDESITE INTRUSIVE:
Jad ANDESITE DIKES &/or SILLS
?
POSSIBLY INTRUSIVE (Age uncertain):
Rfx FELDSPATHIC RHYOLITE BRECCIA
TRIASSIC
PIT FORMATION:
Rpm MUDSTONE. Tuff & glass layers.
Rpat ANDESITE TUFF & BRECCIA
Rprt RHYOLITE TUFF. Porphyritic in part.
BULLY HILL RHYOLITE:
Rbx BULLY HILL RHYOLITE BRECCIA
Rbt BULLY HILL RHYOLITE TUFF
ORES & LOW-GRADE MINERALIZATION:
Ore COPPER ORE (Low-grade is stippled)
Ore ZINC ORE (Low-grade is stippled)
BULLY HILL MINE
SHASTA COUNTY, CALIFORNIA
PRELIMINARY CROSS SECTION OF
DRILL HOLE AI-4
VERT. & HORIZ. SCALE: 1"=100'
0 50' 100' 200' 300'
E.J. LONGYEAR CO.
Aug. 31, 1952



BULLY HILL MINE
SHASTA COUNTY, CALIFORNIA
PRELIMINARY CROSS SECTION OF
DRILL HOLE AI-5

VERT. & HORIZ. SCALE: 1″=100′

0 50′ 100′ 200′ 300′

E.J. LONGYEAR CO.
Aug. 31, 1952

C O P Y

Hole No. Al-2 (#2)

E. J. Longyear Company
Diamond Drilling Sample and Assay Record
BULLY HILL AND RISING STAR MINES
Shasta County, California

Sample No.	Interval From	Interval To	Length	Wt. of sample	Rock Classification	Core Assays Total Cu	Core Assays Oxide Cu	Zn	Pb	Au	Ag
1	778.5	781	2.5			2.01		25.29	0.29	.17	4.83
2	781	786	5.0			3.26		18.41	0.81	.065	4.95
3	786	787	1.0			2.31		7.45	0.20	.06	4.40
4	787	791	4.0			1.75		13.92	0.35	.065	2.60
5	791	794	3.0			0.82		1.12	0.25	.08	1.80
6	794	799	5.0			0.20		0.20	0.04	.01	.40
7	799	804	5.0			0.28		00.37	0.38	.02	Tr
8	804	809	5.0			0.31		0.26	0.09	.005	Tr
9	809	814	5.0			0.23		0.31	0.40	Tr	Nil
10	814	819	5.0			0.10		0.05	0.03	Tr	Nil
11	819	824	5.0			0.04		0.03	0.02	.01	.10
12	824	829	5.0			0.01		0.02	0.09	.02	.08
13	829	834	5.0			0.02		0.11	0.03	.005	Tr
14	834	839	5.0			0.12		0.05	0.02	.005	Tr
15	839	844	5.0			Tr		0.02	0.02	Tr	Nil
16	844	849	5.0			0.02		0.10	0.02	Tr	Nil
17	849	854	5.0			0.05		0.05	0.03	.005	Nil
18	854	859	5.0			0.03		0.02	Tr	Tr	Nil
19	859	864	5.0			Tr		0.02	0.01	.005	Tr
20	864	869	5.0			0.03		0.10	0.01	.005	Tr
21	869	874	5.0			0.02		0.06	0.02	Nil	Nil
22	874	877	3.0			0.13		0.10	0.03	.01	.09
23	877	882	5.0			4.46		0.36	0.10	.02	.38
24	882	883	1.0			0.80		3.84	0.03	.02	.10
25	883	888	5.0			0.77		0.36	0.03	.005	Tr
26	888	893	5.0			0.18		0.12	0.02	.005	Nil
27	893	898	5.0			0.33		0.38	0.02	.005	Tr

C O P Y

Page___ of _____

Hole No. A1-3 (#3)

E. J. Longyear Company
Diamond Drilling Sample and Assay Record
BULLY HILL AND RISING STAR MINES
Shasta County, California

Sample No.	Interval From	Interval To	Length	Wt. of Sample	Rock Classification	Core Assays Total Cu	Core Assays Oxide Cu	Core Assays Zn	Core Assays Pb	Core Assays Au	Core Assays Ag
28	519.5	524	4.5			0.03		0.05	0.02	Tr	Tr
29	524	529	5.0			0.25		0.10	0.02	Tr	.10
30	529	534	5.0			0.72		0.16	0.10	Tr	.15
31	534	539	5.0			0.36		0.11	0.04	Nil	.10
32	539	541.5	2.5			0.03		0.02	0.01	Tr	Nil
33	541.5	546.5	5.0			6.12		0.05	0.03	Tr	.20
34	546.5	549.5	3.0			0.17		0.10	0.02	Nil	Nil
35	553	558	5.0			0.15		0.05	0.02	Tr	Tr
36	558	563	5.0			0.05		0.10	0.02	.005	Tr
37	563	568	5.0			0.01		0.05	0.04	.01	.09
38	568	573	5.0			0.01		0.05	0.01	Tr	Tr
39	573	578	5.0			Tr		0.02	0.01	.005	Nil
40	578	583	5.0			0.01		0.04	0.01	Tr	Tr
41A	583	588	5.0			0.01		0.05	0.08	.01	Tr
41B						0.05		0.05	0.12	Tr	Tr
42	588	593	5.0			0.01		0.03	0.02	.01	Nil
43	593	598	5.0			0.02		0.03	Tr	Tr	Tr
44	598	603	5.5			0.02		0.02	0.01	Tr	Tr
45	603	608	5.0			0.02		0.11	0.02	Tr	Tr
46	613	618	5.0			Tr		0.03	Tr	.01	Tr
47	618	623	5.0			Tr		0.03	Tr	.01	Tr
48	623	628	5.0			Tr		0.03	0.01	.005	Nil
49	628	633	5.0			0.05		0.05	0.07	.005	Nil
50	633	638	5.0			0.02		0.04	0.08	Tr	Nil
51	638	643	5.0			0.02		0.21	0.10	.005	Nil
52	643	648	5.0			0.02		0.05	0.14	.005	Nil
53	648	653	5.0			0.02		0.05	0.13	Tr	Nil
54	653	658	5.0			0.45		0.31	0.25	.01	.10
55	658	663	5.0			0.02		0.02	Tr	.005	Tr
56	663	668	5.0			Tr		0.05	0.03	Nil	Nil
57	668	673	5.0			Tr		0.03	0.02	Tr	Nil
58	673	678	5.0			0.02		0.03	Tr	Tr	Nil
59	678	683	5.0			Tr		0.05	0.02	.01	Tr
60	683	688	5.0			0.02		0.05	0.10	Tr	Nil
61	688	693	5.0			0.02		0.05	0.10	.005	Nil
62	693	698	5.0			0.01		0.03	0.04	Tr	Nil
63	698	703	5.0			Tr		0.03	0.35	.015	.10
64	703	708	5.0			0.15		0.05	0.25	.005	Nil
65	708	712.5	4.5			0.01		0.05	0.02	Nil	Nil
66	712.5	715	2.5			1.48		0.05	0.21	Tr	.10
67	715	720	5.0			0.02		0.05	0.02	Tr	Tr
68	725	731	6.0			Tr		0.02	Tr	Tr	Nil

C O P Y

Page ___ of ___

Hole No. Al-3 (#3)

E. J. Longyear Company
Diamond Drilling Sample and Assay Record
BULLY HILL AND RISING STAR MINES
Shasta County, California

Sample No.	Interval From	Interval To	Length	Wt. of Sample	Rock Classification	Total Cu	Oxide Cu	Core Assays Zn	Pb	Au	Ag
69	731	734	3.0			0.63		0.05	0.03	.005	Tr
70	734	739	5.0			0.03		0.05	0.05	Tr	Nil
71	739	744	5.0			0.03		0.02	0.01	.005	Tr
72	744	749	5.0			0.03		0.03	0.11	Nil	Nil
73	749	752.5	3.5			3.16		0.05	0.10	.01	.10
74	752.5	756	3.5			0.11		0.05	0.02	.005	Nil
75	756	761	5.0			0.08		0.04	0.02	Nil	Nil

E. J. LONGYEAR COMPANY
BULLY HILL & RISING STAR MINES
SHASTA COUNTY, CALIFORNIA

TABULATION NO. 1

DIAMOND DRILL HOLE DATA

USGS-DMA Location No.	Consec. No.	Area No.	PLANNED Bearing	PLANNED Angle	PLANNED Depth	PLANNED Coordinates* North	PLANNED Coordinates* East	ACTUAL Bearing	ACTUAL Angle	ACTUAL Depth	ACTUAL Coordinates # North	ACTUAL Coordinates # East	Cumulative Footage	Location of Mineral
First Stage														
A1-1	2	A1-2	S 80 W	-70°	800	7215	6386	S 78 W	-70°	1038	11306	7986		●
A1-2	3	A1-3	S 80 W	-60°	500	7361	6352	S 75 W	-59°	905	11454	7965		
A1-3	4	A1-4	N 85 W	-45°	750	7593	6535	N 86 W	-45°	936	11748	8204		●
A1-4	1	A1-1	Due W	-70°	1050	6960	6693	Due W	-69°	1015	11034	8324		
A1-5			S 85 W	-66°	1000	7105	6660							
new	5	A1-5						N 88 W	-64°	749	11536	7963	195.7	
A3-1		A3-1	S 89½W	-65°	700	6009	6170							
A3-2		A3-2	N 64 W	-65°	1000	5860	6515							●
A3-3		A3-3	N 79 W	-61°	700	5870	6300							
A3-4		A3-4	N 67 W	-52½°	600	5696	6169							●
A3-5		A3-5	N 66 W	-52°	600	5550	6111							
A3-6		A3-6	N 68½W	-55°	600	5390	6010							
A3-7		A3-7	N 55 W	-55°	600	5154	5886							

* Coor. System SE Cor. RS Shaft = N5000 & E5000 USGS

Coor. system old original origin copper pipe in concrete near office

[illegible]	interval		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

F. J. LONGYEAR COMPANY

BULLY HILL & RISING STAR MINES

Shasta County, California

DIAMOND DRILL HOLE RECORD

Mine Bully Hill Surface ~~or Underground~~ Area No. 1

Hole No. Consecutive 4 Area A1-4 Elevation 1503.35 ft.

Date Started 5-29-52 Date Finished _____ Total Depth _____ ft.

Bearing at Collar N86-0 W Dip -45 ° Coordinates 11748.0 N 8204.0 E

_____ Level _____ Block _____ Stope _____ Floor

Maas Compass Readings:

Date	Depth in Feet	Bearing	Condition of Reading
7-22-52	300	N 58° W	No good
7-23-52	460	N 73° 45'W	O.K.
8-6-52	510		No good. Set in casing.
8-6-52	560	N 80° 45'W	O.K.
7-31-52	660	N 77° 45'W	O.K.
8-6-52	700	N 84° 45'W	Excellent
9-6-52	830	N 76° W	Excellent

Hydrofluoric Readings:

Date	Depth in Feet	Dip in Degrees	Corrected Reading	Condition of Etching
7-22-52	300	45° 30'	40° 30'	O.K.
7-23-52	460	45°	38° 30'	O.K.
8-6-52	560	43° 20'	36° 30'	Excellent
7-31-52	660	43°	36° 30'	O.K.
8-6-52	700	43½°	37°	Excellent
9-6-52	830	41°	34°	Excellent

By _____

F. J. LONGYEAR COMPANY

BULLY HILL & RISING STAR MINES

Shasta County, California

DIAMOND DRILL HOLE RECORD

Mine Bully Hill Surface or Underground Area No. 1

Hole No. Consecutive 5 Area A1-5 Elevation 1503.5 ft.

Date Started 6-18-52 Date Finished _____ Total Depth _____ ft.

Bearing at Collar N 88° W Dip -64° Coordinates 11536.0 N 7963.0 E

_____ Level _____ Block _____ Stope _____ Floor

Maas Compass Readings:

Date	Depth in Feet	Bearing	Condition of Reading
9-6-52	325	S 89° W	Excellent
8-7-52	500	S 88° 0' W	Excellent
9-20-52	700	S 85° W	Excellent

Hydrofluoric Readings:

Date	Depth in Feet	Dip in Degrees	Corrected Reading	Condition of Etching
9-6-52	325	63°	57°	Good
8-7-52	500	63°	57°	Good
9-20-52	700	61½°	55°	Excellent

By _____

E. J. LONGYEAR COMPANY
BULLY HILL & RISING STAR MINES
SHASTA COUNTY, CALIFORNIA

SLUDGE RECOVERY DATA

D. D. Hole No. A1-1 (1)

Sample No.	Depth From:	Depth To:	Length Sampled Ft.	Core Diameter	Sp. Gr. of Rock Drilled	Sampler Opening	Act. Dry Wt. Sludge Recov. Gms.	Comp. Total Wt. Sludge Recov. Gms.	Theoretical Wt. Sludge Recov. Gms.	% of Sludge Recov.	Remarks
	643.1	646.3	3.2	AX	2.70	The cuttings were caught in a series of wash tubs	255		3694	7	
	646.3	652	5.7	AX	2.70		1193		5640	21	
	652	659	7	AX	2.70		1761		6934	25	
	659.6	662	3.4	AX	3.00		4536		3744	121	
	662	667	5	AX	2.85		2950		5130	58	
	667	669	2	AX	2.85		539		2420	22	
	672	676	4	AX	2.85		1375		4240	44	
	676	681	5	AX	2.85		766		5130	15	
	681	685	4	AX	2.85		284		4240	7	
	685	690	5	AX	2.85		2670		5130	52	
	690	695	5	AX	2.85		3006		5130	59	
	695	702	7	AX	2.85		852		7320	12	
	702	707	5	AX	2.85		1051		5130	21	
	707	711	4	AX	2.70		539		4015	13	
	711	720	9	AX	3.00		1819		9860	18	
	725	730	5	AX	2.85		1080		5130	21	
	777	782	5	AX	2.85		3350		5130	65	
	782	787	5	AX	2.85		3120		5130	61	
	787	792	5	AX	2.85		1819		5130	35	

E. J. LONGYEAR COMPANY
BULLY HILL & RISING STAR MINES
SHASTA COUNTY, CALIFORNIA

SLUDGE RECOVERY DATA

D. D. Hole No. A1-1 (1)

Sample No.	Depth From:	Depth To:	Length Sampled Ft.	Core Diameter	Sp. Gr. of Rock Drilled	Sampler Opening	Act. Dry Wt. Sludge Recov. Gms.	Comp. Total Wt. Sludge Recov. Gms.	Theoretical Wt. Sludge Recov. Gms.	% of Sludge Recov.	Remarks
	792	797	5	AX	2.85	The cuttings were caught in a series of wash tubs	3920		5130	76	
	797	802	5	AX	2.85		2242		5130	44	
	802	805	3	AX	2.85		2042		3130	65	
	805	810	5	AX	2.85		3892		5130	76	
	810	815	5	AX	2.85		2950		5130	57	
	815	817	2	AX	2.85		1620		2420	67	
	820	823	3	EX	2.85		398		1685	24	
	823	827	4	EX	2.85		255		2298	11	
	827	832	5	EX	2.85		341		2779	12	
	832	836	4	EX	2.85		284		2298	12	
	836	841	5	EX	2.85		426		2779	15	
	841	846	5	EX	2.85		426		2779	15	
	846	850	4	EX	2.85		255		2298	11	
	850	855	5	EX	2.90		483		2830	17	
	855	860	5	EX	2.85		454		2779	16	
	860	864	4	EX	2.85		1535		2298	67	
	864	869	5	EX	2.85		4800		2779	173	
	869	875	6	EX	2.85		1336		3390	39	
	875	880	5	EX	2.85		3779		2779	136	

E. J. LONGYEAR COMPANY
BULLY HILL & RISING STAR MINES
SHASTA COUNTY, CALIFORNIA

SLUDGE RECOVERY DATA

D. D. Hole No. A1-1 (1)

Sample No.	Depth From:	Depth To:	Length Sampled Ft.	Core Diameter	Sp. Gr. of Rock Drilled	Sampler Opening	Act. Dry Wt. Sludge Recov. Gms.	Comp. Total Wt. Sludge Recov. Gms.	Theoretical Wt. Sludge Recov. Gms.	% of Sludge Recov.	Remarks
	880	886	6	EX	2.85	Cuttings were caught in a series of wash tubs	4115		3390	121	
	886	891	5	EX	2.85		3092		2779	111	
	891	896	5	EX	2.85		1705		2779	61	
	896	900	4	EX	2.85		6980		2298	304	
	900	905	5	EX	2.85	0.25"	227	9870	2779	356	
	905	910	5	EX	2.85	0.25"	454	19780	2779	712	
	910	916	6	EX	2.85	0.25"	227	9870	3390	291	
	916	921	5	EX	2.85	0.25"	200	8700	2779	314	
	921	926	5	EX	2.85	0.25"	312	13590	2779	489	
	926	931	5	EX	2.85	0.25"	398	17320	2779	624	
	935	940	5	EX	2.85	0.25"	196	8520	2779	307	
	940	945	5	EX	2.85	0.3"	114	4250	2779	154	
	945	950	5	EX	2.85	0.3"	227	8620	2779	311	
	950	955	5	EX	2.85	0.3"	398	15115	2779	544	
	955	960	5	EX	2.85	0.3"	312	11860	2779	427	
	960	965	5	EX	2.85	0.3"	57	2110	2779	76	
	965	970	5	EX	2.85	0.3"	142	5390	2779	194	
	970	975	5	EX	2.85	0.3"	227	8620	2779	311	
	975	980	5	EX	2.85	0.3"	114	4250	2779	154	

E. J. LONGYEAR COMPANY
BULLY HILL & RISING STAR MINES
SHASTA COUNTY, CALIFORNIA

SLUDGE RECOVERY DATA

D. D. Hole No. A1-1 (1)

Sample No.	Depth From:	Depth To:	Length Sampled Ft.	Core Diameter	Sp. Gr. of Rock Drilled	Sampler Opening	Act. Dry Wt. Sludge Recov. Gms.	Comp. Total Wt. Sludge Recov. Gms.	Theoretical Wt. Sludge Recov. Gms.	% of Sludge Recov.	Remarks
	980	985	5	EX	2.85	0.3"	171	6500	2779	234	
	985	990	5	EX	2.85	0.3"	171	6500	2779	234	
	990	995	5	EX	2.85	0.3"	114	4250	2779	153	
	995	1000	5	EX	2.85	0.3"	596	22610	2779	815	
	1000	1005	5	EX	2.85	0.3"	426	20410	2779	735	
	1005	1010	5	EX	2.85	0.3"	710	27000	2779	972	
	1010	1015	5	EX	2.85	0.3"	196	7440	2779	268	
								1015' - Bottom of D.D.H. A1-1			

E. J. LONGYEAR COMPANY
BULLY HILL & RISING STAR MINES
SHASTA COUNTY, CALIFORNIA

SLUDGE RECOVERY DATA

D. D. Hole No. A1-2 (2)

Sample No.	Depth From:	Depth To:	Length Sampled Ft.	Core Diameter	Sp. Gr. of Rock Drilled	Sampler Opening	Act. Dry Wt. Sludge Recov. Gms.	Comp. Total Wt. Sludge Recov. Gms.	Theoretical Wt. Sludge Recov. Gms.	% of Sludge Recov.	Remarks
	882	884	2	AX	3.02	The cuttings were caught in a series of wash tubs	340		2160	16	876-883-- Ore zone
	901	911	10	AX	3.02		3346		9930	34	
	911	920	9	AX	2.76		1675		8950	19	
	920	925	5	AX	2.76		795		4965	16	
	925	930	5	AX	2.76		710		4965	14	
	951	960	9	EX	2.71		85		4740	2	
	960	965	5	EX	2.71		340		2633	13	
	965	970	5	EX	2.71		256		2633	10	
	971	975	4	EX	2.71		426		2117	21	
	975	980	5	EX	2.71		256		2640	10	
	980	985	5	EX	2.71		511		2633	20	
	985	996	11	EX	2.71		1906		5800	33	
	996	1002	6	EX	2.71		284		4500	6	No core
	1002	1007	5	EX	2.71		2880		2633	110	
	1007	1014	7	EX	2.71		4320		3690	117	
	1014	1022	8	EX	2.71		1280		4234	30	
	1022	1025	3	EX	2.71		1590		2250	70	
	1025	1030	5	EX	2.71		1363		2633	52	
	1030	1038	8	EX	2.71		539		4234	13	No core

1038' - Bottom of D.D.H. A1-2

E. J. LONGYEAR COMPANY
BULLY HILL & RISING STAR MINES
SHASTA COUNTY, CALIFORNIA

SLUDGE RECOVERY DATA

D. D. Hole No. A1-3 (3)

Sample No.	Depth From:	Depth To:	Length Sampled Ft.	Core Diameter	Sp. Gr. of Rock Drilled	Sampler Opening	Act. Dry Wt. Sludge Recov. Gms.	Comp. Total Wt. Sludge Recov. Gms.	Theoretical Wt. Sludge Recov. Gms.	% of Sludge Recov.	Remarks
	89	95	6	NX	2.76	The cuttings were caught in a series of wash tubs	1118		11220	10	
	95	100	5	NX	2.76		2240		9250	24	
	100	105	5	NX	2.76		3048		9250	33	
	105	110	5	NX	2.76		3234		9250	35	
	110	114	4	NX	2.76		3180		7500	42	No core
	114	120	6	NX	2.76		1005		11220	9	
	120	123	3	NX	2.76		880		5610	16	
	125	131	6	NX	2.76		710		11220	6	
	160	165	5	NX	2.76		1675		9250	18	
	165	170	5	NX	2.76		1062		9250	11	
	170	174	4	NX	2.76		455		7500	6	
	191	195	4	NX	2.76		2020		7500	27	No core
	195	200.3	5.3	NX	2.76		2100		9910	21	No core
	200.3	205	4.7	BX	2.76		1118		6180	18	
	205	210	5	BX	2.76		1118		6625	17	
	210	215	5	BX	2.76		1935		6625	29	
	215	220	5	BX	2.76		2560		6625	39	
	220	223	3	BX	2.76		1118		3943	28	
	223	230	7	BX	2.76		710		9220	8	

E. J. LONGYEAR COMPANY
BULLY HILL & RISING STAR MINES
SHASTA COUNTY, CALIFORNIA

SLUDGE RECOVERY DATA

D. D. Hole No. A1-3 (3)

Sample No.	Depth From:	Depth To:	Length Sampled Ft.	Core Diameter	Sp. Gr. of Rock Drilled	Sampler Opening	Act. Dry Wt. Sludge Recov. Gms.	Comp. Total Wt. Sludge Recov. Gms.	Theoretical Wt. Sludge Recov. Gms.	% of Sludge Recov.	Remarks
	230	235	5	BX	2.76	The cuttings were caught in a series of wash tubs	795		6625	12	
	235	240	5	BX	2.76		767		6625	12	
	240	245	5	BX	2.76		1090		6625	16	
	245	250	5	BX	2.76		624		6625	9	
	250	255	5	BX	2.76		1223		6625	18	
	267	270	3	BX	2.71		880		3880	22	
	270	275	5	BX	2.71		1878		6450	29	
	275	280	5	BX	2.71		2100		6450	33	
	280	285	5	BX	2.71		1590		6450	25	
	350	355	5	BX	2.71		2852		6450	44	
	355	362	7	BX	2.71		2470		9050	27	
	362	367	5	BX	2.71		2268		6450	35	
	367	371	4	BX	2.71		1477		5155	29	
	371	375	4	BX	2.71		1005		5155	19	
	375	380	5	BX	2.71		2240		6450	35	
	380	385	5	BX	2.83		2700		6740	40	
	385	390	5	BX	2.83		2590		6740	38	
	390	395	5	BX	2.70		1310		6440	20	
	395	400	5	BX	2.70		539		6440	8	

E. J. LONGYEAR COMPANY
BULLY HILL & RISING STAR MINES
SHASTA COUNTY, CALIFORNIA

SLUDGE RECOVERY DATA

D. D. Hole No. A1-3 (3)

Sample No.	Depth From:	Depth To:	Length Sampled Ft.	Core Diameter	Sp. Gr. of Rock Drilled	Sampler Opening	Act. Dry Wt. Sludge Recov. Gms.	Comp. Total Wt. Sludge Recov. Gms.	Theoretical Wt. Sludge Recov. Gms.	% of Sludge Recov.	Remarks
	400	405	5	BX	2.70	The cuttings were caught in a series of wash tubs	2212		6440	34	
	405	410	5	BX	2.70		1590		6440	25	
	410	415	5	BX	2.70		910		6440	14	
	415	420	5	BX	2.70		910		6440	14	
	420	425	5	BX	2.70		4000		6440	62	Very broken rock
	425	430	5	BX	2.70		3420		6440	53	
	430	435	5	BX	2.70		2560		6440	40	
	435	440	5	BX	2.70		1732		6440	27	
	440	445	5	BX	2.70		6000		6440	93	
	445	450	5	BX	2.70		9153		6440	142	
	450	455	5	BX	2.70		4100		6440	64	
	455	460	5	BX	2.70	0.3"	1392	52800	6440	820	No core
	460	465	5	BX	2.70	0.3"	405	15400	6440	239	
	465	470	5	BX	2.70	0.3"	1335	50600	6440	786	
	470	475	5	BX	2.70	0.3"	880	33430	6440	519	
	475	480	5	BX	2.70	0.3"	1935	73500	6440	1141	
	480	485	5	BX	2.70	0.3"	2380	90400	6440	1403	
	485	490	5	BX	2.70	0.3"	1648	62500	6440	971	
	490	495	5	BX	2.70	0.3"	1505	57150	6440	887	

E. J. LONGYEAR COMPANY
BULLY HILL & RISING STAR MINES
SHASTA COUNTY, CALIFORNIA

SLUDGE RECOVERY DATA

D. D. Hole No. A1-3 (3)

Sample No.	Depth From:	Depth To:	Length Sampled Ft.	Core Diameter	Sp. Gr. of Rock Drilled	Sampler Opening	Act. Dry Wt. Sludge Recov. Gms.	Comp. Total Wt. Sludge Recov. Gms.	Theoretical Wt. Sludge Recov. Gms.	% of Sludge Recov.	Remarks
	495	500	5	BX	2.70	0.3"	852	32400	6440	503	
	500	505	5	BX	2.70	0.3"	1282	48650	6440	756	
	505	510	5	BX	2.70	0.3"	2240	85100	6440	1321	
	510	515	5	BX	2.70	0.3"	3890	147800	6440	2229	
	515	520	5	BX	2.81	0.2"	312	16220	6700	242	
	520	525	5	AX	2.81	0.2"	85	4420	5050	88	520-745:
	525	530	5	AX	2.81	0.2"	112	5760	5050	114	Sludge is
	530	535	5	AX	2.81	0.2"	14	730	5050	14	unreliable
	535	540	5	AX	2.81	0.2"	28	1460	5050	29	due to the
	540	545	5	AX	2.81	0.2"	56	2920	5050	58	loss of it
	545	550	5	AX	2.81	0.2"	28	1460	5050	29	in the rock
	550	555	5	AX	2.81	0.2"	185	9610	5050	190	fissures and
	555	560	5	AX	2.81	0.2"	200	10400	5050	202	fractures as
	560	565	5	AX	2.81	0.2"	112	58200	5050	115	also due to
	565	570	5	AX	2.81	0.2"	56	29200	5050	57	the inten-
	570	575	5	AX	3.04	0.2"	170	88400	5460	160	sive inflow
	575	580	5	AX	3.04	0.2"	14	7300	5460	13	of ground
	580	585	5	EX	3.04	0.2"	28	14600	2964	49	water with
	590	595	5	EX	3.04	0.2"	28	14600	2964	49	some coarse

E. J. LONGYEAR COMPANY
BULLY HILL & RISING STAR MINES
SHASTA COUNTY, CALIFORNIA

SLUDGE RECOVERY DATA

D. D. Hole No. A1-3 (3)

Sample No.	Depth From:	Depth To:	Length Sampled Ft.	Core Diameter	Sp. Gr. of Rock Drilled	Sampler Opening	Act. Dry Wt. Sludge Recov. Gms.	Comp. Total Wt. Sludge Recov. Gms.	Theoretical Wt. Sludge Recov. Gms.	% of Sludge Recov.	Remarks
	600	605	5	EX	3.04	0.2"	13	6300	2964	21	grained cave
	605	610	5	EX	3.04	0.2"	13	6300	2964	21	material.
	610	615	5	EX	3.04	0.2"	28	14600	2964	49	
	615	620	5	EX	3.04	0.2"	9	4700	2964	16	
	625	630	5	EX	3.04	0.2"	9	4700	2964	16	
	635	640	5	EX	3.04	0.2"	9	4700	2964	16	
	640	645	5	EX	3.04	0.2"	56	29200	2964	99	
	645	650	5	EX	3.41	0.2"	56	29200	3320	88	
	650	655	5	EX	3.04	0.2"	13	6300	2964	21	
	660	665	5	EX	3.04	0.2"	22	11500	2964	39	
	670	675	5	EX	3.04	0.2"	32	16700	2964	56	
	675	680	5	EX	3.04	0.2"	20	10400	2964	35	
	680	685	5	EX	3.04	0.2"	32	16700	2964	56	
	685	690	5	EX	3.04	0.2"	37	19300	2964	65	
	690	695	5	EX	3.04	0.2"	56	29200	2964	99	
	695	700	5	EX	3.04	0.2"	56	29200	2964	99	
	705	710	5	EX	3.04	0.2"	6	3100	2964	11	
	715	720	5	EX	3.04	0.2"	84	4380	2964	148	
	720	725	5	EX	3.04	0.2"	28	1460	2964	49	No core

E. J. LONGYEAR COMPANY
BULLY HILL & RISING STAR MINES
SHASTA COUNTY, CALIFORNIA

SLUDGE RECOVERY DATA

D. D. Hole No. A1-3 (3)

Sample No.	Depth From:	Depth To:	Length Sampled Ft.	Core Diameter	Sp. Gr. of Rock Drilled	Sampler Opening	Act. Dry Wt. Sludge Recov. Gms.	Comp. Total Wt. Sludge Recov. Gms.	Theoretical Wt. Sludge Recov. Gms.	% of Sludge Recov.	Remarks
	725	730	5	EX	3.04	0.2"	42	2180	2964	73	
	730	735	5	EX	3.04	0.2"	112	5820	2964	196	
	735	740	5	EX	3.04	0.2"	84	4330	2964	147	
	740	745	5	EX	3.04	0.2"	14	730	2964	25	
	745	750	5	EX	3.04	0.2"	342	17800	2964	60	
	750	755	5	EX	3.48	0.2"	284	14730	3390	436	
	755	760	5	EX	2.60	0.2"	199	10350	2530	409	
	760	765	5	EX	2.60	0.2"	511	26600	2530	1051	
	770	775	5	EX	3.67	0.2"	170	8840	3530	247	
	775	780	5	EX	3.25	0.2"	56	2910	3165	92	
	780	785	5	EX	3.25	0.2"	112	5820	3165	184	
	785	790	5	EX	3.25	0.2"	28	1450	3165	46	
	790	795	5	EX	3.25	0.2"	9	470	3165	15	
	800	805	5	EX	3.25	0.2"	511	26580	3165	839	No core
	805	810	5	EX	3.25	0.2"	170	8840	3165	279	
	810	815	5	EX	3.25	0.2"	1192	62000	3165	1959	
	815	820	5	EX	3.25	0.2"	420	22190	3165	700	
	820	825	5	EX	3.25	0.2"	112	5820	3165	184	
	833	835	2	EX	3.25	0.2"	340	17690	1265	1399	

E. J. LONGYEAR COMPANY
BULLY HILL & RISING STAR MINES
SHASTA COUNTY, CALIFORNIA

SLUDGE RECOVERY DATA

D. D. Hole No. A1-3 (3)

Sample No.	Depth From:	Depth To:	Length Sampled Ft.	Core Diameter	Sp. Gr. of Rock Drilled	Sampler Opening	Act. Dry Wt. Sludge Recov. Gms.	Comp. Total Wt. Sludge Recov. Gms.	Theoretical Wt. Sludge Recov. Gms.	% of Sludge Recov.	Remarks
	840	845	5	EX	3.25	0.2"	1136	58000	3165	1830	
	845	850	5	EX	3.25	0.2"	112	5820	3165	184	
	850	855	5	EX	3.25	0.2"	23	1200	3165	38	850-905:
	855	860	5	EX	3.25	0.2"	85	4420	3165	140	The sludge
	860	865	5	EX	3.25	0.2"	28	1450	3165	45	is unreli-
	865	869	4	EX	3.25	0.2"	42	2200	2530	87	able because
	869	875	6	EX	3.25	0.3"	6	230	3800	17	cuttings
	880	885	5	EX	3.25	0.3"	411	15600	3165	493	were lost in
	885	890	5	EX	3.25	0.3"	23	880	3165	28	cavities &
	890	895	5	EX	3.25	0.3"	14	530	3165	17	because of
	895	900	5	EX	3.25	0.3"	3830	145800	3165	4606	continued
	900	905	5	EX	3.25	0.3"	14	530	3165	17	caving by
											reason of
											circulating
											ground water
											Samples are
											not from the
											proper place
											or interval
											drilled.
								905' - Bottom of	D.D.H. A1-3		

Redding, California
September 1?, 1952
Drill Hole [illegible]-4
Consecutive 4

Interval Drilled From	To	Feet	Core Recovered Feet	%	Hole Size		Description
[illegible].2	[illegible]14	[illegible]	1	[illegible]	[illegible]	[illegible].1-[illegible]14	Same tuffaceous rhyolite breccia described (see 740-[illegible].2). Breccia fragments smaller in size as before and partly from different petrological composition and color. Original shape of fragments is changed due to the hydrothermal alteration of rock (chloritification, silicification). Average size of fragments mostly not over 1", although breccia pieces of 2" and more inches in size occur, especially in upper horizons. The rock is more chloritic as before. The chlorite is to greatest part dark-green in color. It contains pyrite and chalcopyrite as little individual grains. Quartz-phenocrysts 1-[illegible] mm in size. Badly broken core in between [illegible].1-[illegible]10, [illegible]40-[illegible]50. Average dip [illegible] at 37-40° at [illegible]27', at 40° at [illegible]. Some young hair-thin quartz-calcite veinlets here and there and across the bedding.
[illegible]	[illegible]	[illegible]	[illegible]	50			
[illegible]	[illegible]	4	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]	41			
[illegible]	[illegible]	1.1	[illegible]	0			
[illegible]	[illegible]	[illegible]	[illegible]	0			
[illegible]27	[illegible]	7	1.4	[illegible]	[illegible]		
[illegible]	[illegible]	[illegible]	1	[illegible]			
[illegible]	[illegible]	7	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	1.[illegible]	40			
[illegible]	[illegible]	[illegible]	1.[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	1	[illegible]7			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	8.5	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]	100			
[illegible]	[illegible]	6	[illegible]	50			
7[illegible]	[illegible]	1	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	1	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]1			
[illegible]	[illegible]	[illegible]	[illegible]	100			
[illegible]	[illegible]	[illegible]	[illegible]	100			
[illegible]	[illegible]	10	[illegible]	[illegible]			
[illegible]	014	[illegible]	[illegible]	0			
[illegible]14	[illegible]	1	1	100	[illegible]	014-0[illegible]	Tuffaceous rhyolite breccia almost same in appearance as drilled in D.H. 4 by now (see 6[illegible]-700), only with bigger sizes of breccia fragments ([illegible]-1" or less). Quartz-phenocrysts 1-[illegible] mm. The disseminated pyrite also isolated cubes of pyrite present. Rock is not very chloritic, rather siliceous, fractured, partly lightly sheared and broken. End interval (1" wide zone) is with black fragments and with grains of pyrite and chalcopyrite. At the bottom clayey, sheared and squeeze material indicates fault zone or young shearing. Bedding at 35° to core average.
[illegible]	[illegible]21	[illegible]	[illegible]	10			
[illegible]21	[illegible]	[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]	17			
[illegible]	[illegible]21	[illegible]	[illegible]	[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]	1[illegible]			
[illegible]	[illegible]	1	1	100			

Redding, California
September 22, 24, 1958
Drill Hole A1-3
Consecutive 5

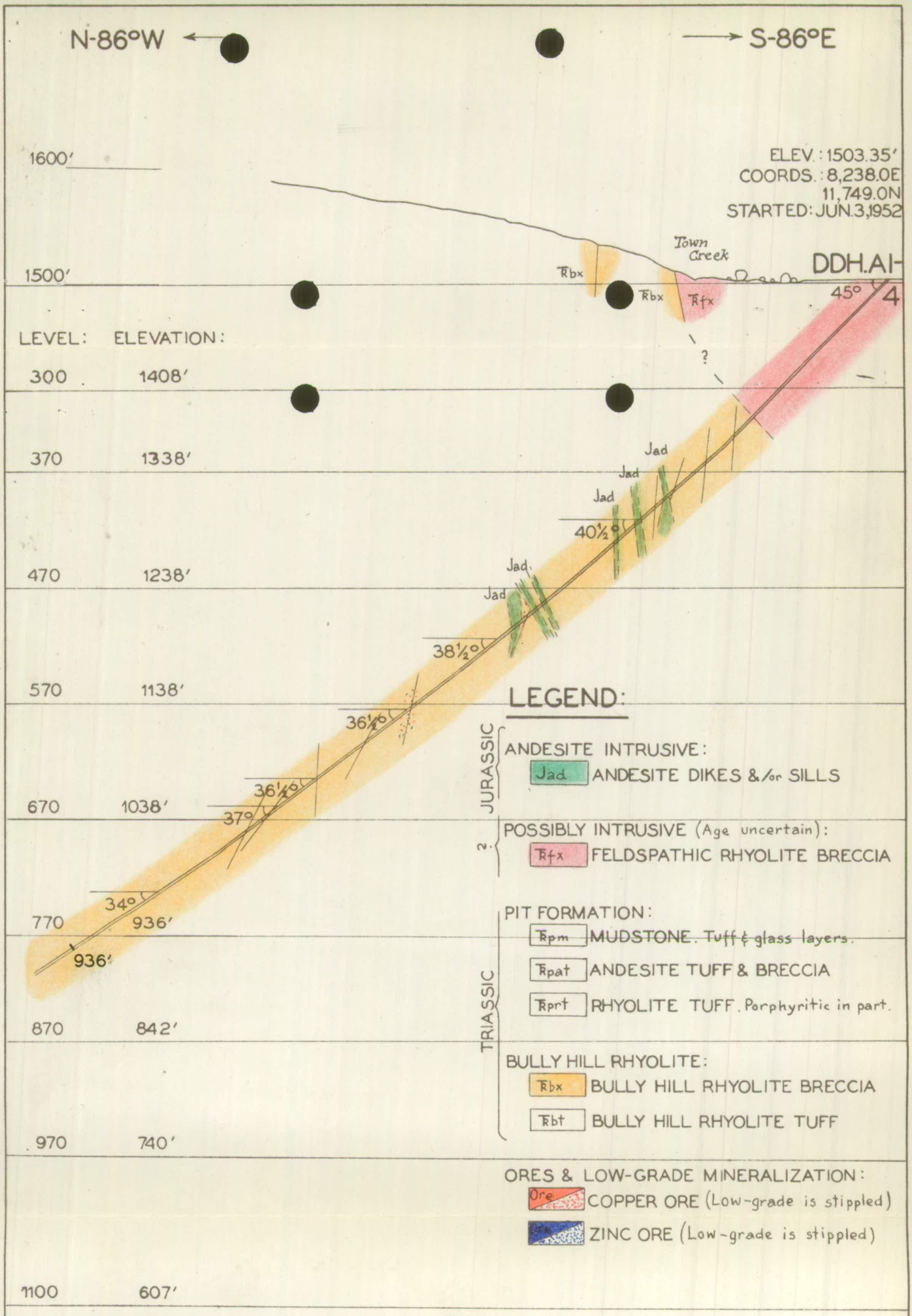
[illegible]

Interval Drilled From	To	Feet	Core Recovered Feet	%	Hole Size		Description
[illegible]	668	1	1.6	60	AX	668-736	Same tuffaceous fine breccia as above. Rock might be called tuff-breccia. It is dark-gray to greenish-gray in color, with size of fragments not over [illegible]. Most of material is fine-grained porphyritic in texture, with size of quartz-phenocrysts up to 1-2mm. Quartz-phenocrysts are not many. Black fragments occur in upper half interval only. Small amount of black to dark-green chloritic material is present and contains very fine grained seams and spots of pyr to and chalcopyrite (see 660, 672-674, 700-705). Also fine disseminated pyrite occurs. Some young quartz-calcite veinlets here and there. Rock is jointed, fractured and broken all over, except between 666-674.5, 691-695, 730-731.5. Bedding is good developed and is at 45° to core average.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			
671	674	3	3	100			
674	[illegible]	0.5	0.4	80			
674.5	[illegible]	3.5	1.1	30			
[illegible]	679	1	0.[illegible]	0	AX		
679	[illegible]	3	3	100			
[illegible]	[illegible]	7	7	100			
[illegible]	[illegible]	4	2.4	60			
[illegible]	694.5	5.5	4.5	[illegible]			
694.5	[illegible]	2.5	2.5	100			
[illegible]	[illegible]	1	0.	0			
70[illegible]	715	7	1.4	20			
715	715.7	0.7	0.5	71			
715.7	71[illegible]	2.3	0.5	22			
71[illegible]	720	2	0.9	45			
720	721.5	1.5	1.5	100			
721.5	722.5	1	0.[illegible]	50			
722.5	724	1.5	0.5	30			
724	725	1	0.7	70			
725	726	1	1	100			

Redding, California
October 1, 1952
Drill Hole A1-5
Consecutive #5

LOG OF DRILL HOLE No. 5
[illegible]

Interval Drilled From	To	Feet	Core Recovered Feet	%	Hole Size		Description
726	727	1	1	100	AX	726-740	Same tuffaceous rhyolite fine breccia as above (655-728). Breccia pieces up to ½" in size, some sharp cornered, bedded into the rhyolitic groundmass. Some layers of rhyolite flow material. Bedding excellent developed and changes at different angles to the core at 726' at 37°, at 731.5 at 15°-20°, at 734' at 30° to 55°-60°, at 735.5' at 45° to 50°, at 737 at 35°, at 740.5' at 25° to 30° to core. Below 741 the dip of rock is 30° average, also 10° to 45° in some places. Rock is partly chloritic, altered. Chlorite is dark-greenish gray in color. Disseminated fine grained pyrite and possibly chalcopyrite occur. Also cubes of pyrite not over 9.5 mm in size. Core is partly sheared and mostly broken. Some indications for faults (clayey gouge and sand material) at 72[illegible], 73[illegible], 740, 741. Black fragments and spots occur below 741 to 743. Quartz-phenocrysts 1-2 mm in size. Some Qtz-CO$_3$ veinlets at 730'.
727	730	3	1.2	40			
730	731	1	1	100			
731	735	5	4.5	90			
735	737	2	2	100			
737	740	3	1.6	50			
740	741	1	1	100			
741	745	4	2.5	62			
74[illegible]	74[illegible]	[illegible]	[illegible]	[illegible]			
74[illegible]	740	1	0.[illegible]	60			

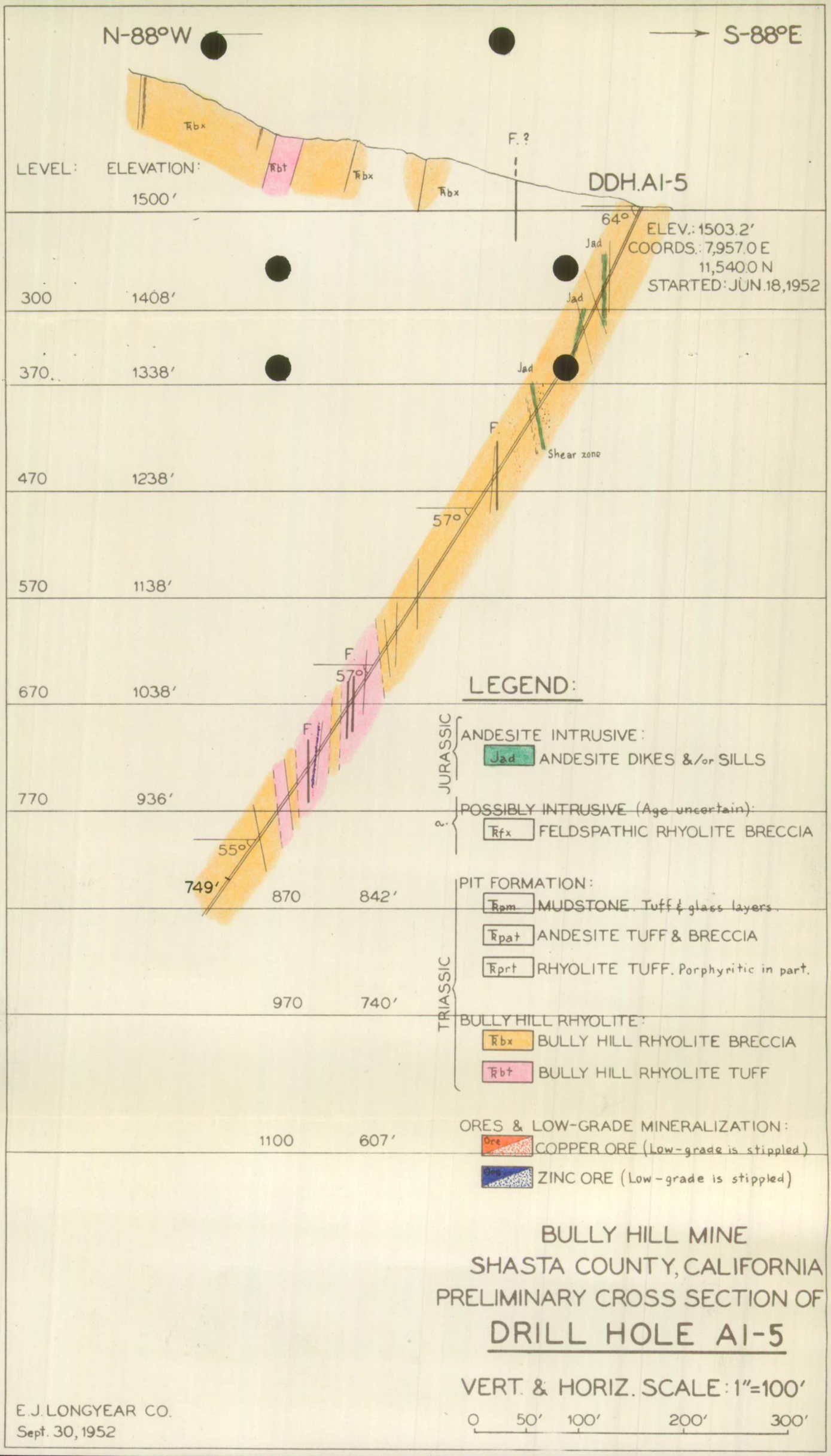


BULLY HILL MINE
SHASTA COUNTY, CALIFORNIA
PRELIMINARY CROSS SECTION OF
DRILL HOLE AI-4

VERT. & HORIZ. SCALE: 1"=100'

0 50' 100' 200' 300'

E.J. LONGYEAR CO.
Sept. 30, 1952


N-88°W
S-88°E
LEVEL:
ELEVATION:
1500′
300
1408′
370
1338′
470
1238′
570
1138′
670
1038′
770
936′
870
842′
970
740′
1100
607′
Trbx
Trbt
Trbx
Trbx
F.?
DDH.A1-5
64°
ELEV.: 1503.2′
COORDS.: 7,957.0 E
11,540.0 N
STARTED: JUN.18,1952
Jad
Jad
Jad
F
Shear zone
57°
F
57°
F
55°
749′
LEGEND:
JURASSIC
ANDESITE INTRUSIVE:
Jad ANDESITE DIKES &/or SILLS
POSSIBLY INTRUSIVE (Age uncertain):
Trfx FELDSPATHIC RHYOLITE BRECCIA
TRIASSIC
PIT FORMATION:
Trpm MUDSTONE. Tuff & glass layers.
Trpat ANDESITE TUFF & BRECCIA
Trprt RHYOLITE TUFF. Porphyritic in part.
BULLY HILL RHYOLITE:
Trbx BULLY HILL RHYOLITE BRECCIA
Trbt BULLY HILL RHYOLITE TUFF
ORES & LOW-GRADE MINERALIZATION:
Ore COPPER ORE (Low-grade is stippled)
Ore ZINC ORE (Low-grade is stippled)
BULLY HILL MINE
SHASTA COUNTY, CALIFORNIA
PRELIMINARY CROSS SECTION OF
DRILL HOLE A1-5
VERT. & HORIZ. SCALE: 1″=100′
0 50′ 100′ 200′ 300′
E.J. LONGYEAR CO.
Sept. 30, 1952

E. J. LONGYEAR COMPANY
BULLY HILL & RISING STAR MINES
SHASTA COUNTY, CALIFORNIA

TABULATION NO. 1

DIAMOND DRILL HOLE DATA

USGS-DMA Location No.	Consec. No.	Area No.	PLANNED Bearing	PLANNED Angle	PLANNED Depth	PLANNED Coordinates* North	PLANNED Coordinates* East	ACTUAL Bearing	ACTUAL Angle	ACTUAL Depth	ACTUAL Coordinates # North	ACTUAL Coordinates # East	Cumulative Footage	Location of Mineral
[illegible] Stope														
A1-1	2	A1-2	S [illegible] W	-70°	[illegible]	7235	6500	S 75 W	-70°	100[illegible]	12500	7000		
A1-2	3	A1-3	S [illegible] W	-67°	500	7501	6500	S 70 W	-59°	500	11454	7005		
A1-3	4	A1-4	S [illegible] W	-45°	700	7600	6605	S [illegible] W	-40°	1003	11740	204		
A1-4	1	A1-1	S[illegible] W	-70°	1000	6909	6693	S[illegible] W	-69°	1015	11084	6504		
A1-5			S 55 W	-50°	3000	7105	6500							
Tot	5	A1-5						[illegible] W	-60°	513	11590	7005	4054	
A3-1		A3-1	S 60½ W	-65°	700	6000	6370							
A3-2		A3-2	N 60 W	-65°	1000	5400	6313							
A3-3		A3-3	N 70 W	-61°	700	6 70	6500							
A3-4		A3-4	N 60	-50½°	600	5600	6150							
A3-5		A3-5	N 60 W	-52°	600	5550	6111							
A3-6		A3-6	N 6[illegible]	-56°	600	5500	6010							
A3-7		A3-7	N 50 W	-50°	600	5104	6106							

* Coor. System SE Cor. RS Shaft = N5000 & E5000 USGS

\# Coor. system old original origin copper pipe in concrete near office

Redding, California
October 1-14, 1952
Drill Hole A1-4
Consecutive #4

LOG OF DRILL HOLE A1-4
DRILL TIME AND CORE DETAILS

Interval Drilled From	To	Feet	Core Recovered Feet	%	Core Size		Description
935	936	1	0.2	20	AX	935-936	Tuffaceous rhyolite breccia with black fragments as above (914-935).
936	937	0.[illegible]	0.1	10	AX	936-97[illegible].5	Fine tuffaceous rhyolite breccia with size of fragments not over ¼", mostly less.
937	941	3	0.2	7			
941	944	3	1.5	50			Porphyritic in texture, with quartz-phenocrysts 1-2mm large. Interval 936-937 slightly mineralized by chalcopyrite in the manner seen at the lower end of D.D.H. A1-3. Some disseminated pyrite and possibly chalcopyrite occur between 963-976. In this zone also black fragments, spots and stringers occur. Very broken core is between 936-944 with possible shearing between 941-944, also between 951.6-954.4.
944	949	5	5	100			
949	951.6	2.6	2.6	100			
951.6	954.4	2.8	0.5	1			
954.4	956.5	2.1	2.1	100			
956.5	962.5	6	5.4	90			Some quartz-calcite veinlets at 951.6, 962. Bedding at 3[illegible] to core at 950' at 25° at 956', at 20°-35° at 960', at 45° to core at 967'.
962.5	963.1	0.6	0.3	50			
963.1	965.8	2.7	2.7	100			
965.8	969.5	3.7	3.7	100			
969.5	969.9	0.4	0.4	100			
969.9	973.2	3.3	2.7	82			
973.2	976.9	3.7	2.9	78			
97[illegible].5	98[illegible].2	3.7	3.7	100	AX	97[illegible].5-98[illegible].1	Tuffaceous rhyolite, in part of aphanitic texture (between 97[illegible].5-982.2). Rock can be called also rhyolite porphyry, or porphyritic rhyolite. It is evidently of tuffaceous origin, partly flow. Lapillis and fragments, 5mm average size occur in the homogeneous rhyolite flow material. Black carbonaceous fragments as above, see 936-97[illegible].5. Slightly chloritic. Quartz-phenocrysts 1-2mm in size. Some disseminated chalcopyrite occurs between 982.2-983, 983.5-983.7, 985-985.3. Bedding at 55° to core.
98[illegible].2	983	0.[illegible]	0.[illegible]	100			
983	983.5	0.5	0.5	100			
983.5	985.3	1.[illegible]	1.5	73			
985.3	986.3	1	0.[illegible]	0			
986.3	98[illegible].1	1.[illegible]	1.4	0			

Redding, California
October 2[illegible], 1952
Drill Hole A1-4
Consecutive #4

LOG OF DRILL HOLE NO. 4
DALLY HILL AND WEST [illegible]

Interval Drilled From	To	Feet	Core Recovered Foot	%	Hole Size		Description
9[illegible].1	9[illegible]	0.9	0.9	100	[illegible]	987.1-9[illegible]	Ore; mineralized in tuffaceous rhyolite with 10% chalcopyrite estimated. About 5% pyrite occurs. Bedding at 30° to core.
[illegible]	991	2	1.0	55	[illegible]	9[illegible]-1009.5	Same tuffaceous rhyolite as described before (see 97[illegible].5-9[illegible]7.1). At upper end with disseminated chalcopyrite and pyrite. In places chloritic, hydrothermaly altered and contains coarse grained pyrite. Increase in pyrite containing downward. Some chalcopyrite at 995.5, 999.5 and at 1002.3. Bedding changes from 35° at 990' to 55° at 1000'. Broken core and poor core recovery between 1002.3-1009.5.
991	992.1	1.1	1.1	100			
992.1	994.3	2.2	2.2	100			
[illegible]4.3	99[illegible]	4.6	4.6	100			
99[illegible]	1000.2	3.3	3.3	100			
1000.2	1007.3	7.1	0.4	6			
1009.3	1009.5	0.2	0.2	100			
1009.5	1012.7	3.2	3.2	100	[illegible]X	1009.5-1012	Ore; mineralized is tuffaceous rhyolite, described above (989-1009.5). Percent of chalcopyrite 5-10% estimated. Percent of pyrite 15-20% estimated. Bedding at 45-50°.
1012.7	1014.8	2.2	1.5	68	[illegible]X	1012-1055.9	Tuffaceous rhyolite, described before (see 97[illegible].5-9[illegible]7.1 and 989-1009.5). Some aphanitic layers between 1012.7-105[illegible], 1024-1026. Much pyrite (up to 25%) with some disseminated chalcopyrite between 1016.5-1033.9. Some pyrite streaks at 1[illegible]33.[illegible] and between 1040-1041. Though core is broken, the core recovery averages to 85% in whole interval described.
1014.8	1016.8	1.8	1.8	100			
[illegible]6.8	1019.[illegible]	2.3	2.3	100			
1019.[illegible]	1023	4.2	4.2	100			
1023	1025.9	2.9	2.9	100			
[illegible]	1030.9	8	8	100			
[illegible]0.9	1030.7	1.8	1.1	60			
1030.7	1036.1	5.4	5.4	100			
1036.1	1042.1	[illegible]	6	100			
1042.1	1043.2	1.1	0.6	54			
1043.2	1046	2.[illegible]	1	36			
1046	104[illegible].7	0.7	2	74			
104[illegible].7	1049.5	0.[illegible]	0.[illegible]	100			
1049.5	1051.5	2	1.[illegible]	90			
1051.5	1053.1	2	1.9	95			
1053.1	1053.7	0.6	0.4	66			
1053.7	1055.9	2.2	2.2	100			

Redding, California
November 4, 1952
Drill Hole 1-4
Consecutive #4

[illegible] HOLE NO. 4
[illegible] MINES

Interval Drilled From	To	Feet	Core Recovered Feet	%	Hole Size	Description
1055.0	1057.7	1.[illegible]	1.[illegible]	100	[illegible] 1[illegible]5.[illegible]-10[illegible]2.0	Tuffaceous rhyolite, described above (see 978.[illegible]-987.1). Primary character of the rock difficult distinguishable. It seems the rock is mixture of more or less homogeneous flow material of partly aphanitic, partly porphyritic texture with the minor content of the interbedded fragmental tuffaceous rhyolite (see intervals 1056-105[illegible] and especially 1077-107[illegible]). Rhyolite is slightly chloritic. Chlorite streaks containing some very fine grained disseminated pyrite, with quartz-phenocrysts 1 to 3mm in size are longitudinally shaped and elongated parallel to the bedding planes. Some black material occurs in rhyolite (see also above descriptions). Quartz-phenocrysts are probably resulted by hydrothermal attacking and recrystallization of rhyolite. Following intervals are pyritic: 1[illegible]5.0-1062 (1-5% pyrite plus streaks of chalcopyrite), 1077-10[illegible] (less than 0.5% pyrite). Bedding at 50 to 60° to the core (55° average i[illegible] o[illegible]). Core is partly broken. Average core recovery 96% in whole interval described.
1057.7	10[illegible]	0.[illegible]	0.[illegible]	100		
10[illegible]	1060.2	1.6	1.2	75		
1[illegible]0.2	1062	1.8	1.6	90		
1062	1063.1	1.1	1.1	100		
1[illegible].1	1071.[illegible]	8.4	8.1	96		
1[illegible].5	1074.[illegible]	[illegible]	[illegible]	100		
1[illegible]	1075.[illegible]	0.6	0.[illegible]	40		
10[illegible]	1077	1.7	1.1	64		
1077	107[illegible].4	1.4	1.4	100		
107[illegible]	1080	1.9	1.8	100		
10[illegible]0	10[illegible]1.8	1.8	1	53		
1081.0	1082.6	0.7	0.7	100		

Redding, California
October 2[illegible], 1952
Drill Hole A1-5
Consecutive [illegible]5

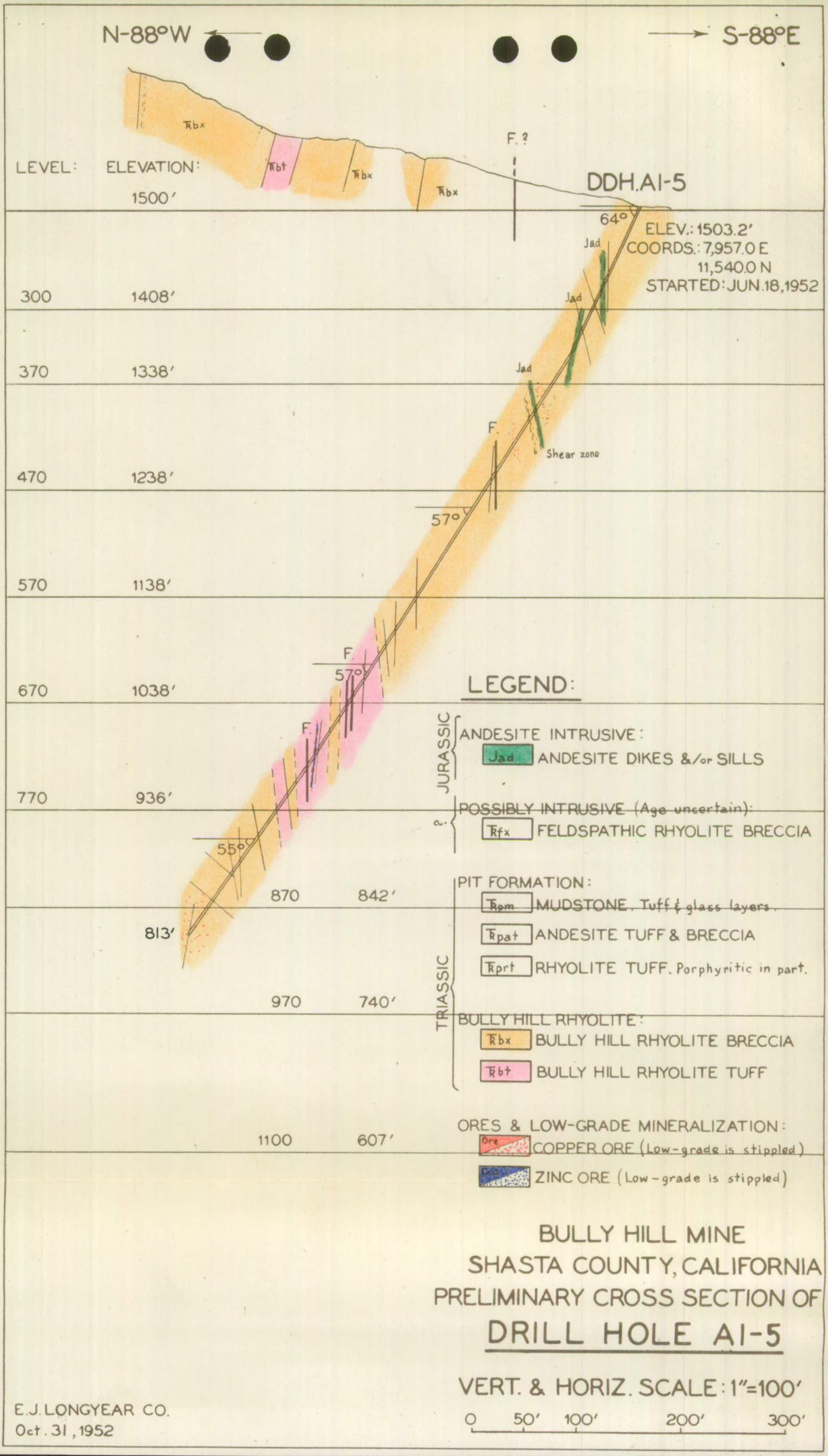
LOG OF DRILL HOLE NO. 5
PALMER [illegible] STANDARD

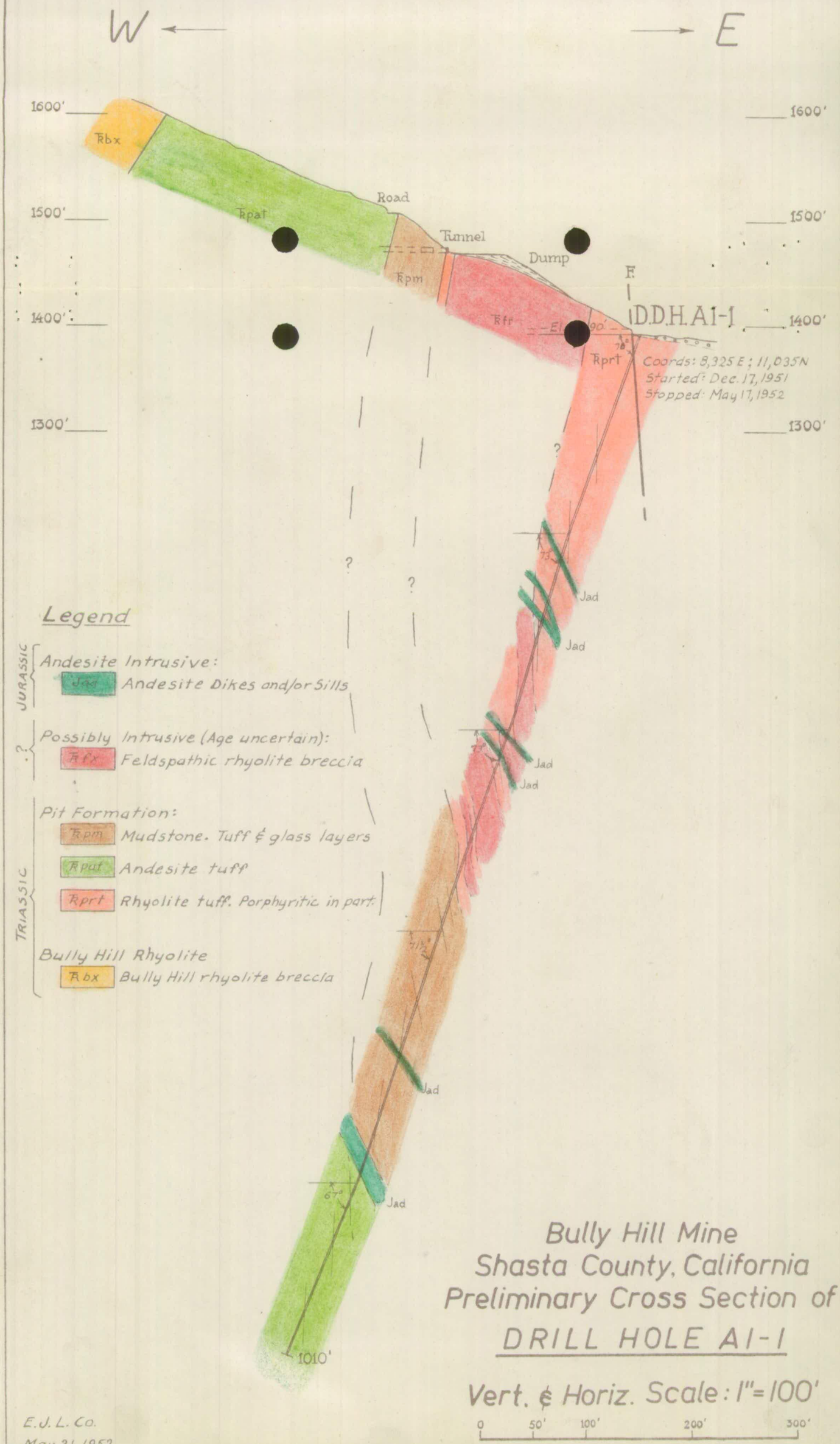
Interval Drilled From	To	Feet	Core Recovered Feet	%	Hole Size		Description
749	751	2	1.6	0	AX	749-769	Same tuffaceous rhyolite as above described (728-749). Tuffaceous, siliceous, hard layers with small lapillis (1-2mm in size), also with larger fragments and with carbonaceous black material repeat with aphanitic and/or porphyritic flow rhyolite. In some places rock is jointed. The joints are refilled with chloritic material with some fine grained pyrite. Chalcopyrite along 3-4mm wide fracture of apparently young age at 750'. Some pyrite and chalcopyrite at 952.5.
751	752	1	0.5	50			
752	754	2	2	100			
754	756	2	1.2	60			
756	759	3	0.7	23			
759	763	4	0.[illegible]	20			
[illegible]7	766	3	0.9	30			
766	76[illegible].5	0.5	0.7	[illegible]			
76[illegible].5	769	0.5	0.1	20			
769	769.5	0.5	0.4	[illegible]	AX	769-776.5	Aphanitic rhyolite. It is flow material with excellent flow structures, with repeated change of flow medium, particularly between 769.5-772. Dark green chlorite is mixed with rhyolitic flow in places. Flow lines at 15 to 30° to core.
769.5	772	2.5	2.5	100			
772	773	1	0.7	70			
773	774	1	0.15	15			
774	775	1	0.5	50			
775	777	2	2	100			
777	7[illegible]1	4	3	75	X	77[illegible].5-7[illegible]1	Precious layer of Bully Hill rhyolite of similar textural appearance as rhyolite breccia at upper end of drill hole (0-500'). Much chlorite, containing disseminated, fine grained pyrite. Rhyolite is quite siliceous, in part of porphyritic texture. Few quartz-phenocrysts are not over 1mm large.

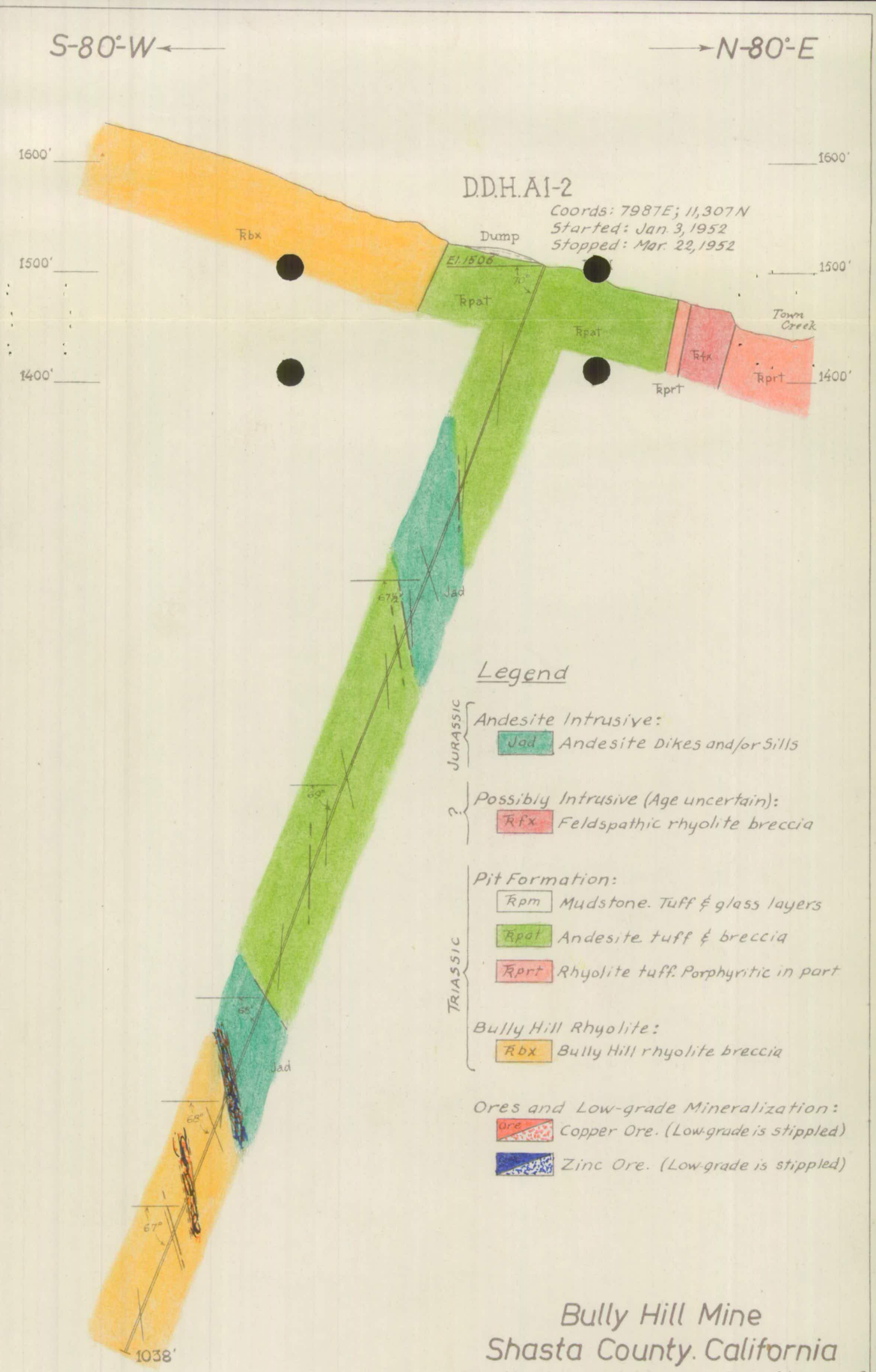
Redding, California
November 4, 1952
Drill Hole A1-5
Consecutive #5

LOG OF DRILL HOLE NO. 5
BULLY HILL & RISING STAR MINES

Interval Drilled From	To	Feet	Core Recovered Feet	%	Hole Size		Description
781	786	5	2.5	50	AX	781-813	Tuffaceous rhyolite, very fine grained, siliceous hard, in part aphanitic, in part porphyritic. Quartz-phenocrysts not over 1mm in size. Material is very fine bedded at 20°-30° (average 25° is o.k.) to the core. Brecciated and broken. Fractures, some of them 6" wide (see 800-801), are refilled with porphyroclastic fragmental material of same composition as wall rock itself. Pyrite, chlorite, silica and in places baryte (806.5 for instance) cement the fragments. Direction of cracks and fissures changes from 0 to 90° to the bedding. Graininess of pyrite decreases with the depth. Large cubes of pyrite between 797-808 (some ar 5 x 5mm large) cannot be seen anymore at lower end of interval. Rock is here more altered, more bleached, if even less broken. Color of the rock changes from light-gray to dark-gray at the bottom with disseminated, fine grained pyrite. There is plus or minus 5% of pyrite, plus some chalcopyrite estimated in whole interval described. Some little quartz-veinlets without calcite.
786	789	3	1.2	40			
789	791	2	1.6	80			
791	795	4	4	100			
795	797	2	1.8	90			
797	799	2	1.5	75			
799	804	5	5	100			
804	808	4	3.5	88			
808	813	5	5	100			


N-88°W
S-88°E
LEVEL:
ELEVATION:
1500'
300
1408'
370
1338'
470
1238'
570
1138'
670
1038'
770
936'
870
842'
813'
970
740'
1100
607'
Trbx
Trbt
Trbx
Trbx
F.?
DDH.A1-5
64°
ELEV.: 1503.2'
COORDS.: 7,957.0 E
11,540.0 N
STARTED: JUN.18,1952
Jad
Jad
Jad
Shear zone
F.
57°
F.
57°
F.
55°
LEGEND:
JURASSIC
ANDESITE INTRUSIVE:
Jad ANDESITE DIKES &/or SILLS
?
POSSIBLY INTRUSIVE (Age uncertain):
Trfx FELDSPATHIC RHYOLITE BRECCIA
TRIASSIC
PIT FORMATION:
Trpm MUDSTONE. Tuff & glass layers.
Trpat ANDESITE TUFF & BRECCIA
Trprt RHYOLITE TUFF. Porphyritic in part.
BULLY HILL RHYOLITE:
Trbx BULLY HILL RHYOLITE BRECCIA
Trbt BULLY HILL RHYOLITE TUFF
ORES & LOW-GRADE MINERALIZATION:
Ore COPPER ORE (Low-grade is stippled)
Ore ZINC ORE (Low-grade is stippled)
BULLY HILL MINE
SHASTA COUNTY, CALIFORNIA
PRELIMINARY CROSS SECTION OF
DRILL HOLE A1-5
VERT. & HORIZ. SCALE: 1"=100'
0 50' 100' 200' 300'
E.J. LONGYEAR CO.
Oct. 31, 1952

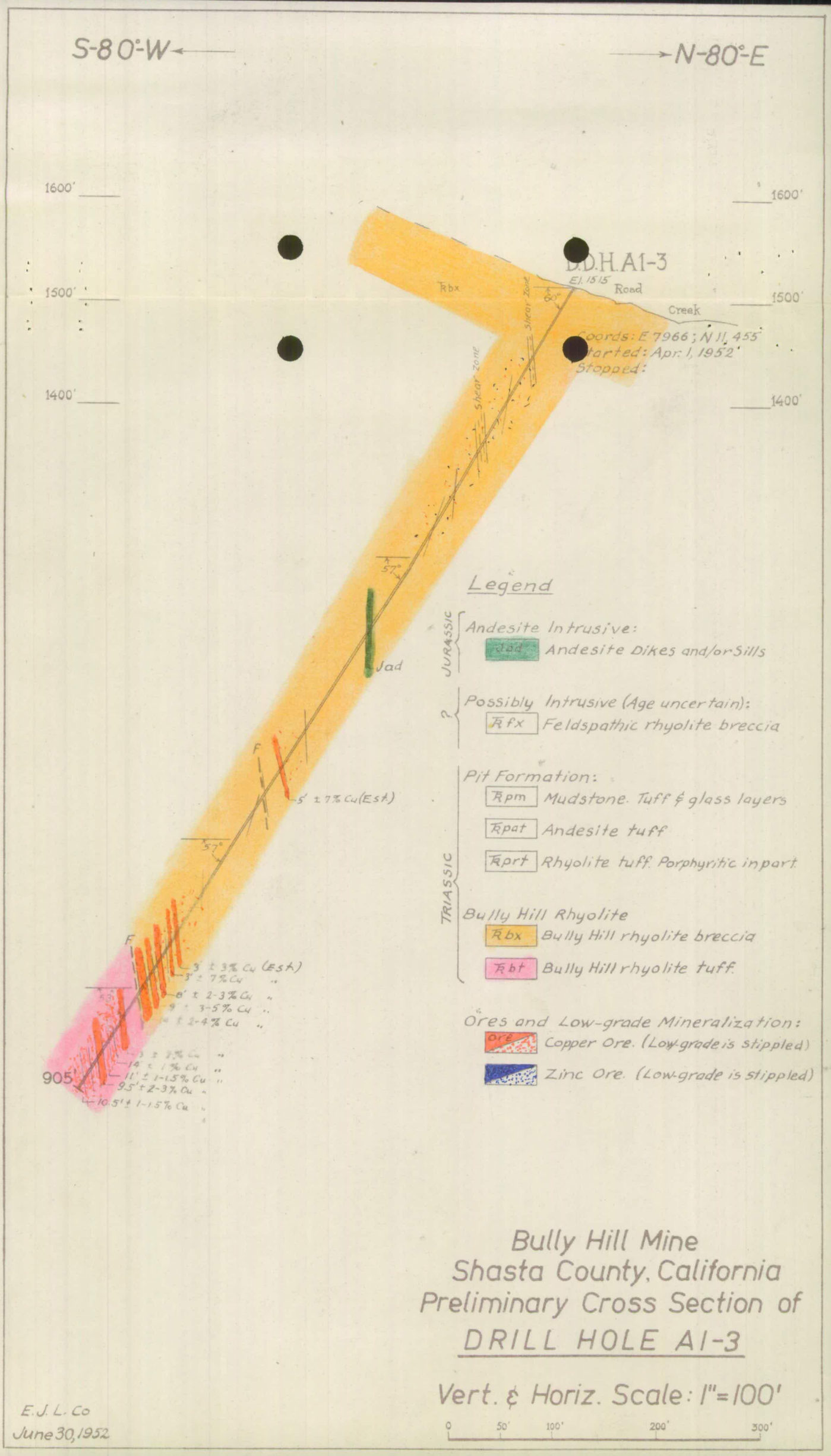

W
E
1600'
1500'
1400'
1300'
Rbx
Rpat
Road
Tunnel
Dump
Rpm
Rfr
F
D.D.H. A1-1
90°
78°
Rprt
Coords: 8,325 E ; 11,035 N
Started: Dec. 17, 1951
Stopped: May 17, 1952
?
73°
Jad
Legend
JURASSIC
Andesite Intrusive:
Jad Andesite Dikes and/or Sills
Possibly Intrusive (Age uncertain):
Rfx Feldspathic rhyolite breccia
TRIASSIC
Pit Formation:
Rpm Mudstone. Tuff & glass layers
Rpat Andesite tuff
Rprt Rhyolite tuff. Porphyritic in part.
Bully Hill Rhyolite
Rbx Bully Hill rhyolite breccia
71½°
67°
1010'
Bully Hill Mine
Shasta County, California
Preliminary Cross Section of
DRILL HOLE A1-1
Vert. & Horiz. Scale: 1" = 100'
0
50'
100'
200'
300'
E.J.L. Co.
May 31, 1952

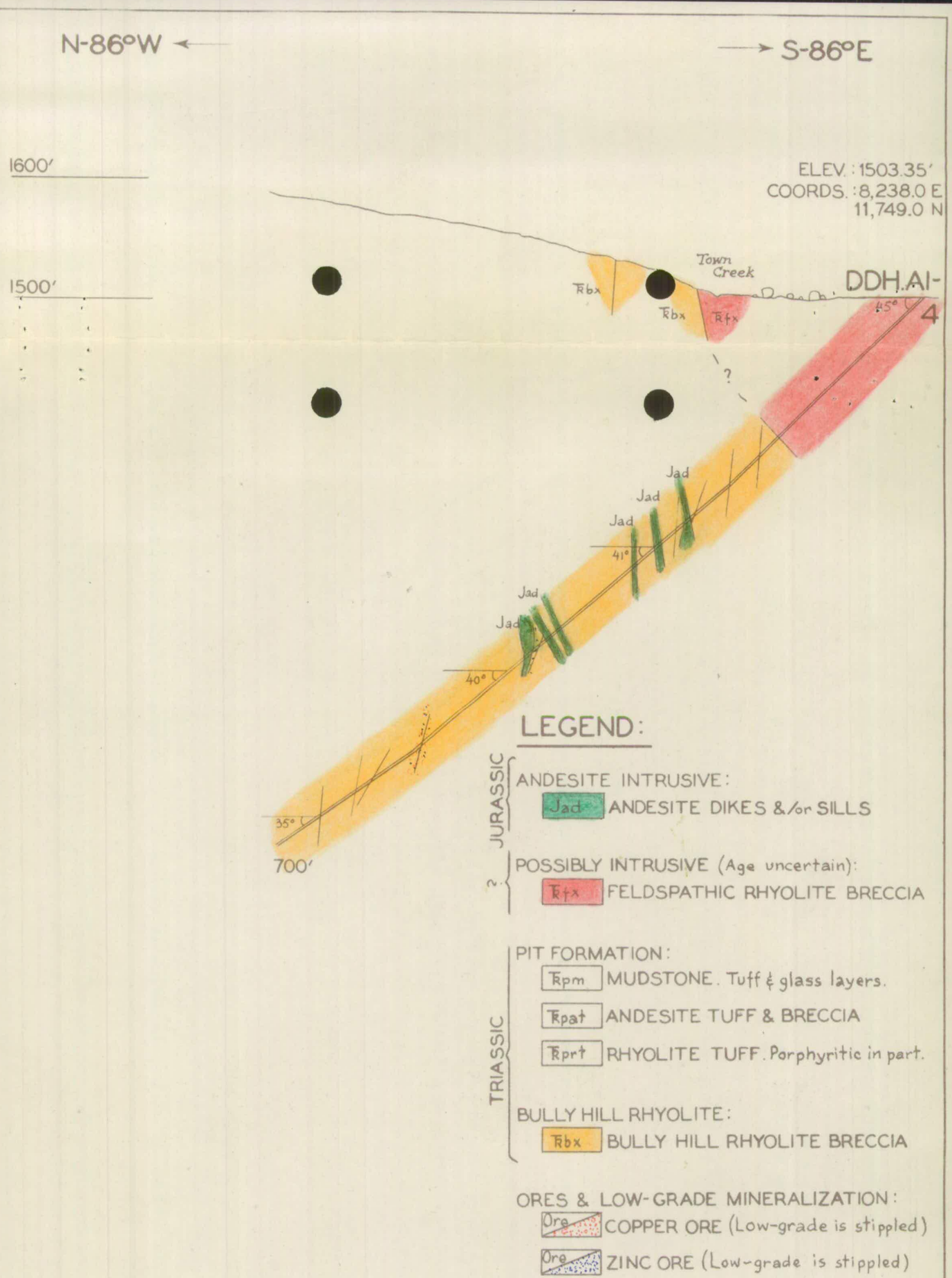


Bully Hill Mine
Shasta County. California
Preliminary Cross Section of
DRILL HOLE A1-2

Vert. & Horiz. Scale: 1" = 100'

E. J. L. Co.
May 31, 1952


S-80°-W
N-80°-E
1600'
1500'
1400'
905'
D.D.H. A1-3
El. 1515
Road
Creek
Coords: E 7966; N 11,455
Started: Apr. 1, 1952
Stopped:
Rbx
Shear zone
60°
57°
Jad
F
5' ± 7% Cu (Est.)
3' ± 3% Cu (Est.)
3' ± 7% Cu "
8' ± 2-3% Cu "
9' ± 3-5% Cu "
± 2-4% Cu "
14' ± 1% Cu "
11' ± 1-1.5% Cu "
9.5' ± 2-3% Cu "
10.5' ± 1-1.5% Cu "
Legend
JURASSIC
Andesite Intrusive:
Jad Andesite Dikes and/or Sills
?
Possibly Intrusive (Age uncertain):
Rfx Feldspathic rhyolite breccia
TRIASSIC
Pit Formation:
Rpm Mudstone. Tuff & glass layers
Rpat Andesite tuff
Rprt Rhyolite tuff. Porphyritic in part.
Bully Hill Rhyolite
Rbx Bully Hill rhyolite breccia
Rbt Bully Hill rhyolite tuff.
Ores and Low-grade Mineralization:
Ore Copper Ore. (Low-grade is stippled)
Zinc Ore. (Low-grade is stippled)
Bully Hill Mine
Shasta County, California
Preliminary Cross Section of
DRILL HOLE A1-3
Vert. & Horiz. Scale: 1" = 100'
0 50' 100' 200' 300'
E.J.L. Co
June 30, 1952

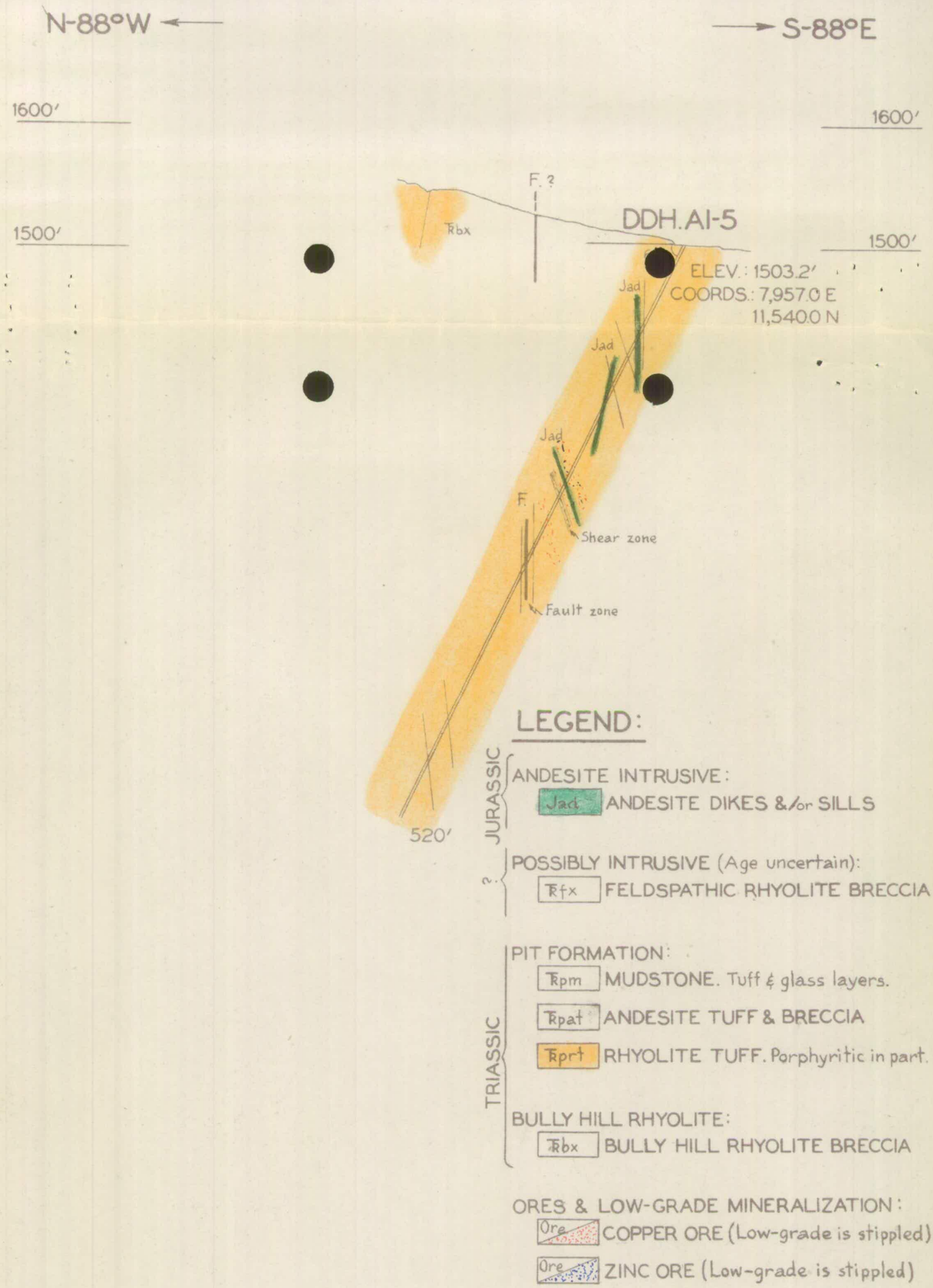


BULLY HILL MINE
SHASTA COUNTY, CALIFORNIA
PRELIMINARY CROSS SECTION OF
DRILL HOLE AI-4

VERT. & HORIZ. SCALE: 1″=100′

0 50′ 100′ 200′ 300′

E.J. LONGYEAR CO.
July 31, 1952

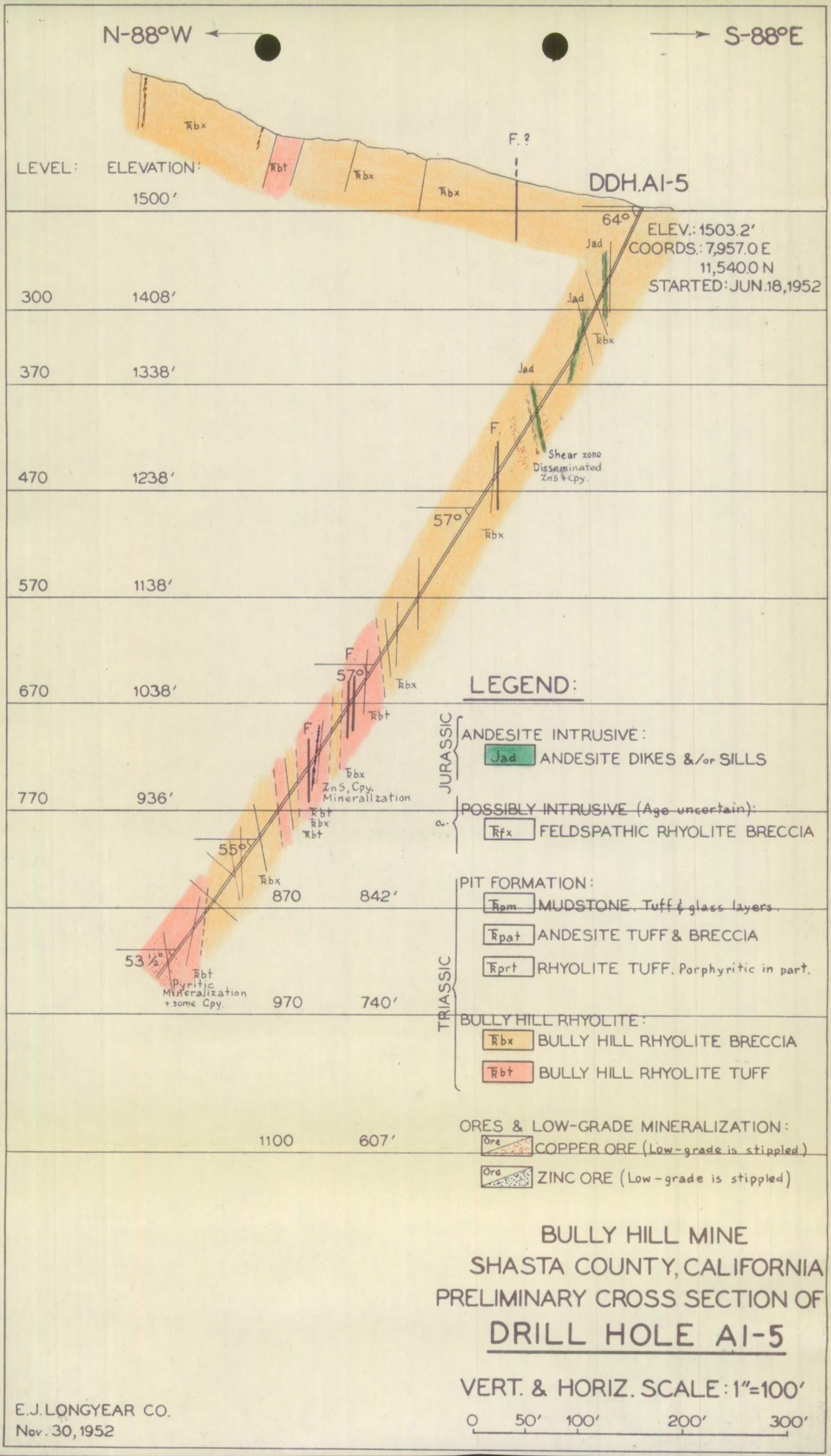


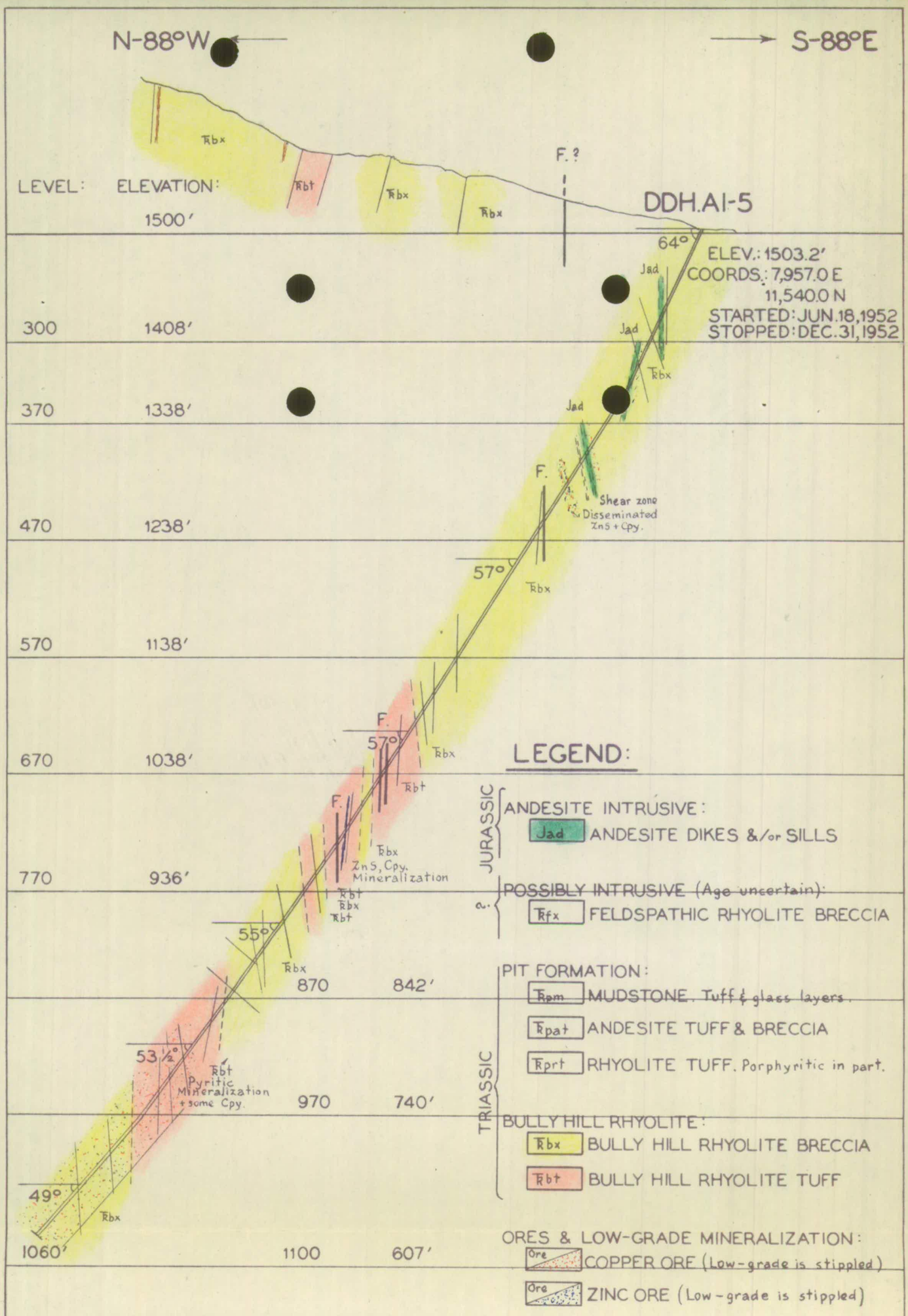
BULLY HILL MINE
SHASTA COUNTY, CALIFORNIA
PRELIMINARY CROSS SECTION OF
DRILL HOLE AI-5

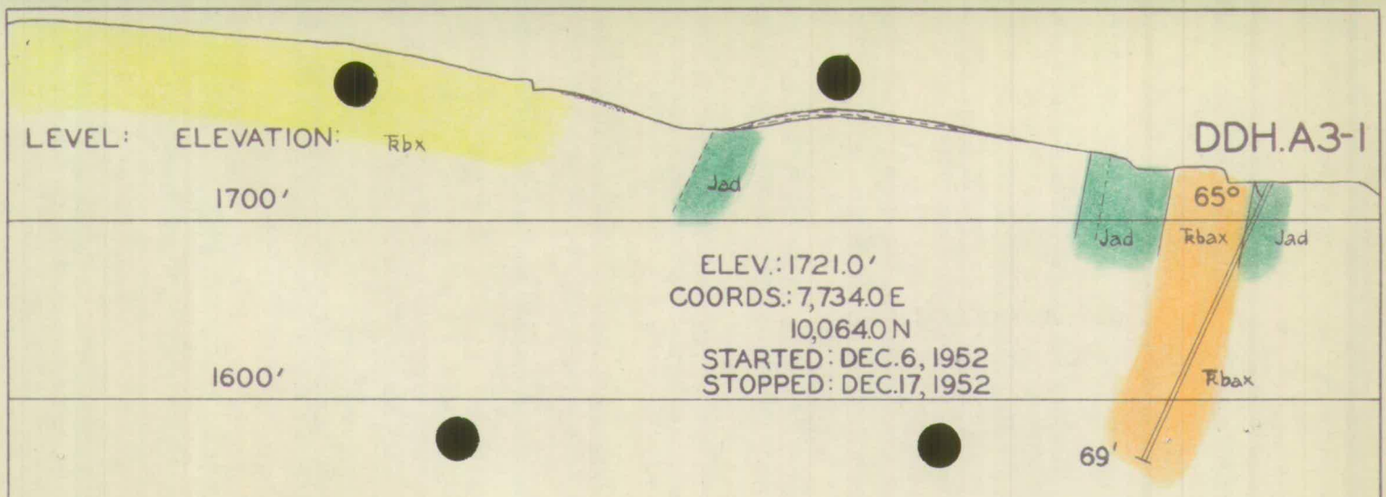
VERT. & HORIZ. SCALE: 1″=100′

0 50′ 100′ 200′ 300′

E.J. LONGYEAR CO.
July 31, 1952


N-88°W
S-88°E
LEVEL:
ELEVATION:
1500′
300
1408′
370
1338′
470
1238′
570
1138′
670
1038′
770
936′
870
842′
970
740′
1100
607′
DDH.A1-5
ELEV.: 1503.2′
COORDS.: 7,957.0 E
11,540.0 N
STARTED: JUN.18,1952
64°
57°
57°
55°
53 1/2°
F.?
F.
Jad
Shear zone
Disseminated
ZnS & Cpy.
ZnS, Cpy.
Mineralization
Pyritic
Mineralization
+ some Cpy.
LEGEND:
JURASSIC
ANDESITE INTRUSIVE:
Jad ANDESITE DIKES &/or SILLS
&
POSSIBLY INTRUSIVE (Age uncertain):
Trfx FELDSPATHIC RHYOLITE BRECCIA
TRIASSIC
PIT FORMATION:
Trpm MUDSTONE. Tuff & glass layers.
Trpat ANDESITE TUFF & BRECCIA
Trprt RHYOLITE TUFF. Porphyritic in part.
BULLY HILL RHYOLITE:
Trbx BULLY HILL RHYOLITE BRECCIA
Trbt BULLY HILL RHYOLITE TUFF
ORES & LOW-GRADE MINERALIZATION:
Ore COPPER ORE (Low-grade is stippled)
Ore ZINC ORE (Low-grade is stippled)
BULLY HILL MINE
SHASTA COUNTY, CALIFORNIA
PRELIMINARY CROSS SECTION OF
DRILL HOLE A1-5
VERT. & HORIZ. SCALE: 1″=100′
0 50′ 100′ 200′ 300′
E.J. LONGYEAR CO.
Nov. 30, 1952


N-88°W
S-88°E
LEVEL:
ELEVATION:
1500'
300
1408'
370
1338'
470
1238'
570
1138'
670
1038'
770
936'
870
842'
970
740'
1060'
1100
607'
F.?
DDH.A1-5
64°
ELEV.: 1503.2'
COORDS.: 7,957.0 E
11,540.0 N
STARTED: JUN.18,1952
STOPPED: DEC.31,1952
Jad
Jad
Jad
Trbx
Trbt
Shear zone
Disseminated
ZnS + Cpy.
F.
57°
F.
57°
F.
ZnS, Cpy.
Mineralization
55°
53½°
Pyritic
Mineralization
+ some Cpy.
49°
LEGEND:
JURASSIC
ANDESITE INTRUSIVE:
Jad ANDESITE DIKES &/or SILLS
POSSIBLY INTRUSIVE (Age uncertain):
Trfx FELDSPATHIC RHYOLITE BRECCIA
TRIASSIC
PIT FORMATION:
Trpm MUDSTONE. Tuff & glass layers.
Trpat ANDESITE TUFF & BRECCIA
Trprt RHYOLITE TUFF. Porphyritic in part.
BULLY HILL RHYOLITE:
Trbx BULLY HILL RHYOLITE BRECCIA
Trbt BULLY HILL RHYOLITE TUFF
ORES & LOW-GRADE MINERALIZATION:
Ore COPPER ORE (Low-grade is stippled)
Ore ZINC ORE (Low-grade is stippled)
BULLY HILL MINE
SHASTA COUNTY, CALIFORNIA
PRELIMINARY CROSS SECTION OF
DRILL HOLE A1-5
VERT. & HORIZ. SCALE: 1"=100'
0 50' 100' 200' 300'
E.J. LONGYEAR CO.
Dec. 31, 1952



300	1408'
370	1338'
470	1238'
570	1138'
670	1038'
770	936'
870	842'
970	740'
1100	607'

LEGEND:

AS ON SECTION OF DDH. A1-5

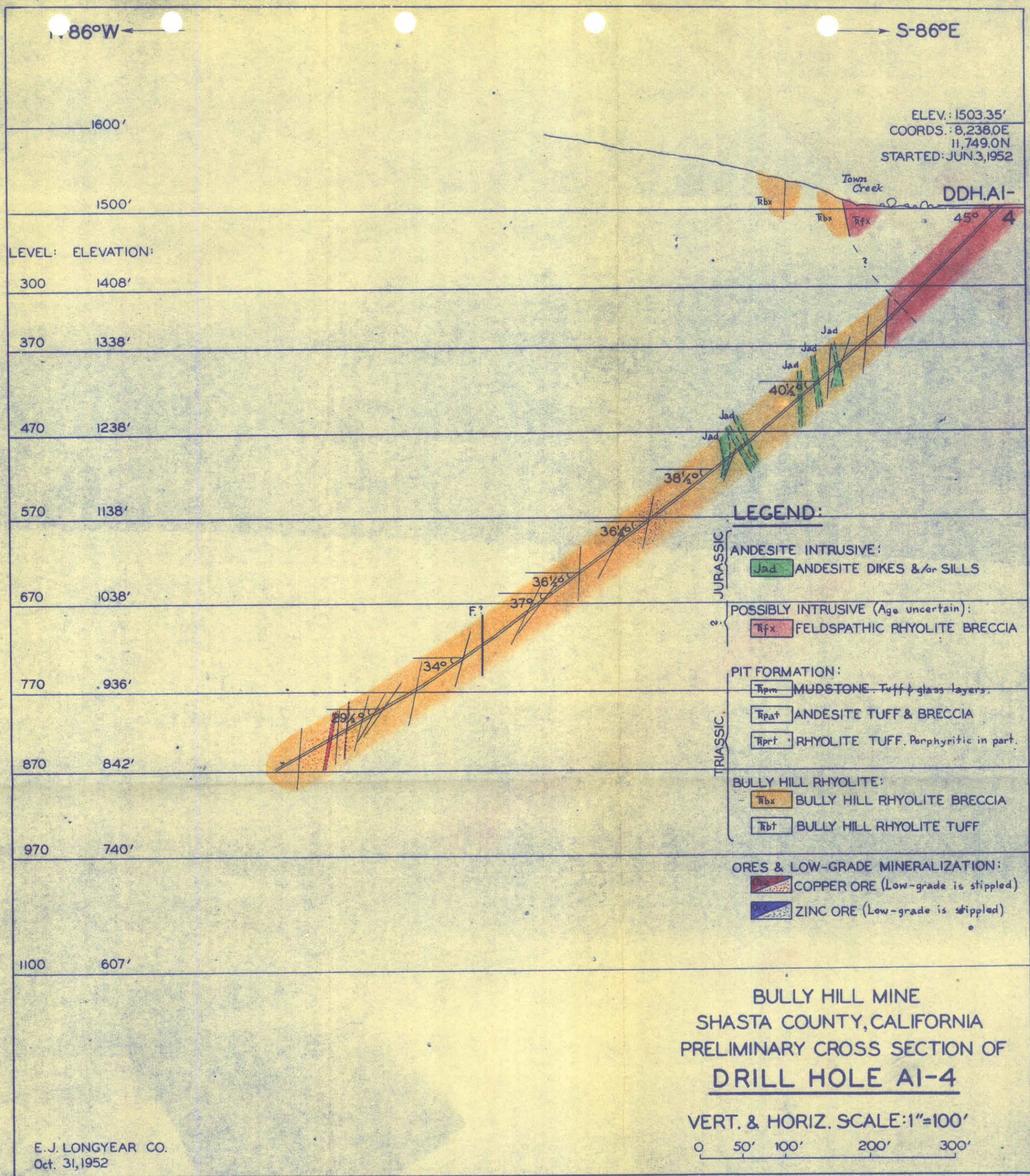
Tbax APHANITIC RHYOLITE BRECCIA

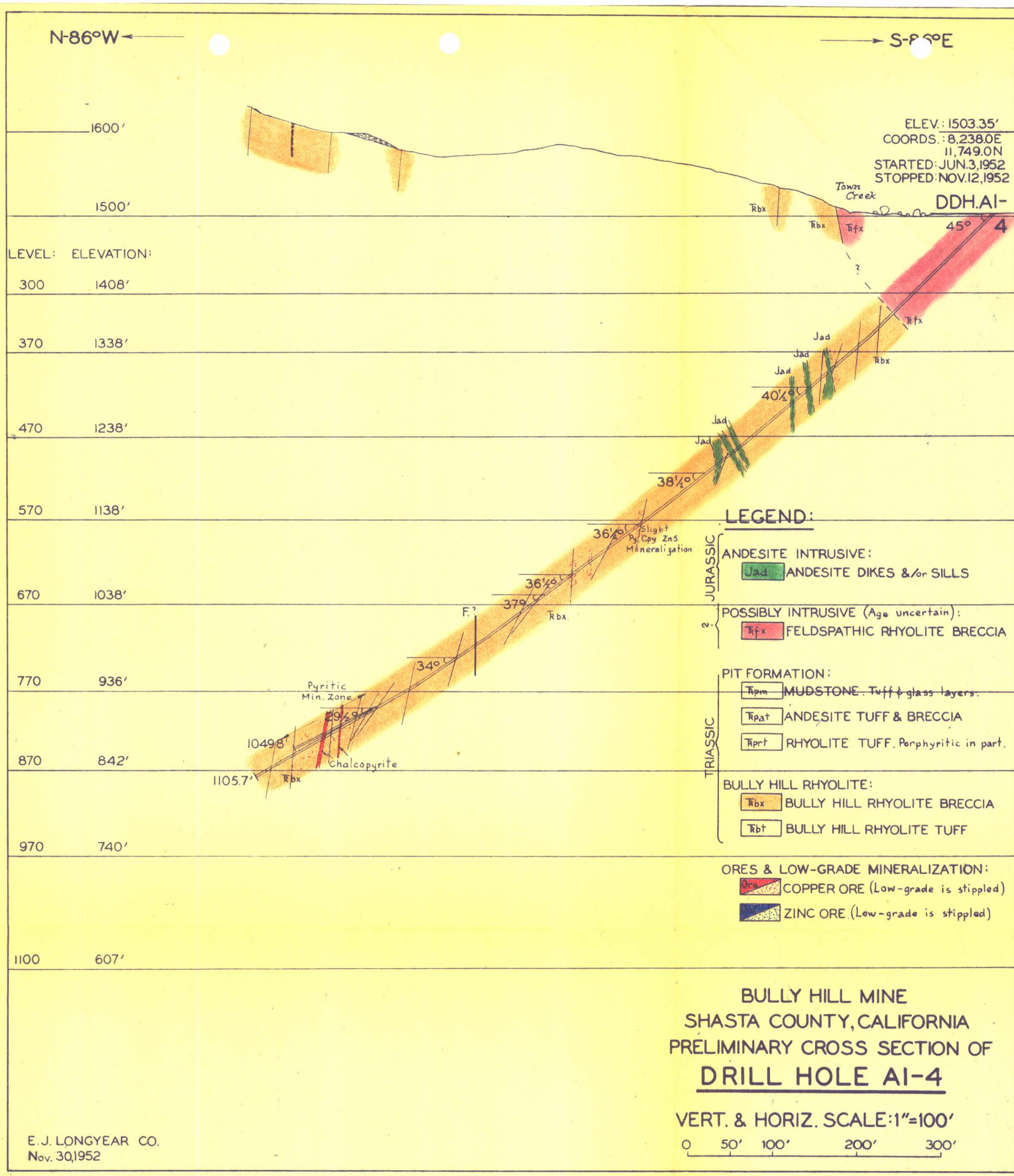
BULLY HILL MINE
SHASTA COUNTY, CALIFORNIA
PRELIMINARY CROSS SECTION OF
DRILL HOLE A3-1

VERT. & HORIZ. SCALE: 1"=100'

0 50' 100' 200' 300'

E.J. LONGYEAR CO.
Dec. 31, 1952


N-86°W
S-86°E
ELEV.: 1503.35'
COORDS.: 8,238.0E
11,749.0N
STARTED: JUN.3,1952
DDH.AI-4
Town Creek
Rbx
Rbx
Rfx
45°
?
1600'
1500'
LEVEL: ELEVATION:
300 1408'
370 1338'
470 1238'
570 1138'
670 1038'
770 936'
870 842'
970 740'
1100 607'
Jad
Jad
Jad
40½°
Jad
Jad
38½°
36½°
36½°
37°
F.?
34°
29½°
LEGEND:
JURASSIC
ANDESITE INTRUSIVE:
Jad ANDESITE DIKES &/or SILLS
?
POSSIBLY INTRUSIVE (Age uncertain):
Rfx FELDSPATHIC RHYOLITE BRECCIA
TRIASSIC
PIT FORMATION:
Rpm MUDSTONE. Tuff & glass layers.
Rpat ANDESITE TUFF & BRECCIA
Rprt RHYOLITE TUFF. Porphyritic in part.
BULLY HILL RHYOLITE:
Rbx BULLY HILL RHYOLITE BRECCIA
Rbt BULLY HILL RHYOLITE TUFF
ORES & LOW-GRADE MINERALIZATION:
COPPER ORE (Low-grade is stippled)
ZINC ORE (Low-grade is stippled)
BULLY HILL MINE
SHASTA COUNTY, CALIFORNIA
PRELIMINARY CROSS SECTION OF
DRILL HOLE AI-4
VERT. & HORIZ. SCALE: 1"=100'
0 50' 100' 200' 300'
E.J. LONGYEAR CO.
Oct. 31, 1952


N-86°W
S-8°E
1600'
1500'
ELEV.: 1503.35'
COORDS.: 8,238.0E
11,749.0N
STARTED: JUN.3,1952
STOPPED: NOV.12,1952
DDH.AI-4
Town Creek
45°
LEVEL: ELEVATION:
300 1408'
370 1338'
470 1238'
570 1138'
670 1038'
770 936'
870 842'
970 740'
1100 607'
Rbx
Rfx
?
Jad
40½°
38½°
36½°
Slight Py Cpy ZnS Mineralization
36½°
37°
F.?
34°
Pyritic Min. Zone
29½°
1049.8'
1105.7'
Chalcopyrite
LEGEND:
JURASSIC
ANDESITE INTRUSIVE:
Jad ANDESITE DIKES &/or SILLS
?
POSSIBLY INTRUSIVE (Age uncertain):
Rfx FELDSPATHIC RHYOLITE BRECCIA
TRIASSIC
PIT FORMATION:
Rpm MUDSTONE. Tuff & glass layers.
Rpat ANDESITE TUFF & BRECCIA
Rprt RHYOLITE TUFF. Porphyritic in part.
BULLY HILL RHYOLITE:
Rbx BULLY HILL RHYOLITE BRECCIA
Rbt BULLY HILL RHYOLITE TUFF
ORES & LOW-GRADE MINERALIZATION:
Cu COPPER ORE (Low-grade is stippled)
Zn ZINC ORE (Low-grade is stippled)
BULLY HILL MINE
SHASTA COUNTY, CALIFORNIA
PRELIMINARY CROSS SECTION OF
DRILL HOLE AI-4
VERT. & HORIZ. SCALE: 1"=100'
0 50' 100' 200' 300'
E.J. LONGYEAR CO.
Nov. 30,1952