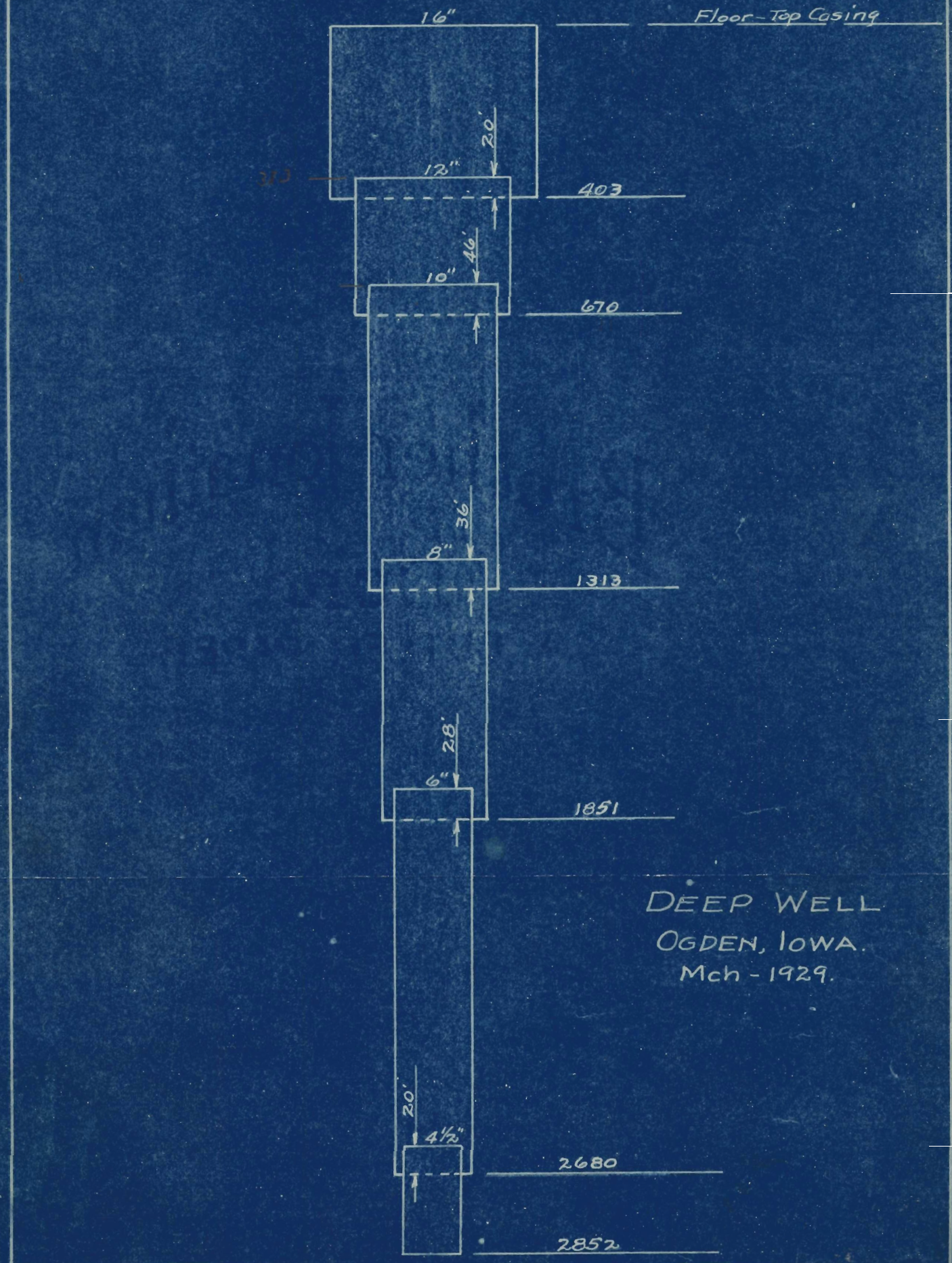


DEEP WELL
OGDEN, IOWA.
Mch - 1929.

Ogden City Well-W-0005

Bore

Formation	Kind of Rock	Interval	Fluorite	Apatite	Chitin	Barite	anhydrite	Celestite	Pyrite	Sphalerite	Zoned Zircon	unzoned Zircon	Tourmaline: green	Tourmaline: brown	Tourmaline: blue	garnet	leucoxene	anatase	Titanite	Rutile	Magnetite	Ilmenite	Hematite	Limonite	glauconite	hornblende	Tremolite	Mica	chlorite	epidote	staurolite	Anhydrite	Clay Minerals	Chert	feldspar	glauconite	Muscovite	Quartz	Gypsum
↑	Limestone chert	350-480				X	X		F	X	X	X	X		X	X	X		X	X	X							R					C	C	C	P		C
Mississippian	Sandstone	470-490				C			A	X	X	X	R	R	C	C					C												C	C	C	X	F	S (?)
	Limestone	510-550							F	X	X	X	X						X														C	C	C	X		
	shale	570-630				X			A	X	X	X	X		X	X	X									X								F	X	X	X	C	
	Limestone	650							F	X	X	X	X		X	X	X																	F	X	X	X	C	
Devonian	Limestone	760-970	X			C	R		F	X	X	X			X	X	X			X						X								A	A	X	X	C	
↓	limestone	970-1170	C			X	F		X	A	X					X	X																	A	A	R	R	X	C	
Silurian	dolomite	1170-1260	X			R			F	X		X					X										X							F	X				
	Limestone	1260-1300							A		X														A									F					
Mountain Dale	shale	1300-1360							A		X																							F					
Sevy	Chert	1360-1410				X			A			X	X											A										C	F	X			
Fish Haven	dolo.	1420-1780	X			X	X		F			X	X											A										C	F	C	R		
Garrison	Shale	1780-1790					X		F			X	X											X										F	*		X		
↑ Peterboro	Sandstone	1790-1820			R				F	X	R	R	X											X										C					
↓ Eureka	Limestone	1820-1870				X			F	X	X													X										A		R	X		
Shaftsbee	Dolo.	1870-1920							F			X												X										C	A	X	A		
↓	"	1920-1936				R			F	R	X	X	X											R										X	A	R	C		A
W. Rich	Sandstone	1936-1970					F	R	X	X		X		X	X									X										C		C	X		F
Ophiola	Dolo	1970-2180					E	R	X	X	X				X									X										C	C	X	X		A
							F	C		P																													F
Jordan	Sandstone	2180-2260																																					

*- Represents cavity,

Ogden - W-0006

Formation	Kind of Rock	Interval	
Lodi St. Joseph	dolo	2410-2430	
Franconia/Lunda	Limestone/dolo	2450-2550	
↓	Limestone	2560-2570	
Eales	SS.	2710-2740	
			Fluorite
			Apatite
		X	Chitin
		X X	Barite
		X	Anhydrite
			Celestite
		F	Pyrite
		R X X	Sphalerite
		X X R	Zoned Zircon
		X X R	unzoned Zircon
		X X X	green Tourmaline
		X X X	brown
		X X X	blue
		X X R	garnet
		X C X X	leucoxene
		X C R X	Anatase
			Titanite
			Rutile
		C	Magnetite
		A A	Ilmenite
		A A C	Hematite
		X X	Limonite
		X R X	glauconite
		X R X X	hornblende
		X X X	Tremolite
		X X X	Mica
		X R	Chlorite
			epidote
			Staurolite
			Anhydrite
		C X	Clay Minerals
		A C A	Chert
		C A A C	Feldspar
		A C X X	glauconite
		X X X X	Muscovite
		A A C A	Quartz
			Gypsum

DEEP WELL STUDY

Well No. W— 0005
Depth 350 to 370
No. samples used 2
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P.	2.34
3. Wt. after solution, with filter paper	30.81 gm.			
4. Less wt. F. P. (2)	2.34 gm.			
5. Wt. Insol. Residue (3 minus 4)	28.47 gm.	71.2 %		
6. Wt. lost by solution (1 minus 5)	11.53 gm.	28.8 %		
7. To balance (5 plus 6)	40.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	28.47 gm.	100.0%	
2. Cylinder (+1/32) 25.93 + 2.32 = 23.61	23.61 gm.	83.0 %	
3. Jar (1/32—1/64) 3.46 − 2.28 = 1.18	1.18 gm.	4.1 %	
4. Drain 1.18	3.68 gm.	12.9 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus	14.91	63.4
2–1 mm	3.01	12.8
1–½ mm	2.18	9.3
½–¼ mm	1.12	4.7
¼–⅛ mm	.77	3.3
⅛–1/16	.92	3.9
Pan	.61	2.6
Total	23.52	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) 1/4-1/32 mm.

Analyst Rowser
Date 12-15-34

Wt. of sample 221.0 gm. 100.0%

Heavy Minerals 29.4 gm. 13.3 %

Light Minerals 1.916 gm. 86.7 %

Shape Analysis:

A ....% : a ....% : C ....%

r ....% : R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Pyrite	877	82.3
Hornblende	13	1.2
glauconite	15	1.4
carbonate	16	1.5
X	2	.2
zircon unzoned	2	.2
zircon zoned	2	.2
Tourmaline (green)	1	.1
garnet	1	.1
quartz	20	1.9
epidote	1	.1
clay	115	10.8
Total	1065	100%

Light Concentrate	No. of Grains	Rel. %
glauconite	359	36
chert	308	31
Quartz	181	18
Feldspar	38	4
clay	115	11
Total	1001	100%

Classification Grouping:

	Absol. %
Primary Minerals: 62.1 %	
Hornblende	.2
glauconite {Heavy / Light}	.2 / 31.2
Quartz {Heavy / Light}	.3 / 15.6
Feldspar {Heavy / Light}	3.5 / 1.4
clay {Heavy / Light}	9.3 / .2
carbonate	0
zircon unzoned	0
zircon zoned	0
Tourmaline	0
garnet	0
epidote	0
Secondary Minerals: 37.9 %	
Pyrite	11.
X	0
chert	26.9
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Chert – 60 – wh – opalescent – snd – ± 80 %; glauconite – very abundant; shale – ± 3 %; Solubility of sample – 99 %

DEEP WELL STUDY

Well No. W— 0005
Depth 370 to 380
No. samples used 1
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P. 2.39
3. Wt. after solution, with filter paper	38.00 gm.		
4. Less wt. F. P. (2)	2.39 gm.		
5. Wt. Insol. Residue (3 minus 4)	35.61 gm.	89.0 %	
6. Wt. lost by solution (1 minus 5)	4.39 gm.	11.0 %	
7. To balance (5 plus 6)	40.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	35.61 gm.	100.0%	
2. Cylinder (+1/32) 5.03 + 2.32 + 33.71	33.71 gm.	94.6 %	
3. Jar (1/32—1/64) 9.99 − 9.39	0.60 gm.	1.7 %	
4. Drain 60	1.30 gm.	3.7 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus	24.47	73.3
2–1 mm	4.83	14.5
1–½ mm	2.34	7.5
½–¼ mm	.72	2.2
¼–⅛ mm	.51	1.5
⅛–1/16	.17	.5
Pan	.18	.5
Total	33.22	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) 1/4-1/32 mm.

Analyst Rowser
Date 12-13-34

Wt. of sample . . . . .86 gm. 100.0%

Heavy Minerals . . . . .06 gm. 7.0 %

Light Minerals . . . . .80 gm. 93.0 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate

	No. of Grains	Rel. %
Pyrite	1080	93
Hornblende	12	1
glauconite	1	0
carbonate	1	0
anhydrite	1	0
zircon unzoned	1	0
zoned	2	0
tourmaline (green)	1	0
garnet	2	0
Quartz	6	0
epidote	1	0
Clay	53	5
Total	1161	100%

Light Concentrate

glauconite	5	.5
chert	861	77.3
Quartz	171	15.4
Feldspar	40	3.6
clay	36	3.2
Total	1113	100%

Classification Grouping:

Primary Minerals: 21.5 %

		Absol. %
Hornblende		.1
glauconite	Heavy	.0
	Light	.4
Quartz	Heavy	.1
	Light	14.3
Feldspar	Heavy	3.4
	Light	.3
clay	Heavy	
	Light	2.9
Carbonate		0
Zircon unzoned		0
zoned		0
Tourmaline		0
garnet		0
epidote		0

Secondary Minerals: 78.5 %

Pyrite		6.5
Chert		72.0
anhydrite		0
Total		100%

Revised Lithologic Description (from descriptive log and laboratory data).

Chert - 70% wh - opalescent; snd; ± 14%; glauconite abundant; Shale ± 5%; ; solubility of sample - 11%;

DEEP WELL STUDY

Well No. W— 0005
Depth 390 to 400
No. samples used 1
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P.	2.40
3. Wt. after solution, with filter paper	28.63 gm.			
4. Less wt. F. P. (2)	2.40 gm.			
5. Wt. Insol. Residue (3 minus 4)	26.23 gm.	65.6 %		
6. Wt. lost by solution (1 minus 5)	13.77 gm.	34.4 %		
7. To balance (5 plus 6)	40.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	14.37	55.0
1–½ mm	6.13	23.3
½–¼ mm	3.57	13.6
¼–⅛ mm	1.32	5.6
⅛–1/16	.43	1.6
Pan	.22	.9
Total	26.04	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Powder
Date 12-14-34

Wt. of sample 1.97 gm. 100.0%

Heavy Minerals .25 gm. 12.7 %

Light Minerals 1.72 gm. 87.3 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate

	No. of Grains	Rel. %
Scale	950	91
Pyrite	81	8
Hornblende	9	1
garnet	2	0
staurolite	1	0
Total	1043	100%

Light Concentrate

Chert	667	63
Quartz	279	26
Feldspar	108	10
glauconite	15	1
Total	1069	100%

Classification Grouping:

Primary Minerals: 32.4 %

	Absol. %
Quartz	22.7
Feldspar	8.7
glauconite	.9
Hornblende	.1
garnet	0
staurolite	0

Secondary Minerals: 67.6 %

Scale	11.6
Pyrite	1.
Chert	55.
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Chert – 43%; wh; oolitic in part;
LS – 34%; lt cream; dense;
Qtz; 27%; in angular grains

DEEP WELL STUDY

Well No. W— 0005
Depth 400 to 420
No. samples used 2
Analyst T + G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	35 gm.	100.0%	2. Wt. of F. P.	2.35
3. Wt. after solution, with filter paper	21.90 gm.			
4. Less wt. F. P. (2)	2.35 gm.			
5. Wt. Insol. Residue (3 minus 4)	19.45 gm.	55.6 %		
6. Wt. lost by solution (1 minus 5)	15.55 gm.	44.4 %		
7. To balance (5 plus 6)	35.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	4.40	22.4
1–½ mm	6.87	35.3
½–¼ mm	6.37	32.6
¼–⅛ mm	1.41	7.2
⅛–1/16	.25	1.3
Pan	.21	1.2
Total	19.51	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Rowsey
Date 12-15-34

Wt. of sample 1.80 gm. 100.0%

Heavy Minerals 15 gm. 8.3 %

Light Minerals 1.65 gm. 91.7 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Epidote	3	0
Hornblende	29	3
rutile	2	0
garnet	4	0
zircon (unrounded)	1	0
Tourmaline (brown)	1	0
Sulphate (barite)	25	3
Pyroxene	6	1
biotite	2	0
Titanite	2	0
scale	27	3
Pyrite	888	90
Total	990	100%

Light Concentrate		
Quartz	469	38.4
Chert	446	36.6
Feldspar	98	8.0
clay	209	17.2
glauconite	5	.4
Total	1221	100%

Classification Grouping:

	Absol. %
Primary Minerals: 59.0 %	
Quartz	35.3
Feldspar	7.3
clay	15.5
glauconite	.4
epidote	0 .2
Hornblende	
rutile	0
garnet	0
zircon	0
tourmaline	0
pyroxene	0
biotite	0
Titanite	0
Secondary Minerals: 41.0 %	
sulphate	.2
scale	.2
pyrite	7.5
chert	33.1
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

LS.— white to buff; dense; probably 50-60% soluble;
SS — fine-50%; 1-½-35%; ½-¼-33%; shape+ A-10%; a-25%; C-50%
r 15%; Sample contaminated with drift.

DEEP WELL STUDY

Well No. W— 0005
Depth 420 to 440
No. samples used 2
Analyst T & C
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight . . . . . 40 gm. 100.0%: 2. Wt. of F. P. 2.41
3. Wt. after solution, with filter paper . . . . . 10.52 gm.
4. Less wt. F. P. (2) . . . 2.41 gm.
5. Wt. Insol. Residue (3 minus 4) . . . . . 8.11 gm. 20.3 %
6. Wt. lost by solution (1 minus 5) . . . . . 31.89 gm. 79.7 %
7. To balance (5 plus 6) . . 4000 gm. 100.0 %

B. Subsidation:

1. Original Wt. . . . . 8.11 gm. 100.0%
2. Cylinder (+1/32) 10.24 − 2.32 = 7.92 7.92 gm. 97.7 %
3. Jar (1/32—1/64) 2.26 − 2.25 = 0.01 gm. .1 %
4. Drain . . . . . 0.18 gm. 2.2 %

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	4.63	59.0
1–½ mm		
½–¼ mm		
¼–⅛ mm	3.21	41.0
⅛–1/16		
Pan		
Total	7.84	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ..... mm.

Analyst .....
Date .....

Wt. of sample . . . . gm. 100.0%

Heavy Minerals . . . . gm. %

Light Minerals . . . . gm. %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Total		100%

Classification Grouping:
Primary Minerals: ..... %

Absol. %

Light Concentrate

Secondary Minerals: ..... %

Total 100%

Total 100%

Revised Lithologic Description (from descriptive log and laboratory data).

DEEP WELL STUDY

Well No. W— 0005
Depth 440 to 450
No. samples used 1
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15%)

1. Sample weight	35 gm.	100.0%	2. Wt. of F. P.	2.36
3. Wt. after solution, with filter paper	10.44 gm.			
4. Less wt. F. P. (2)	2.36 gm.			
5. Wt. Insol. Residue (3 minus 4)	8.08 gm.	23.0 %		
6. Wt. lost by solution (1 minus 5)	26.92 gm.	77.0 %		
7. To balance (5 plus 6)	35.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.99	12.2
1–½ mm	3.35	41.4
½–¼ mm	2.79	34.4
¼–⅛ mm	.62	7.7
⅛–1/16	.15	1.9
Pan	.20	2.4
Total	8.10	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Rowser
Date 12-17-34

Wt. of sample . . . . 188 gm. 100.0%

Heavy Minerals . . . . 106 gm. 6.5 %

Light Minerals . . . . 182 gm. 93.2 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Pyrite	680	60
clay	451	40
anhydrite	4	0
Hornblende	1	0
Total	1136	100%

Classification Grouping:

Primary Minerals: 89.4 %

	Absol. %
clay (light)	2.7
	49.4
Quartz	36.4
Feldspar	.9
glauconite	0
Hornblende	0

Light Concentrate		
clay	583	53
quartz	431	39
chert	78	7
feldspar	15	1
glauconite	4	0
Total	1113	100%

Secondary Minerals: 10.6 %

Pyrite	4.1
anhydrite	0
Chert	6.5
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

ls - 77%; cream to tan; dense; sd content - ±10%; a gtz frag; a few fresh x's of qtz; sh - ±12%; chert - a trace

DEEP WELL STUDY

Well No. W— 0005
Depth 460 to 480
No. samples used 2
Analyst T + G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P.	2.33
3. Wt. after solution, with filter paper	9.42 gm.			
4. Less wt. F. P. (2)	2.33 gm.			
5. Wt. Insol. Residue (3 minus 4)	7.09 gm.	14.2 %		
6. Wt. lost by solution (1 minus 5)	42.91 gm.	85.8 %		
7. To balance (5 plus 6)	50.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm	5.62	78.3
½–¼ mm		
¼–⅛ mm		
⅛–1/16	1.56	21.7
Pan		
Total	7.18	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Analyst Gus Pyre
Date 12/17/34

Acet. Tetrabr. / ~~Bromoform~~ ± 2.93 Sp. gr. Size–Grade(s) ¼-Pan mm.

Wt. of sample 1.53 gm. 100.0%

Heavy Minerals 12 gm. 7.8 %

Light Minerals 1.41 gm. 92.2 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate

	No. of Grains	Rel. %
Pyrite	1079	84.9
Magnetite + Ilmenite	19	1.5
Leucoxene	18	1.4
Casing Scale	15	1.2
Epidote	12	.9
Green Amphibole	80	6.3
Colorless "	9	.7
Garnet	1	.1
Tourmaline (Green)	1	.1
Zircon	2	.2
Chlorite	2	.2
Rutile	1	.1
Hematite	31	2.4
Total	1270	100%

Light Concentrate

Clay minerals (black)	1163	71
Quartz	498	27
Feldspar	12	1
Chert	15	1
Glauconite	3	0
Total	1641	100%

Classification Grouping:

	Absol. %
Primary Minerals: 92.1 %	
Magnetite & Ilmenite	.1
Epidote	.1
Green Amphibole	.5
Colorless "	0
Garnet	0
Tourmaline	0
Zircon	0
Rutile	0
Clay minerals	65.5
Quartz	25.0
Feldspar	.9
Secondary Minerals: 7.9 %	
Pyrite	6.6
Chert	0
Glauconite	.9
Hematite	.2
Leucoxene	.1
Casing Scale	.1
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Limestone - 86% soluble; ± 10% dk. gray clay minerals; 1-2% pyrite; 3-4% detrital qtz.

DEEP WELL STUDY

Well No. W— 0005

Depth 480 to 500

No. samples used 2

Analyst T + G

Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P. 2.40
3. Wt. after solution, with filter paper	6.32 gm.		
4. Less wt. F. P. (2)	2.40 gm.		
5. Wt. Insol. Residue (3 minus 4)	3.92 gm.	9.8 %	
6. Wt. lost by solution (1 minus 5)	36.08 gm.	90.2 %	
7. To balance (5 plus 6)	40.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	3.92 gm.	100.0%	
2. Cylinder (+1/32) 6.00, 2.30	3.70 gm.	94.4 %	
3. Jar (1/32—1/64) 3.70, 2.41, 2.32	0.09 gm.	2.3 %	
4. Drain 0.09	0.13 gm.	3.3 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	1.81	48.0
1–½ mm		
½–¼ mm		
¼–⅛ mm	1.96	52.0
⅛–1/16		
Pan		
Total	3.77	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ..... mm.

Analyst .....

Date .....

Wt. of sample . . . . gm. 100.0%

Heavy Minerals . . . . gm. %

Light Minerals . . . . gm. %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Total		100%

Classification Grouping: Absol. %

Primary Minerals: ..... %

Light Concentrate

Secondary Minerals: ..... %

Total . . . . . 100% Total 100%

Revised Lithologic Description (from descriptive log and laboratory data).

DEEP WELL STUDY

Well No. W— 0005

Depth 510 to 530

No. samples used 2

Analyst T & G

Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P. 2.35
3. Wt. after solution, with filter paper	8.00 gm.		
4. Less wt. F. P. (2)	2.35 gm.		
5. Wt. Insol. Residue (3 minus 4)	5.65 gm.	14.1 %	
6. Wt. lost by solution (1 minus 5)	34.35 gm.	85.9 %	
7. To balance (5 plus 6)	40.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm		
¼–⅛ mm		
⅛–1/16		
Pan		
Total		100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ..... mm.

Analyst .....

Date .....

Wt. of sample ..... gm. 100.0% Shape Analysis:

Heavy Minerals ..... gm. ..... % A ..... %: a ..... %: C ..... %

Light Minerals ..... gm. ..... % r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Total		100%

Classification Grouping: Absol. %

Primary Minerals: ..... %

Secondary Minerals: ..... %

Light Concentrate

Total		100%

Total 100%

Revised Lithologic Description (from descriptive log and laboratory data).

DEEP WELL STUDY

Well No. W— 0005
Depth 540 to 550
No. samples used 1
Analyst T + G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	35 gm.	100.0%	2. Wt. of F. P. 2.33
3. Wt. after solution, with filter paper	11.12 gm.		
4. Less wt. F. P. (2)	2.33 gm.		
5. Wt. Insol. Residue (3 minus 4)	8.79 gm.	25.0 %	
6. Wt. lost by solution (1 minus 5)	26.21 gm.	75.0 %	
7. To balance (5 plus 6)	35.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	1.65	19.0
1–½ mm	3.38	39.0
½–¼ mm	1.96	22.6
¼–⅛ mm	.53	6.1
⅛–1/16	.85	9.8
Pan	.30	3.5
Total	8.67	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Rousax
Date 12-13-34

Wt. of sample 1.71 gm. 100.0%

Heavy Minerals .15 gm. 8.7 %

Light Minerals 1.56 gm. 91.3 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Pyrite	1160	82.9
Tourmaline / Brown	2	.1
Tourmaline / Green	2	.1
Hornblende	2	.1
Zircon / unzoned	5	.4
Zircon / zoned	4	.3
Garnet	3	.2
Quartz	34	2.4
Rutile	1	.1
Scale	188	13.4
Total	1401	100%

Light Concentrate			
Quartz	861	—	81
Feldspar	125	—	12
Clay	78	—	7
Total	1064		100%

Classification Grouping:

Primary Minerals: 80.6 %	Heavy	Light	Absol. %
Quartz	—	—	74.2
Clay	—	—	6.4
Tourmaline / Brown	—	—	0
Tourmaline / Green	—	—	0
Hornblende	—	—	0
Zircon / unzoned	—	—	0
Zircon / zoned	—	—	0
Garnet	—	—	0
Rutile	—	—	0

Secondary Minerals: 19.4 %			
Feldspar	—	—	11.0
Scale	—	—	1.2
Pyrite	—	—	7.2
Total			100%

Revised Lithologic Description (from descriptive log and laboratory data).

L.S - 75%; white; xline; oolitic; compact; Snd - ± 20%; well rounded grains; feldspar also present; pyrite common.

DEEP WELL STUDY

Well No. W— 0005
Depth 550 to 570
No. samples used 2
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P.	2.35
3. Wt. after solution, with filter paper	39.91 gm.			
4. Less wt. F. P. (2)	2.35 gm.			
5. Wt. Insol. Residue (3 minus 4)	37.56 gm.	93.9 %		
6. Wt. lost by solution (1 minus 5)	2.44 gm.	6.1 %		
7. To balance (5 plus 6)	40.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	37.56 gm.	100.0%	
2. Cylinder (+1/32) 17.53 − 2.35 = 15.20	15.20 gm.	40.5 %	
3. Jar (1/32—1/64) 9.82 − 2.31 = 7.51	7.51 gm.	20.0 %	
4. Drain	14.85 gm.	39.5 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	1.49	9.8
1–½ mm	.35	2.3
½–¼ mm	.42	2.7
¼–⅛ mm	.84	5.5
⅛–1/16	5.49	35.9
Pan	6.68	43.8
Total	15.27	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) 18-1/16 mm.

Analyst Rowser
Date 12-14-34

Wt. of sample . . . . 926 gm. 100.0%

Heavy Minerals . . . . 1038 gm. 1.2 %

Light Minerals . . . . 3.222 gm. 98.8 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Pyrite	960	78
Tourmaline	2	0
zircon	2	0
staurolite	1	0
garnet	1	0
clay	272	22
Total	1238	100%

Light Concentrate		
clay	1084	80
Quartz	264	20
Muscovite	2	0
Feldspar	4	0
Total	1354	100%

Classification Grouping:

Primary Minerals: 99.1 %	Absol. %
clay (1084 + 264 + 2 + 4 = 1354)	.3 + 79.1
Quartz	19.7
Muscovite	0
Feldspar	0
Tourmaline	0
zircon	0
staurolite	0
garnet	

Secondary Minerals: .9 %
Pyrite — .9

Total 100%

Revised Lithologic Description (from descriptive log and laboratory data).

shale - 75%; slightly calcareous - 6% soluble; greenish gray; fine snd - ±25%; ½-1/16 - Clay; Pyrite abundant.

DEEP WELL STUDY

Well No. W— 0005
Depth 580 to 600
No. samples used 2
Analyst T + G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P. 2.39
3. Wt. after solution, with filter paper	25.85 gm.		
4. Less wt. F. P. (2)	2.39 gm.		
5. Wt. Insol. Residue (3 minus 4)	23.46 gm.	47.0 %	
6. Wt. lost by solution (1 minus 5)	26.54 gm.	53.0 %	
7. To balance (5 plus 6)	50.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	23.46 gm.	100.0%	
2. Cylinder (+1/32) 7.67 2.38 5.25	5.25 gm.	22.4 %	
3. Jar (1/32—1/64) 3.22 2.39 283	2.83 gm.	12.1 %	
4. Drain	15.38 gm.	65.5 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm	2.92	56.4
¼–⅛ mm		
⅛–1/16	2.26	43.6
Pan		
Total	5.18	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ¼-⅛ mm.

Analyst Rowser
Date 12-17-34

Wt. of sample 2.29 gm. 100.0%

Heavy Minerals 1.08 gm. 47.2 %

Light Minerals 1.21 gm. 52.8 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
⊕⊕ Limonite	996	84.1
Clay	108	9.1
Quartz	51	4.3
Pyrite	29	2.5
Total	1184	100%

Light Concentrate		
⊕ Clay	1115	99.3
Quartz	5	.5
Feldspar	1	.1
Glauconite	1	.1
Total	1122	100%

Classification Grouping:

Primary Minerals: 59.1 %

	Heavy	Light	Absol. %
Clay	4.3	52.5	56.8
Quartz	2.0	.3	2.3
Feldspar			0
Glauconite			0

Secondary Minerals: 40.9 %

Limonite	39.7
Pyrite	1.2
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Shale – calcareous – iron rich – tan to brown; calcareous content – trace; sud – a trace – same coarser material – evidently from drift.

DEEP WELL STUDY

Well No. W— 0005
Depth 610 to 620
No. samples used 1
Analyst T + G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight . . . . . 30 gm. 100.0% : 2. Wt. of F. P. 2.35
3. Wt. after solution, with filter paper . . . . . 12.07 gm.
4. Less wt. F. P. (2) . . . 2.35 gm.
5. Wt. Insol. Residue (3 minus 4) . . . . . 9.72 gm. 32.4 %
6. Wt. lost by solution (1 minus 5) . . . . . 20.28 gm. 67.6 %
7. To balance (5 plus 6) . . 30.00 gm. 100.0 %

B. Subsidation:

1. Original Wt. . . . . gm. 100.0%
2. Cylinder (+1/32) gm. %
3. Jar (1/32—1/64) gm. %
4. Drain . . . . . gm. %

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm	8.91	91.6
½–¼ mm		
¼–⅛ mm		
⅛–1/16	.78	8.4
Pan		
Total	9.69	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst
Date

Wt. of sample . . . . .78 gm. 100.0%

Heavy Minerals . . . . .04 gm. %

Light Minerals . . . . gm. %

Shape Analysis:

A %: a %: C %

r %: R %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Total		100%
Light Concentrate		
Total		100%

Classification Grouping:
Primary Minerals: %
Secondary Minerals: %

Absol. %
100%

Revised Lithologic Description (from descriptive log and laboratory data).

DEEP WELL STUDY

Well No. W— 0005
Depth 620 to 630
No. samples used 1
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15%)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P. 2.35
3. Wt. after solution, with filter paper	33.00 gm.		
4. Less wt. F. P. (2)	2.35 gm.		
5. Wt. Insol. Residue (3 minus 4)	30.65 gm.	76.6 %	
6. Wt. lost by solution (1 minus 5)	9.35 gm.	23.4 %	
7. To balance (5 plus 6)	40.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	30.65 gm.	100.0%	
2. Cylinder (+1/32) 13.27 + 2.30 = 15.57	12.97 gm.	42.4 %	
3. Jar (1/32—1/64) 8.51 + 2.40 = 6.11	6.11 gm.	19.9 %	
4. Drain	11.57 gm.	37.7 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm	tr.	
½–¼ mm	.04	.3
¼–⅛ mm	.38	2.9
⅛–1/16	7.97	61.8
Pan	4.51	35.0
Total	12.90	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) 1/8-1/16 mm.

Analyst Rausch
Date 12-19-34

Wt. of sample 3.37 gm. 100.0%

Heavy Minerals .005 gm. .1 %

Light Minerals 3.365 gm. 99.9 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Pyrite	105	9
clay	81	7
biotite	3	0
chlorite	2	0
garnet	1	0
limonite	461	40
scale	509	44
Total	1162	100%

Light Concentrate clay 100%

Total 100%

Classification Grouping:

	Absol. %
Primary Minerals: 99.91%	
clay (Heavy)	0.01
clay (Light)	99.9
biotite	0
garnet	0
Secondary Minerals: .09%	
Pyrite	.01
chlorite	0
limonite	.04
scale	.04
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Shale — grayish green — calcareous — 9.3% soluble; moderately fissile.

DEEP WELL STUDY

Well No. W— 0005
Depth 630 to 650
No. samples used 2
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P.	2.35
3. Wt. after solution, with filter paper	49.72 gm.			
4. Less wt. F. P. (2)	2.35 gm.			
5. Wt. Insol. Residue (3 minus 4)	2.37 gm.	4.6 %		
6. Wt. lost by solution (1 minus 5)	47.63 gm.	95.4 %		
7. To balance (5 plus 6)	50.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm		
¼–⅛ mm		
⅛–1/16		
Pan		
Total		100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size-Grade(s) mm.

Analyst
Date

Wt. of sample gm. 100.0%

Heavy Minerals gm. %

Light Minerals gm. %

Shape Analysis:

A %: a %: C %

r %: R %.

Minerals Identified: Heavy Concentrate	No. of Grains	Rel. %
Total		100%

Classification Grouping:
Primary Minerals: %

Absol. %

Light Concentrate

Secondary Minerals: %

Total	100%	Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

DEEP WELL STUDY

Well No. W— 0005
Depth 660 to 680
No. samples used 2
Analyst T + G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15%)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P. 2.36
3. Wt. after solution, with filter paper	3.51 gm.		
4. Less wt. F. P. (2)	2.36 gm.		
5. Wt. Insol. Residue (3 minus 4)	1.15 gm.	2.3 %	
6. Wt. lost by solution (1 minus 5)	48.85 gm.	97.7 %	
7. To balance (5 plus 6)	50.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	gm.	100.0%	
2. Cylinder (+1/32)	gm.	%	
3. Jar (1/32—1/64)	gm.	%	
4. Drain	gm.	%	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm		
¼–⅛ mm		
⅛–1/16		
Pan		
Total		100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) Comp mm.

Analyst Rowser
Date 12-19-34

Wt. of sample 1.06 gm. 100.0%

Heavy Minerals 13 gm. 12.3 %

Light Minerals .93 gm. 87.7 %

Shape Analysis:

A ....% : a ....% : C ....%

r ....% : R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Pyrite	1262	89
Tourmaline/green	1	0
Tourmaline/brown	1	0
Zircon (unzoned)	2	0
Hornblende	1	0
biotite	1	0
scales	37	3
epidote	1	0
clay	108	8
Total	1414	100%

Light Concentrate		
clay	815	65
Quartz	429	34
glauconite	12	1
Total	1256	100%

Classification Grouping:

	Absol. %
Primary Minerals: 88.7 %	
Heavy	1.0
Light	57.0
clay	29.8
Quartz	.9
glauconite	0
tourmaline	0
zircon	0
biotite	0
epidote	0
Hornblende	0
Secondary Minerals: 11.3 %	
Pyrite	10.9
Scale	.4
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Limestone - 98%; finely xline; light cream to grey;
clay content - 2%

DEEP WELL STUDY

Well No. W— 0005
Depth 690 to 710
No. samples used 2
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P. 2.35
3. Wt. after solution, with filter paper	3.31 gm.		
4. Less wt. F. P. (2)	2.35 gm.		
5. Wt. Insol. Residue (3 minus 4)	.96 gm.	1.9 %	
6. Wt. lost by solution (1 minus 5)	49.04 gm.	98.1 %	
7. To balance (5 plus 6)	50.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	gm.	100.0%	
2. Cylinder (+1/32)	gm.	%	
3. Jar (1/32—1/64)	gm.	%	
4. Drain	gm.	%	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm		
¼–⅛ mm		
⅛–1/16		
Pan		
Total		100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ± 2.93 Sp. gr. Size–Grade(s) Camp mm.

Analyst Rowser
Date 12-19-34

Wt. of sample 96 gm. 100.0%

Heavy Minerals 7 gm. 7.3 %

Light Minerals 89 gm. 92.7 %

Shape Analysis:
A ___ %: a ___ %: C ___ %
r ___ %: R ___ %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
amphibole	12	.8
zircon zoned	4	.3
zircon unzoned	4	.3
Tourmaline (green)	3	.2
Titanite	1	.1
Garnet	1	.1
pyrite	1289	85.1
clay scale	156	10.3
	42	2.8
Total	1512	100%

Light Concentrate			
clay	1015	94	
Quartz	61	6	
Total	1076	100%	

Classification Grouping:

	Absol. %
Primary Minerals: 93.6 %	
Amphibole	0
zircon zoned	0
zircon unzoned	0
Tourmaline	0
titanite	0
garnet	.7
clay (Heavy)	87.2
clay (Light)	5.6
Quartz	
Secondary Minerals: 6.4 %	6.2
Pyrite	.2
scale	
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Limestone — 98%; light cream to tan.
Shale — 2%; Pyrite abundant.

DEEP WELL STUDY

Well No. W— 0005
Depth 710 to 720
No. samples used 1
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P. 2.35
3. Wt. after solution, with filter paper	3.59 gm.		
4. Less wt. F. P. (2)	2.35 gm.		
5. Wt. Insol. Residue (3 minus 4)	1.24 gm.	3.1 %	
6. Wt. lost by solution (1 minus 5)	38.76 gm.	96.9 %	
7. To balance (5 plus 6)	40.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm		
¼–⅛ mm		
⅛–1/16		
Pan		
Total		100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ..... mm.

Analyst .....
Date .....

Wt. of sample . . . . gm. 100.0%

Heavy Minerals . . . . gm. %

Light Minerals . . . . gm. %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate — No. of Grains — Rel. %

Classification Grouping: Primary Minerals: ..... % — Absol. %

Total 100%

Light Concentrate

Secondary Minerals: ..... %

Total . . . . . 100% Total 100%

Revised Lithologic Description (from descriptive log and laboratory data).

DEEP WELL STUDY

Well No. W— 0005
Depth 730 to 750
No. samples used 2
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15%)

1. Sample weight . . . . . 50 gm. 100.0%: 2. Wt. of F. P. 2.39
3. Wt. after solution, with filter paper . . . . . 5.00 gm.
4. Less wt. F. P. (2) . . . 2.39 gm.
5. Wt. Insol. Residue (3 minus 4) . . . . . 2.61 gm. 5.2%
6. Wt. lost by solution (1 minus 5) . . . . . 47.39 gm. 94.8%
7. To balance (5 plus 6) . . 50.00 gm. 100.0%

B. Subsidation:

1. Original Wt. . . . . gm. 100.0%
2. Cylinder (+1/32) . . . . . gm. %
3. Jar (1/32—1/64) . . . . . gm. %
4. Drain . . . . . gm. %

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm		
¼–⅛ mm		
⅛–1/16		
Pan		
Total		100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ..... mm.

Analyst .....
Date .....

Wt. of sample . . . . gm. 100.0%

Heavy Minerals . . . . gm. %

Light Minerals . . . . gm. %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified: Heavy Concentrate	No. of Grains	Rel. %
Total		100%
Light Concentrate		
Total		100%

Classification Grouping: Absol. %

Primary Minerals: ..... %

Secondary Minerals: ..... %

Total 100%

Revised Lithologic Description (from descriptive log and laboratory data).

DEEP WELL STUDY

Well No. W— 0005
Depth 760 to 780
No. samples used 2
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P.	2.32
3. Wt. after solution, with filter paper	10.00 gm.			
4. Less wt. F. P. (2)	2.32 gm.			
5. Wt. Insol. Residue (3 minus 4)	7.68 gm.	15.4 %		
6. Wt. lost by solution (1 minus 5)	42.32 gm.	84.6 %		
7. To balance (5 plus 6)	50.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	7.68 gm.	100.0%	
2. Cylinder (+1/32) 8.13, 2.30, 5.83	5.83 gm.	75.9 %	
3. Jar (1/32—1/64) 5.85, 2.35, 0.73	0.73 gm.	9.5 %	
4. Drain	1.12 gm.	14.6 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm	1.01	17.3
¼–⅛ mm		
⅛–1/16	4.83	82.7
Pan		
Total	5.84	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) 1/4 - 1/32 mm.

Analyst Pousey
Date 12-20-34

Wt. of sample 3.16 gm. 100.0%

Heavy Minerals 0.07 gm. 2.2 %

Light Minerals 3.09 gm. 97.8 %

Shape Analysis:

A ____ %: a ____ %: C ____ %

r ____ %: R ____ %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Zircon (zoned / unzoned)	4 — —	.3
	3 — —	.2
Tourmaline (brown)	4 — —	.3
anatase	2 — —	.1
garnet	3 — —	.2
dolomite	1 — —	.1
epidote	4 — —	.3
anhydrite	1269 — —	83.1
Pyrite	182 — —	12.0
clay scale	5-0 — —	3.3
Total	1523	100%

Light Concentrate		
Quartz	813 —	78
clay	225 —	21
Feldspar	10 —	1
Total	1048	100%

Classification Grouping:

Primary Minerals: 98.1 %	Absol. %
Zircon	0
Tourmaline	0
anatase	0
garnet	0
epidote	0
clay (Heavy)	.3
clay (Light)	20.5
Quartz	76.4
Feldspar	.9

Secondary Minerals: 1.9 %	
Pyrite	1.8
scale	.1
anhydrite	0
Dolomite	0
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

L.S. - 85-90%, dk. gny., slightly dolomitic, sandy, snd - 10%, fine - C to a., shale - 15-%

DEEP WELL STUDY

Well No. W— 0005
Depth 780 to 800
No. samples used 2
Analyst T & G
Date 8-7 34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P. 9.35
3. Wt. after solution, with filter paper	7.67 gm.		
4. Less wt. F. P. (2)	2.35 gm.		
5. Wt. Insol. Residue (3 minus 4)	5.32 gm.	10.6 %	
6. Wt. lost by solution (1 minus 5)	44.68 gm.	89.4 %	
7. To balance (5 plus 6)	50.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	5.32 gm.	100.0%	
2. Cylinder (+1/32) 3.81, 2.39	3.42 gm.	64.3 %	
3. Jar (1/32—1/64) 3.42, 2.97, 2.33	0.64 gm.	12.0 %	
4. Drain 0.64	1.26 gm.	23.7 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm		
¼–⅛ mm		
⅛–1/16		
Pan		
Total		100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Analyst Pyre
Date 1/9/35

Acet. Tetrabr. / ~~Bromoform~~ ± 2.93 Sp. gr. Size–Grade(s) ¼-½2 mm.

Wt. of sample . . . . 1.77 gm. 100.0%

Heavy Minerals . . . . .103 gm. 3.9 %

Light Minerals . . . . 1.74 gm. 96.1 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate

		No. of Grains	Rel. %
Zircon (zoned / unzoned)	6	1.0	
Tourmaline (green / blue)	2	.2	
Tremolite	1	.1	
Amphibole	7	.6	
Garnet	4	.3	
Barite	1	.1	
Anhydrite	4	.3	
Fluorite	3	.2	
Anatase	1	.1	
Rutile	1	.1	
Muscovite	2	.2	
Quartz	1	.1	
Feldspar	15	1.2	
Sphalerite	7	.6	
Magnetite / ilmenite	1	.1	
Pyrite	14	1.1	
Staurolite ??	1160	92.3	
Zoisite	1	.1	
	12	.9	
Total	1256		100%

Light Concentrate

Quartz	230	24	
Clay minerals	705	72	
Feldspar	29	3	
Muscovite	10	1	
	974		
Total			100%

Classification Grouping:

	Absol. %
Primary Minerals: 93.5 %	
Zircon (zoned / unzoned)	0
Tourmaline (green / blue)	0
Tremolite	0
Amphibole	0
Garnet	0
Rutile	0
Muscovite	1.0
Quartz	23.1
Mag. Ilm.	
Clay Minerals	69.4
Staurolite ?	0
Secondary Minerals: 6.5 %	
Pyrite	3.6
Barite	0
Anhydrite	0
Anatase	0
Sphalerite	0
Feldspar	2.9
Fluorite	0
Rutile	0
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Limestone – 90% soluble; gray; ± 7% black shale frags; ± 2% ε qtz. grains; ε 1% pyrite in minute x-tals; ε

DEEP WELL STUDY

Well No. W— 0005
Depth 810 to 830
No. samples used 2
Analyst I & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P. 2.33
3. Wt. after solution, with filter paper	5.47 gm.		
4. Less wt. F. P. (2)	2.33 gm.		
5. Wt. Insol. Residue (3 minus 4)	3.14 gm.	6.3 %	
6. Wt. lost by solution (1 minus 5)	46.86 gm.	93.7 %	
7. To balance (5 plus 6)	50.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	2.33 gm.	100.0%	
2. Cylinder (+1/32) 4.03 / 2.33 / 1.70	1.70 gm.	73.0 %	
3. Jar (1/32—1/64) 2.74 / 2.39 / 0.35	0.41 gm.	17.6 %	
4. Drain 0.41	0.22 gm.	9.4 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm		
¼–⅛ mm		
⅛–1/16		
Pan		
Total		100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ±2.93 Sp. gr. Size–Grade(s) +1/32 mm.

Analyst Rouser
Date 12-20-34

Wt. of sample 1.75 gm. 100.0%

Heavy Minerals 16 gm. 9.1 %

Light Minerals 1.59 gm. 90.9 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Pyrite	1539	81.8
clay	120	6.4
anhydrite	29	1.6
zircon zoned	8	.4
zircon unzoned	7	.4
Tourmaline brown	4	.2
Tourmaline blue	3	.1
Fluorite	2	.1
garnet	1	.1
epidote	76½	4.1
scale	2	.1
dolomite		
Total	1881	100%

Light Concentrate		
Clay	1217	96
Quartz	56	4
Total	1273	100%

Classification Grouping:

Primary Minerals: 91.6 %

	Absol. %
clay (heavy)	.6
clay (light)	87.4
Quartz	3.6
zircon	0
Tourmaline	0
epidote	0
garnet	0

Secondary Minerals: 8.4 %

Fluorite	0
anhydrite	.1
Pyrite	7.5
scale	.8
Dolomite	0
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Limestone — 90% — dolomitic — cream to tan; dense — sh. — 6% — Pyrite abundant

DEEP WELL STUDY

Well No. W— 0005
Depth 840 to 860
No. samples used 2
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15%)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P.	2.42
3. Wt. after solution, with filter paper	5.09 gm.			
4. Less wt. F. P. (2)	2.42 gm.			
5. Wt. Insol. Residue (3 minus 4)	2.67 gm.	5.3 %		
6. Wt. lost by solution (1 minus 5)	47.33 gm.	94.7 %		
7. To balance (5 plus 6)	50.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm		
¼–⅛ mm		
⅛–1/16		
Pan		
Total		100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / ~~Bromoform~~ ± 2.93 Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Pyle
Date 1/9/35

Wt. of sample .79 gm. 100.0%

Heavy Minerals .02 gm. 2.5 %

Light Minerals .77 gm. 97.5 %

Shape Analysis:

A ...% : a ...% : C ...%

r ...% : R ...%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Pyrite	440	69.9
Hematite	6	.5
Sphalerite	9	21.6
Barite	138	.3
Epidote	2	3.1
Amphibole	20	.9
Leucoxene	6	3.3
Casing Scale	21	.2
Dolomite	1	.2
Muscovite	1	
Total	638	100%

Light Concentrate			
Dark Shale Particles	1000 (est.)	98.9	
Quartz	5	.5	
Feldspar	5	.5	
Muscovite	1	.1	
Total	1011	100%	

Classification Grouping:

Primary Minerals: 97.2 %	Absol. %
Amphibole	.1
Epidote	0
Muscovite {Heavy / Light}	0 / .1
Shale	96.5
Quartz	.5

Secondary Minerals: 2.8 %	
Pyrite	1.7
Hematite	0
Sphalerite	0
Barite	.5
Casing Scale	.1
Dolomite	0
Feldspar	.5
Leucoxene	0
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Limestone – 95% soluble – grayish buff; ± 5% shale frags; < 1% quartz, feldspar & pyrite;

DEEP WELL STUDY

Well No. W— 0005
Depth 860 to 880
No. samples used 2
Analyst T + G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P.	2.37
3. Wt. after solution, with filter paper	5.19 gm.			
4. Less wt. F. P. (2)	2.37 gm.			
5. Wt. Insol. Residue (3 minus 4)	2.82 gm.	5.6 %		
6. Wt. lost by solution (1 minus 5)	47.18 gm.	94.4 %		
7. To balance (5 plus 6)	50.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	2.82 gm.	100.0%	
2. Cylinder (+1/32) 4.17 − 2.26	1.91 gm.	67.7 %	
3. Jar (1/32—1/64) 2.49 − 2.26	0.23 gm.	8.2 %	
4. Drain	0.68 gm.	24.1 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm		
¼–⅛ mm		
⅛–1/16		
Pan		
Total		100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) +½₂ mm.

Analyst Bowser
Date 12-21-34

Wt. of sample 1.90 gm. 100.0%
Heavy Minerals 0.12 gm. 6.3 %
Light Minerals 1.78 gm. 93.7 %

Shape Analysis:
A ..... %: a ..... %: C ..... %
r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Zircon	2	0
Tourmaline	2	0
garnet	1	0
dolomite	1	0
epidote	2	0
anhydrite	10	1
Sphalerite	11	0
Titanite	16	1
Horn blende	1	0
rutile	1	0
* Fluorite	84	56
Pyrite	476	32
scale	14	1
clay	5	0
Total	1494	100%

Light Concentrate		
clay	1451	93
Quartz	96	6
Feldspar	21	1
Total	1568	100%

Classification Grouping:

Primary Minerals: 94.3 %	Absol. %
Clay	87.2
Quartz	5.6
Zircon	0
Tourmaline	0
garnet	0
epidote	0
Titanite	0
Horn blende	0
rutile	.9
Feldspar	

Secondary Minerals: 5.7 %	
dolomite	0
anhydrite	0
sphalerite	0
Fluorite	3.5
Pyrite	2.2
scale	
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Limestone - gray; cream to tan - med. xline;
clay content - ±5%; snd - ±1%; Pyrite common

DEEP WELL STUDY

Well No. W— 0005
Depth 890 to 910
No. samples used 2
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P. 2.36
3. Wt. after solution, with filter paper	5.35 gm.		
4. Less wt. F. P. (2)	2.36 gm.		
5. Wt. Insol. Residue (3 minus 4)	2.99 gm.	6.0 %	
6. Wt. lost by solution (1 minus 5)	47.01 gm.	94.0 %	
7. To balance (5 plus 6)	50.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	gm.	100.0%	
2. Cylinder (+1/32)	gm.	%	
3. Jar (1/32—1/64)	gm.	%	
4. Drain	gm.	%	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm	1.17	39.6
½–¼ mm		
¼–⅛ mm		
⅛–1/16	1.78	60.4
Pan		
Total	2.95	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ¼ Pan mm.

Analyst Rowser
Date 12-22-34

Wt. of sample 1.82 gm. 100.0%

Heavy Minerals 1.04 gm. 2.2 %

Light Minerals 1.78 gm. 97.8 %

Shape Analysis:

A ....% : a ....% : C ....%

r ....% : R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Fluorite	2	0
Anhydrite	3	0
Barite	58	4
Zircon	1	0
Tourmaline	1	0
Garnet	2	0
Staurolite	1	0
Hornblende	1	0
Clay	361	22
Pyrite	652	40
Scale	531	33
Quartz	10	1
Dolomite	1	0
Sphalerite	2	0
Total	1625	100%

Light Concentrate		
Clay	899	94
Quartz	75	7
Feldspar	28	3
Total	1002	100%

Classification Grouping:

	Absol. %
Primary Minerals: 95.4 %	
Quartz (Heavy / Light)	6.9
Clay (Heavy / Light)	88.
Hornblende	0
staurolite	0
garnet	0
Tourmaline	0
zircon	0
Secondary Minerals: 4.6 %	
Feldspar	2.9
Fluorite	0
Anhydrite	0
barite	.1
Pyrite	.9
Scale	.7
dolomite	0
sphalerite	0
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Ls - 94%; lgt tan to gry; dolomitic -
shale - ±5%; Qtz & Feldspar - ±1%; —

DEEP WELL STUDY

Well No. W— 0005
Depth 920 to 940
No. samples used 2
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P. 2.30
3. Wt. after solution, with filter paper	4.60 gm.		
4. Less wt. F. P. (2)	2.30 gm.		
5. Wt. Insol. Residue (3 minus 4)	2.20 gm.	4.4 %	
6. Wt. lost by solution (1 minus 5)	47.80 gm.	95.6 %	
7. To balance (5 plus 6)	50.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.61	28.1
1–½ mm		
½–¼ mm		
¼–⅛ mm	1.56	71.9
⅛–1/16		
Pan		
Total	2.17	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Analyst D Fraschetti
Date 1-8-35

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ¼-⅛ mm.

Wt. of sample .77 gm. 100.0%

Heavy Minerals .03 gm. 3.9 %

Light Minerals .74 gm. 96.1 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
amphibole	27	2
tourmaline	3	0
zircon	2	0
barite	68	5
flourite	3	0
sphalerite	2	0
quartz	12	1
hornblende	7	1
rutile	4	0
anhydrite	1	0
muscovite	1	0
pyrite	1080	76
leucoxene	30	2
hematite	65	5
limonite	28	2
Scale	88	6
Total	1419	100%

Light Concentrate		
glauconite	1	0
quartz	70	3
feldspar	81	4
clay minerals	2100	93
Total	2252	100%

Classification Grouping:

Primary Minerals: 96.2 %	Absol. %
amphibole	.1
tourmaline	0
zircon	0
flourite	0
quartz	2.9
hornblende	0
rutile	0
muscovite	0
glauconite	0
feldspar	3.8
clay minerals	89.4

Secondary Minerals: 3.8 %	
barite	.2
sphalerite	0
anhydrite	0
pyrite	3.0
leucoxene	.1
hematite	.2
limonite	.1
Scale	.2
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

limestone 95%: white crystalline - shale 4%. trace of quartz and feldspar - quartz - sub-round

1 (over)

DEEP WELL STUDY

Well No. W— 0005
Depth 950 to 970
No. samples used 2
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P. 2.33
3. Wt. after solution, with filter paper	4.24 gm.		
4. Less wt. F. P. (2)	2.33 gm.		
5. Wt. Insol. Residue (3 minus 4)	1.91 gm.	3.8 %	
6. Wt. lost by solution (1 minus 5)	48.09 gm.	96.2 %	
7. To balance (5 plus 6)	50.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm		
¼–⅛ mm		
⅛–1/16		
Pan		
Total		100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst D. Frasché
Date 1—9—35

Wt. of sample 1.13 gm. 100.0%

Heavy Minerals .02 gm. 1.8 %

Light Minerals 1.11 gm. 98.2 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
amphibole	9	1
quartz	4	0
tourmaline	3	0
horn blend	17	1
Sphalerite	12	1
barite	11	1
feldspar	4	0
zircon	3	0
fluorite	4	0
dolomite	1	0
garnet	1	0
leucoxene	34	4
pyrite	700	74
hematite	93	9
limonite	77	8
scale	90	10
Total	950	100%

Light Concentrate		
feldspar	30	2
clay minerals	1900	98
Total	1930	100%

Classification Grouping:

Primary Minerals: 98.3 %	Absol. %
amphibole	0
quartz	0
tourmaline	0
hornblend	0
feldspar	1.9
zircon	0
fluorite	0
garnet	0
clay minerals	96.4

Secondary Minerals: 1.7 %	
Sphalerite	0
barite	0
dolomite	0
leucoxene	1/3
pyrite	1.3
hematite	.1
limonite	0
scale	.2
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Limestone 96% white to tan crystalline - shale 3% - greyish-brown - some subround feldspars - also some authigenic feldspars (?)

DEEP WELL STUDY

Well No. W— 0005
Depth 980 to 1000
No. samples used 2
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P. 2.35
3. Wt. after solution, with filter paper	5.48 gm.		
4. Less wt. F. P. (2)	2.35 gm.		
5. Wt. Insol. Residue (3 minus 4)	3.13 gm.	6.3 %	
6. Wt. lost by solution (1 minus 5)	46.87 gm.	93.7 %	
7. To balance (5 plus 6)	50.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.64	21.3
1–½ mm		
½–¼ mm		
¼–⅛ mm	2.36	78.7
⅛–1/16		
Pan		
Total	3.00	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst D. Frasche
Date 1-9-35

Wt. of sample 4.7 gm. 100.0%

Heavy Minerals .03 gm. 2.6 %

Light Minerals 1.14 gm. 97.4 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
barite	230	17.1
fluorite	14	1.
zircon	4	.3
hornblend	6	.4
sphalerite	6	.4
quartz	4	.3
tourmaline	4	.3
dolomite	2	.1
pyrite	800	59.5
leucoxene	12	.9
hematite	200	14.9
scale	64	4.8
Total	1346	100%

Light Concentrate		
feldspar	721	33
clay-minerals	1462	67
Total	2183	100%

Classification Grouping:

Primary Minerals: 97.5 %

	Absol. %
fluorite	0
zircon	0
hornblend	0
quartz	0
tourmaline	0
feldspar	32.2
Clay	65.3

Secondary Minerals: 2.5 %

barite	.4
sphalerite	0
dolomite	1.6
pyrite	0
leucoxene	.4
hematite	
scale	.1
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Limestone 93%. White crystalline dolomite
+ rubs—coal trace. Dark brown-gray shale 4%
—shale and feldspars—2%.

DEEP WELL STUDY

Well No. W-- 0005
Depth 1010 to 1030
No. samples used 2
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P. 2.35
3. Wt. after solution, with filter paper	3.45 gm.		
4. Less wt. F. P. (2)	2.35 gm.		
5. Wt. Insol. Residue (3 minus 4)	1.10 gm.	2.8 %	
6. Wt. lost by solution (1 minus 5)	38.90 gm.	97.2 %	
7. To balance (5 plus 6)	40.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	gm.	100.0%	
2. Cylinder (+1/32)	gm.	%	
3. Jar (1/32—1/64)	gm.	%	
4. Drain	gm.	%	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm		
¼–⅛ mm		
⅛–1/16		
Pan		
Total		100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ¼–Pan mm.

Analyst Rowser
Date 1-8-'35

Wt. of sample 1.59 gm. 100.0%

Heavy Minerals .103 gm. 5.1 %

Light Minerals 1.56 gm. 94.9 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Fluorite	1	0
barite	9	1
anhydrite	17	2
Muscovite	1	0
zircon	1	0
Tourmaline	1	0
sphalerite	4	0
glauconite	1	0
tremolite	2	0
pyrite	301	28
scale	699	64
clay	54	5
Total	1080	100%

Light Concentrate		
clay	1116	92
Quartz	86	7
Feldspar	8	1
Total	1210	100%

Classification Grouping:	Absol. %
Primary Minerals: 95.3 %	
Feldspar	.9
Quartz	6.6
Muscovite	0
zircon	0
Tourmaline	0
glauconite	0
clay (Heavy)	.4
(Light)	87.4
Tremolite	0
Secondary Minerals: 4.7 %	
Fluorite	0
barite	.1
anhydrite	.1
sphalerite	0
pyrite	1.4
scale	3.1
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Limestone 97% lt. cream to tan - dolomitic coarse x'line;
clay - ± 3% - Qtz & feldspar - a trace;

DEEP WELL STUDY

Well No. W— 0005
Depth 1040 to 1060
No. samples used 2
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P.	2.40
3. Wt. after solution, with filter paper	12.95 gm.			
4. Less wt. F. P. (2)	2.40 gm.			
5. Wt. Insol. Residue (3 minus 4)	10.55 gm.	21.0 %		
6. Wt. lost by solution (1 minus 5)	39.45 gm.	79.0 %		
7. To balance (5 plus 6)	50.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	1.91	18.3
1–½ mm	2.82	27.2
½–¼ mm	2.72	26.1
¼–⅛ mm	1.10	10.5
⅛–1/16	.75	7.2
Pan	1.12	10.7
Total	10.42	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Ronser
Date

Wt. of sample 1.88 gm. 100.0%

Heavy Minerals 10 gm. 5.3 %

Light Minerals 1.78 gm. 94.7 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Anhydrite	981	88
Fluorite	72	7
Hornblende	1	0
Scale	57	5
Total	1111	100%

Light Concentrate		
Anhydrite	913	73
Gypsum	156	12
Quartz	78	6
Clay	108	9
Total	1255	100%

Classification Grouping:

	Absol. %
Primary Minerals: 14.2 %	
Quartz	5.7
Clay	8.5
Hornblende	0
Secondary Minerals: 85.8 %	
Anhydrite, Heavy	4.6
Anhydrite, Light	69.1
Gypsum	11.4
Fluorite	.4
Scale	.3
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

LS—70%; lt cream; dolomitic; anhydrite ±20%, clay—±10%. Fluorite present

DEEP WELL STUDY

Well No. W-- 0005
Depth 1070 to 1090
No. samples used 2
Analyst T + G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P.	2.37
3. Wt. after solution, with filter paper	17.68 gm.			
4. Less wt. F. P. (2)	2.37 gm.			
5. Wt. Insol. Residue (3 minus 4)	15.31 gm.	30.6 %		
6. Wt. lost by solution (1 minus 5)	34.69 gm.	69.4 %		
7. To balance (5 plus 6)	50.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	15.31 gm.	100.0%	
2. Cylinder (+1/32) 15.40, 2.36, 11.04	11.04 gm.	72.1 %	
3. Jar (1/32—1/64) 2.87, 2.37	0.50 gm.	3.3 %	
4. Drain 5.50	3.77 gm.	24.6 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	3.32	30.0
1–½ mm	2.67	24.2
½–¼ mm	2.20	19.9
¼–⅛ mm	1.12	10.1
⅛–1/16	.66	6.1
Pan	1.07	9.7
Total	11.04	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ¼ - 1/32 mm.

Analyst Rowser
Date 12-17-34

Wt. of sample 2.72 gm. 100.0%

Heavy Minerals 1.00 gm. 36.8 %

Light Minerals 1.72 gm. 63.2 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Anhydrite	1261	98.4
Fluorite	18	1.4
scale gypsum	3	.2
Total	1282	100%

Classification Grouping: Absol. %

Primary Minerals: 27.9 %

clay - - - - - - - - - - 27.9
glauconite - - - - - - 0

Light Concentrate		
Anhydrite	416	46
clay	396	44
gypsum	87	10
glauconite	2	0
Total	901	100%

Secondary Minerals: 72.1 %

Anhydrite (Heavy + Light) - - - 36.2
gypsum - - - - - - - - - 29.1
Fluorite - - - - - - - - - 6.3
.5

Total 100%

Revised Lithologic Description (from descriptive log and laboratory data).

Ls-699- dolomitic; lt creamy xls at mod size;
gypsum & anhydrite common - about 3%.

DEEP WELL STUDY

Well No. W— 0005
Depth 1100 to 1120
No. samples used 2
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P.	2.30
3. Wt. after solution, with filter paper	5.00 gm.			
4. Less wt. F. P. (2)	2.30 gm.			
5. Wt. Insol. Residue (3 minus 4)	2.70 gm.	6.8 %		
6. Wt. lost by solution (1 minus 5)	37.30 gm.	93.2 %		
7. To balance (5 plus 6)	40.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm		
¼–⅛ mm		
⅛–1/16		
Pan		
Total		100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Analyst Gus Pyre
Date 12/17/34

Acet. Tetrabr. / ~~Bromoform~~ 2.93 Sp. gr. Size–Grade(s) Comp mm.

Wt. of sample 2.59 gm. 100.0%

Heavy Minerals .65 gm. 21.2 %

Light Minerals 2.04 gm. 78.8 %

Shape Analysis:
A ..... %: a ..... %: C ..... %
r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate

	No. of Grains	Rel. %
Anhydrite	1259	97.1
Fluorite	18	1.4
Quartz	9	.8
Pyrite	16	1.2
	1297	
Total		100%

Classification Grouping: Absol. %
Primary Minerals: 56.8 %
Clay minerals — 56.0
Quartz {Heavy — 0 / Light — .8

Light Concentrate

Clay minerals (dk. brown)	895	71
Gypsum	150	12
Anhydrite	200	16
Quartz	6	1
	1251	
Total		100%

Secondary Minerals: 43.2 %

Anhydrite	Heavy	20.6
	Light	12.6
Gypsum		9.4
Fluorite		.3
Pyrite		.3
Total		100%

Revised Lithologic Description (from descriptive log and laboratory data).

Limestone - dolomitic: lt. cream; xline; ± 9% gypsum + anhydrite; ± 2% dk. brown clay minerals; Fluorite present in appreciable amount;

DEEP WELL STUDY

Well No. W— 0005
Depth 1130 to 1150
No. samples used 2
Analyst T + G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P. 2.38
3. Wt. after solution, with filter paper	11.26 gm.		
4. Less wt. F. P. (2)	2.38 gm.		
5. Wt. Insol. Residue (3 minus 4)	8.88 gm.	22.2 %	
6. Wt. lost by solution (1 minus 5)	31.12 gm.	77.8 %	
7. To balance (5 plus 6)	40.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	gm.	100.0%	
2. Cylinder (+1/32)	gm.	%	
3. Jar (1/32—1/64)	gm.	%	
4. Drain	gm.	%	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.55	6.3
1–½ mm	1.33	15.2
½–¼ mm	1.57	18.0
¼–⅛ mm	3.01	34.3
⅛–1/16	1.32	15.1
Pan	.97	11.1
Total	8.75	100.0

S.G.D. not valid

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Rowser
Date

Wt. of sample 2.26 gm. 100.0%

Heavy Minerals 105 gm. 2.2 %

Light Minerals 2.21 gm. 97.8 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Anhydrite	615	55
Pyrite	471	42
scale	30	3
* Fluorite	7	0
Tourmaline (green)	2	0
Zircon	2	0
Total	1127	100%

Classification Grouping: Primary Minerals: .5 %

Absol. %	
glauconite	.5
Tourmaline	0
Zircon	0

Light Concentrate

Chert	55 %
Gypsum	35
Anhydrite	9.5
Glauconite	.5
(* Percentages estimated)	
Total	100%

Secondary Minerals: 99.5 %

anhydrite (very light)	1.2
anhydrite (light)	9.3
gypsum	34.2
chert	53.8
Fluorite	0
pyrite	.9
scale	.1
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolo – 78%; tan; finely xline;
gypsum 20-30%; chert; 15-40-60%; anhydrite
abundant

DEEP WELL STUDY

Well No. W— 0005

Depth 1150 to 1170

No. samples used 2

Analyst T & G

Date 8-7-34.

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P.	2.38
3. Wt. after solution, with filter paper	8.57 gm.			
4. Less wt. F. P. (2)	2.38 gm.			
5. Wt. Insol. Residue (3 minus 4)	6.19 gm.	15.3 %		
6. Wt. lost by solution (1 minus 5)	33.81 gm.	84.7 %		
7. To balance (5 plus 6)	40.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.19	3.2
1–½ mm	2.13	35.7
½–¼ mm	1.65	27.6
¼–⅛ mm	.90	15.1
⅛–1/16	.58	9.7
Pan	.52	8.7
Total	5.97	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Rowser

Date 12-26-34

Wt. of sample 1.98 gm. 100.0%

Heavy Minerals 1.04 gm. 2.0 %

Light Minerals 1.94 gm. 98.0 %

Shape Analysis:

A ....% : a ....% : C ....%

r ....% : R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
*Fluorite	40	2.7
Sphalerite	1	.1
Anhydrite	627	42.3
Tourmaline	2	.1
Celestite	12	.8
dolomite	1	.1
Pyrite	687	46.4
Scale	34	2.3
anatase	1	.1
zircon	2	.1
garnet	1	.1
clay	72	4.9
Total	1480	100%

Light Concentrate			
gypsum	461	44	
anhydrite	22	2	
Quartz	18	2	
clay	538	52	
Total	1039	100%	

Classification Grouping: Primary Minerals: 53.1 %	Absol. %
Tourmaline	0
Zircon	0
garnet	0
clay (heavy)	.1
clay (light)	51.1
Quartz	1.9

Secondary Minerals: 46.9 %	
Fluorite	.6
Sphalerite	.1
Anhydrite (slight) (heavy)	.7 .1
Celestite	0
dolomite	0
scale	0
anatase	0
gypsum	43.2
Pyrite	.9
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Limestone – 85-90; dolomitic – cream to gray;

anhydrite + gypsum – ±10-20; clay – 5-10.

DEEP WELL STUDY

Well No. W— 0005
Depth 1180 to 1200
No. samples used 2
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P. 2.34
3. Wt. after solution, with filter paper	8.03 gm.		
4. Less wt. F. P. (2)	2.34 gm.		
5. Wt. Insol. Residue (3 minus 4)	5.69 gm.	11.4 %	
6. Wt. lost by solution (1 minus 5)	44.31 gm.	88.6 %	
7. To balance (5 plus 6)	50.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	5.69 gm.	100.0%	
2. Cylinder (+1/32) 6.50 − 2.40 = 3.60	3.60 gm.	63.3 %	
3. Jar (1/32—1/64) 3.76 − 3.28 = 0.48	0.48 gm.	8.4 %	
4. Drain	1.61 gm.	28.3 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½+¼ mm	.28	7.7
¼–⅛ mm		
⅛–1/16	3.36	92.3
Pan		
Total	3.64	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) 14–132 mm.

Analyst Rouser
Date 12-11-34

Wt. of sample 3.36 gm. 100.0%

Heavy Minerals .04 gm. 1.2 %

Light Minerals 3.32 gm. 98.8 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Pyrite	1034	80
clay	176	14
Tremolite	1	0
Hornblende	2	0
Zircon	4	0
Scale	76	6
Total	1293	100%

Light Concentrate		
clay	1075	93.1
Quartz	51	4.4
⊕ Feldspar	28	2.4
Muscovite	1	.1
Total	1155	100%

Classification Grouping:

	Absol. %
Primary Minerals: 96.7 %	
clay {Heavy / Light}	.2 / 92.1
Quartz	4.3
Muscovite	.1
Tremolite	0
Hornblende	0
Zircon	0

Secondary Minerals: 3.3 %

Feldspar	2.3
Pyrite	.9
scale	.1
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite – lgt. cream; 87%; insoluble residue – 11% – chiefly clay – a little s/t. (102-90)

DEEP WELL STUDY

Well No. W-- 0005
Depth 1210 to 1230
No. samples used 2
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P. 2.33
3. Wt. after solution, with filter paper	6.22 gm.		
4. Less wt. F. P. (2)	2.33 gm.		
5. Wt. Insol. Residue (3 minus 4)	3.89 gm.	7.8 %	
6. Wt. lost by solution (1 minus 5)	46.11 gm.	92.2 %	
7. To balance (5 plus 6)	50.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	3.89 gm.	100.0%	
2. Cylinder (+1/32) 4.94 2.25 2.69	2.69 gm.	69.2 %	
3. Jar (1/32—1/64) 2.52 2.29 0.23	0.23 gm.	5.9 %	
4. Drain	.97 gm.	24.9 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm		
¼–⅛ mm		
⅛–1/16		
Pan		
Total		100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / ~~Bromoform~~ ± 2.93 Sp. gr. Size–Grade(s) Comp. mm.

Analyst Rowser
Date 12-27-34

Wt. of sample 2.61 gm. 100.0%

Heavy Minerals .17 gm. 6.5%

Light Minerals 2.44 gm. 93.5%

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate

	No. of Grains	Rel. %
Pyrite	962	59
Sphalerite	2	0
barite	21	1
Fluorite	1	0
Tourmaline	1	0
garnet	1	0
scale	289	18
Clay	356	22
Total	1633	100%

Light Concentrate clay ±100%
Quartz trace

Classification Grouping:

Primary Minerals: 94.9 %

	Absol. %
Clay	1.4
Tourmaline	0
garnet	0
clay	93.5
Quartz	0

Secondary Minerals: 5.1 %

Pyrite	3.8
Sphalerite	0
barite	.1
Fluorite	0
scale	1.2

Total 100% Total 100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite — 90% — lt cream — dense — fine xline —
clay — 8% — Pyrite abundant — ±1%

DEEP WELL STUDY

Well No. W— 0005

Depth 1240 to 1250

No. samples used 1

Analyst T & G

Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	35 gm.	100.0%	2. Wt. of F. P. 2.35
3. Wt. after solution, with filter paper	5.35 gm.		
4. Less wt. F. P. (2)	2.35 gm.		
5. Wt. Insol. Residue (3 minus 4)	3.00 gm.	8.6 %	
6. Wt. lost by solution (1 minus 5)	32.00 gm.	91.4 %	
7. To balance (5 plus 6)	35.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	gm.	100.0%	
2. Cylinder (+1/32) 6.80, 2.31, 4.49	4.49 gm.	%	
3. Jar (1/32—1/64) 2.46, 2.39	0.07 gm.	%	
4. Drain .07	gm.	%	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm		
¼–⅛ mm		
⅛–1/16		
Pan		
Total		100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ..... mm.

Analyst .....

Date .....

Wt. of sample . . . . gm. 100.0% Shape Analysis:

Heavy Minerals . . . . gm. % A ..... %: a ..... %: C ..... %

Light Minerals . . . . gm. % r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Total		100%

Classification Grouping: Absol. %

Primary Minerals: ..... %

Secondary Minerals: ..... %

Light Concentrate

Total . . . . . 100% Total 100%

Revised Lithologic Description (from descriptive log and laboratory data).

DEEP WELL STUDY

Well No. W— 0005
Depth 1250 to 1260
No. samples used 1.
Analyst T & G.
Date 8-7-34.

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P.	2.36
3. Wt. after solution, with filter paper	6.00 gm.			
4. Less wt. F. P. (2)	2.36 gm.			
5. Wt. Insol. Residue (3 minus 4)	3.64 gm.	9.1 %		
6. Wt. lost by solution (1 minus 5)	36.36 gm.	90.9 %		
7. To balance (5 plus 6)	40.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	3.64 gm.	100.0%	
2. Cylinder (+1/32) 4.78 2.34 2.44	2.44 gm.	67.0 %	
3. Jar (1/32—1/64) 2.57 2.36	0.21 gm.	5.8 %	
4. Drain 0.21	0.99 gm.	27.2 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm		
¼–⅛ mm		
⅛–1/16		
Pan		
Total		100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / ~~Bromoform~~ ..... Sp. gr. Size–Grade(s) Comp. mm.

Analyst .....
Date .....

Wt. of sample 2.37 gm. 100.0%

Heavy Minerals 17 gm. 7.2 %

Light Minerals 2.20 gm. 92.8 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
sphalerite	2	0
barite	16	1
Fluorite	1	0
garnet	1	0
Tourmaline (brown)	2	0
zircon (unzoned)	3	0
amphibole	4	0
Pyrite	48	33
Limonite	136	9
Scale	5-92	35
Clay	378	22
Total	1476	100%

Light Concentrate

Clay	100%
Total	100%

Classification Grouping:

Primary Minerals: 94.4 %	Absol. %
garnet	0
Tourmaline	0
zircon	0
amphibole	1.6
clay {Heavy / Light}	92.8

Secondary Minerals: 5.6 %	
sphalerite	0
barite	0
Fluorite	2.4
Pyrite	.7
Limonite	2.5
Scale	
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite - 90%; gray - fine xline;
shale - 9%; Pyrite abundant.

DEEP WELL STUDY

Well No. W— 0005 .....
Depth 1260 to 1280
No. samples used 2.
Analyst T & G.
Date 8-7-34.

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1.	Sample weight	40 gm.	100.0%	2. Wt. of F. P. 2.43
3.	Wt. after solution, with filter paper	34.68 gm.		
4.	Less wt. F. P. (2)	2.43 gm.		
5.	Wt. Insol. Residue (3 minus 4)	32.25 gm.	80.6 %	
6.	Wt. lost by solution (1 minus 5)	7.75 gm.	19.4 %	
7.	To balance (5 plus 6)	40.00 gm.	100.0 %	

B. Subsidation:

1.	Original Wt.	32.25 gm.	100.0%	
2.	Cylinder (+1/32) 6.14, 2.38, 3.84	3.84 gm.	11.9 %	
3.	Jar (1/32—1/64) 3.39, 2.30	1.09 gm.	3.4 %	
4.	Drain 1.09.	27.32 gm.	84.7 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm	.22	5.7
¼–⅛ mm		
⅛–1/16	3.65	94.3
Pan		
Total	3.87	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) 1/4 - 1/32 mm.

Analyst Powser
Date 12-27-34

Wt. of sample . . . . 2.16 gm. 100.0%

Heavy Minerals . . . . 1.03 gm. 1.4 %

Light Minerals . . . . 2.13 gm. 98.6 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified: Heavy Concentrate	No. of Grains	Rel. %
Pyrite	631	36.6
Limonite	407	23.2
Scale	236	13.4
clay	480	27.4
Tourmaline	1	0
Zircon	1	0
Total	1756	100%

Classification Grouping:

	Absol. %
Primary Minerals: 99.0 %	
Clay (Light)	98.6
Tourmaline	0
Zircon	0
Quartz	0

Light Concentrate
clay ---- ±100%
Quartz ---- a trace

Secondary Minerals: 1.6 %

Pyrite	.5
Scale	.2
Limonite	.3
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Shale - green to brown, laminated, calcareous - 99% soluble -

DEEP WELL STUDY

Well No. W— 0.005
Depth 1290 to 1300
No. samples used 1.
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	30 gm.	100.0%	2. Wt. of F. P.	2.40
3. Wt. after solution, with filter paper	24.79 gm.			
4. Less wt. F. P. (2)	2.40 gm.			
5. Wt. Insol. Residue (3 minus 4)	22.30 gm.	74.4 %		
6. Wt. lost by solution (1 minus 5)	7.70 gm.	25.6 %		
7. To balance (5 plus 6)	30.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	22.30 gm.	100.0%	
2. Cylinder (+1/32) 4.53 / 2.32 / 2.21	2.21 gm.	9.8 %	
3. Jar (1/32—1/64) 5.26 / 2.31 / 2.95	2.95 gm.	13.2 %	
4. Drain	17.14 gm.	77.0 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm		
¼–⅛ mm		
⅛–1/16		
Pan		
Total		100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) Comp mm.

Analyst Rowser
Date

Wt. of sample 2.02 gm. 100.0%

Heavy Minerals 1.16 gm. 7.9 %

Light Minerals 1.86 gm. 92.1 %

Shape Analysis:
A ....%: a ....%: C ....%
r ....%: R ....%.

Minerals Identified; Heavy Concentrate

	No. of Grains	Rel. %
Limonite	688	52.3
Pyrite	123	9.4
Scale	346	25.9
Zirconcroned	4	.3
Tourmaline	2	.2
clay	157	11.9
Total	1.314	100%

Classification Grouping:

Primary Minerals: ....%

	Absol. %
clay	.9
zircon	0
Tourmaline	0

Light Concentrate

lgt. sample lost

Secondary Minerals: ....%

Limonite	4.1
Pyrite	.7
Scale	2.1

Total 100%

Total 100%

Revised Lithologic Description (from descriptive log and laboratory data).

DEEP WELL STUDY

Well No. W— 0005
Depth 1300 to 1320
No. samples used 2
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	30 gm.	100.0%	2. Wt. of F. P.	2.37
3. Wt. after solution, with filter paper	24.11 gm.			
4. Less wt. F. P. (2)	2.37 gm.			
5. Wt. Insol. Residue (3 minus 4)	21.74 gm.	72.4 %		
6. Wt. lost by solution (1 minus 5)	8.26 gm.	27.6 %		
7. To balance (5 plus 6)	30.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	6.66	30.7
1–½ mm	8.12	37.5
½–¼ mm	5.12	23.6
¼–⅛ mm	1.24	5.7
⅛–1/16	.32	1.5
Pan	.22	1.0
Total	21.68	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Rowser
Date 12-27-34

Wt. of sample 1.70 gm. 100.0%

Heavy Minerals 20 gm. 11.7 %

Light Minerals 1.50 gm. 88.3 %

Shape Analysis:

A. ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Scale	982	88
Pyrite	122	11
Quartz	12	1
Tourmaline	1	0
Total	1117	100%

Classification Grouping:

	Absol. %
Primary Minerals: 69.8 %	
Heavy	.1
Quartz Light	48.5
Tourmaline	0
Feldspar	0
Clay	21.2

Light Concentrate		
Quartz	586	55
Chert	221	21
Clay	261	24
Feldspar	4	0
Total	1072	100%

Secondary Minerals: 30.2 %

Chert	18.6
Pyrite	1.3
Scale	10.3
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Chert - ±70% - grey to nearly white - dense - LS - 28%; Quartz - ±2% - in well rounded sand - showing 2 ndary enlarg.

DEEP WELL STUDY

Well No. W— 0005
Depth 1330 to 1340
No. samples used 1
Analyst T + G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	30 gm.	100.0%	2. Wt. of F. P.	2.42
3. Wt. after solution, with filter paper	24.91 gm.			
4. Less wt. F. P. (2)	2.42 gm.			
5. Wt. Insol. Residue (3 minus 4)	22.49 gm.	75.0 %		
6. Wt. lost by solution (1 minus 5)	7.51 gm.	25.0 %		
7. To balance (5 plus 6)	30.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	9.25	41.3
1–½ mm	8.17	36.5
½–¼ mm	3.88	17.4
¼–⅛ mm	.78	3.5
⅛–1/16	.19	.9
Pan	.09	.4
Total	22.36	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Analyst Rowser
Date 12-27-34

Acet. Tetrabr. / Bromoform } Sp. gr. Size-Grade(s) ¼-Pan mm.

Wt. of sample 1.10 gm. 100.0%

Heavy Minerals 13 gm. 11.8 %

Light Minerals 97 gm. 88.2 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Scale	981	87
Pyrite	150	13
garnet	1	0
tourmaline	1	0
zircon	1	0
Total	1134	100%

Classification Grouping:

	Absol. %
Primary Minerals: 2.7 %	
garnet	0
tourmaline	0
zircon	0
Quartz	2.7

Light Concentrate		
chert	862	97
Quartz	26	3
Total	888	100%

Secondary Minerals: 97.3 %

chert	85.5
Scale	10.3
Pyrite	1.5
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

chert- 75% - white - dense - some b/k inclusions.
Ls - 25 %.

DEEP WELL STUDY

Well No. W— 0005
Depth 1340 to 1360
No. samples used 2
Analyst T + G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	30 gm.	100.0%	2. Wt. of F. P. 2.40
3. Wt. after solution, with filter paper	25.40 gm.		
4. Less wt. F. P. (2)	2.40 gm.		
5. Wt. Insol. Residue (3 minus 4)	23.00 gm.	76.6 %	
6. Wt. lost by solution (1 minus 5)	7.00 gm.	23.4 %	
7. To balance (5 plus 6)	30.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	9.60	42.3
1–½ mm	8.02	35.1
½–¼ mm	4.29	18.7
¼–⅛ mm	.65	2.8
⅛–1/16	.17	.7
Pan	.10	.4
Total	22.83	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ¼–Pan mm.

Analyst Rowsey
Date 12-28-34

Wt. of sample . . . . .94 gm. 100.0%

Heavy Minerals . . . . .11 gm. 11.7 %

Light Minerals . . . . .83 gm. 88.3 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
casing scale	98	75
Limonite	16	15
Pyrite	1	0
Tourmaline	1	0
barite	1	0
Total	117	100%

Classification Grouping:

Primary Minerals: 1.8 %

Absol. %	
Quartz	0
Feldspar	.9
Tourmaline	.9

Light Concentrate			
Chert	1103	98	
Quartz	15	1	
Feldspar	8	1	
Total	1126	100%	

Secondary Minerals: 98.2 %

Total	
barite	0
Chert	86.5
scale	10.0
limonite	1.7
pyrite	0
	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Chert - 77% - wh. to gray; some blk. inclusions
do/o - 23%.

DEEP WELL STUDY

Well No. W— 0005
Depth 1360 to 1370
No. samples used 1
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight . . . . . 30 gm. 100.0%: 2. Wt. of F. P. 2.32
3. Wt. after solution, with filter paper . . . . . 26.25 gm.
4. Less wt. F. P. (2) . . . 2.32 gm.
5. Wt. Insol. Residue (3 minus 4) . . . . . 23.93 gm. 79.7 %
6. Wt. lost by solution (1 minus 5) . . . . . 6.07 gm. 20.3 %
7. To balance (5 plus 6) . . 30.00 gm. 100.0 %

B. Subsidation:

1. Original Wt. . . . . gm. 100.0%
2. Cylinder (+1/32) gm. %
3. Jar (1/32—1/64) gm. %
4. Drain . . . . . gm. %

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	11.47	48.5
1–½ mm	8.32	35.2
½–¼ mm	3.19	13.5
¼–⅛ mm	.45	1.9
⅛–1/16	.13	.6
Pan	.06	.3
Total	23.62	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ..... mm.

Analyst .....
Date .....

Wt. of sample . . . . gm. 100.0% Shape Analysis:

Heavy Minerals . . . . gm. % A ..... %: a ..... %: C ..... %

Light Minerals . . . . gm. % r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %	Classification Grouping: Primary Minerals: ..... %	Absol. %
Total		100%		
Light Concentrate			Secondary Minerals: ..... %	
Total		100%	Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

DEEP WELL STUDY

Well No. W— 0005
Depth 1380 to 1400
No. samples used 2
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P.	2.35
3. Wt. after solution, with filter paper	22.57 gm.			
4. Less wt. F. P. (2)	2.35 gm.			
5. Wt. Insol. Residue (3 minus 4)	20.22 gm.	50.6 %		
6. Wt. lost by solution (1 minus 5)	19.78 gm.	49.4 %		
7. To balance (5 plus 6)	40.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	2.06	35.0
1–½ mm	5.66	29.1
½–¼ mm	4.04	20.0
¼–⅛ mm	1.40	6.6
⅛–1/16	1.08	5.4
Pan	.80	3.9
Total	20.04	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Analyst
Date

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ¼-Pan mm.

Wt. of sample . . . . 1.86 gm. 100.0%

Heavy Minerals . . . . .028 gm. 1.5 %

Light Minerals . . . . 1.832 gm. 98.5 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Casing scale	1260	92
Limonite	81	6
Magnetite	10	1
Pyrite	2	0
garnet	2	0
Zircon(zoned)	3	0
Tourmaline(brown)	1	0
dolomite	3	0
Horn blende	1	0
barite		
Total	1375	100%

Light Concentrate		
Clay	1500	99
Quartz	10	1
Total	1510	100%

Classification Grouping:

Primary Minerals: 98.5 %	Absol. %
Clay	97.6
Quartz	.9
Magnetite	0
garnet	0
Zircon	0
Tourmaline	0
Horn blende	0

Secondary Minerals: 1.5 %	
Scale	1.4
Limonite	.1
Pyrite	0
barite	0
Dolomite	0
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Shale- very calcareous — 49.4% soluble- grays; very small amt of detrital Qtz.

DEEP WELL STUDY

Well No. W— 0005
Depth 1400 to 1410
No. samples used 1
Analyst T + G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	25 gm.	100.0%	2. Wt. of F. P.	2.35
3. Wt. after solution, with filter paper	18.07 gm.			
4. Less wt. F. P. (2)	2.35 gm.			
5. Wt. Insol. Residue (3 minus 4)	15.72 gm.	63.0 %		
6. Wt. lost by solution (1 minus 5)	9.28 gm.	37.0 %		
7. To balance (5 plus 6)	25.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	5.40	34.7
1–½ mm	5.56	35.9
½–¼ mm	3.21	20.6
¼–⅛ mm	.74	4.8
⅛–1/16	.37	2.4
Pan	.25	1.6
Total	15.53	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Rousey
Date 12-28-34

Wt. of sample 1.41 gm. 100.0%
Heavy Minerals 11 gm. 7.8 %
Light Minerals 1.30 gm. 92.2 %

Shape Analysis:
A ..... %: a ..... %: C ..... %
r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate — No. of Grains — Rel. %

scale - 10070
Cone grain of tourmaline & 3 grains Pyrite noted.)

Total 100%

Light Concentrate
clay 619 - 56
Chert 490 - 44
Quartz 5 - 0

Total 1114 100%

Classification Grouping: Absol. %
Primary Minerals: 51.6 %
clay - - - - 51.6
Quartz - - - - 0

Secondary Minerals: 48.4 %
scale - - - - 7.8
Chert - - - - 40.6

Total 100%

Revised Lithologic Description (from descriptive log and laboratory data).

Shale 41% gy, grnsh tan;
Chert - 18% wh. to gry;
dolo - 37%, fine xline - buff,

DEEP WELL STUDY

Well No. W— 0005
Depth 1410 to 1420
No. samples used 1
Analyst T + G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	30 gm.	100.0%	2. Wt. of F. P.	2.42
3. Wt. after solution, with filter paper	22.58 gm.			
4. Less wt. F. P. (2)	2.42 gm.			
5. Wt. Insol. Residue (3 minus 4)	20.18 gm.	67.4 %		
6. Wt. lost by solution (1 minus 5)	9.82 gm.	32.6 %		
7. To balance (5 plus 6)	30.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	9.20	45.6
1–½ mm	6.87	34.2
½–¼ mm	2.90	14.4
¼–⅛ mm	.61	3.0
⅛–1/16	.30	1.5
Pan	.26	1.3
Total	20.14	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst .....
Date .....

Wt. of sample . . . . 1.42 gm. 100.0% Shape Analysis:

Heavy Minerals . . . . 1.11 gm. % A ..... %: a ..... %: C ..... %

Light Minerals . . . . gm. % r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Total		100%

Classification Grouping: Absol. %
Primary Minerals: ..... %

Light Concentrate

Secondary Minerals: ..... %

Total . . . . . 100% Total 100%

Revised Lithologic Description (from descriptive log and laboratory data).

DEEP WELL STUDY

Well No. W— 0005
Depth 1420 to 1440
No. samples used 2
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	35 gm.	100.0%	2. Wt. of F. P.	2.40
3. Wt. after solution, with filter paper	17.61 gm.			
4. Less wt. F. P. (2)	2.40 gm.			
5. Wt. Insol. Residue (3 minus 4)	15.21 gm.	43.5 %		
6. Wt. lost by solution (1 minus 5)	19.79 gm.	56.5 %		
7. To balance (5 plus 6)	35.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	15.21 gm.	100.0%	
2. Cylinder (+1/32) 6.65, 1.96, 4.69	4.69 gm.	30.8 %	
3. Jar (1/32—1/64) 5.48, 2.34	3.14 gm.	20.7 %	
4. Drain 3.14	7.38 gm.	48.5 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm	2.18	47.0
½–¼ mm		
¼–⅛ mm		
⅛–1/16	2.46	53.0
Pan		
Total	4.64	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ¼-1/32 mm.

Analyst Rowser
Date 12-28-34

Wt. of sample 2.54 gm. 100.0%

Heavy Minerals .05 gm. 2.0 %

Light Minerals 2.49 gm. 98.0 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Barite	22	2
anhydrite	2	0
Fluorite	1	0
Pyrite	888	66
Zircon (zoned)	1	0
Tourmaline	1	0
clay	75-0	11
scale	27 3-	21
Total	1340	100%

Light Concentrate		
clay	981	93
Quartz	66	6
Feldspar	9	1
Total	1056	100%

Classification Grouping:

Primary Minerals: 98.3 %

	Absol. %
Clay (Light)	91.3
Quartz	6.9
Feldspar	.9
zircon	0
tourmaline	0

Secondary Minerals: 1.7 %

Pyrite	1.3
Scale	.4
anhydrite	0
fluorite	0
barite	0
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

dolo — 57% — gry to buff, fine xline

Sh — & Sls — 43%, gry.

DEEP WELL STUDY

Well No. W— 0005
Depth 1450 to 1470
No. samples used 2
Analyst T + G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P. 2.29
3. Wt. after solution, with filter paper	8.26 gm.		
4. Less wt. F. P. (2)	2.29 gm.		
5. Wt. Insol. Residue (3 minus 4)	5.97 gm.	14.9 %	
6. Wt. lost by solution (1 minus 5)	34.03 gm.	85.1 %	
7. To balance (5 plus 6)	40.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	5.97 gm.	100.0%	
2. Cylinder (+1/32) 6.58 − 2.37 = 4.21	4.21 gm.	70.4 %	
3. Jar (1/32—1/64) 3.00 − 2.38 = 0.62	0.62 gm.	10.4 %	
4. Drain	1.14 gm.	19.2 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	1.90	45.5
1–½ mm		
½–¼ mm		
¼–⅛ mm	2.28	54.5
⅛–1/16		
Pan		
Total	4.18	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size-Grade(s) ..... mm.

Analyst .....
Date .....

Wt. of sample . . . . gm. 100.0%

Heavy Minerals . . . . gm. %

Light Minerals . . . . gm. %

Shape Analysis:
A ..... %: a ..... %: C ..... %
r ..... %: R ..... %.

Minerals Identified: Heavy Concentrate	No. of Grains	Rel. %
Total		100%

Classification Grouping:
Primary Minerals: ..... %
Secondary Minerals: ..... %

Absol. %
100%

Light Concentrate

Total 100% **Total** 100%

Revised Lithologic Description (from descriptive log and laboratory data).

DEEP WELL STUDY

Well No. W— 6005
Depth 1470 to 1480
No. samples used 1.
Analyst T & G
Date 8-7-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight . . . . . 25 gm. 100.0% : 2. Wt. of F. P. 2.40
3. Wt. after solution, with filter paper . . . . . 17.71 gm.
4. Less wt. F. P. (2) . . . 2.40 gm.
5. Wt. Insol. Residue (3 minus 4) . . . . . 15.31 gm. 61.4 %
6. Wt. lost by solution (1 minus 5) . . . . . 9.69 gm. 38.6 %
7. To balance (5 plus 6) . . 25.00 gm. 100.0 %

B. Subsidation:

1. Original Wt. . . . . gm. 100.0%
2. Cylinder (+1/32) gm. %
3. Jar (1/32—1/64) gm. %
4. Drain . . . . . gm. %

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	5.64	37.0
1–½ mm	5.78	37.9
½–¼ mm	2.68	17.7
¼–⅛ mm	.72	4.7
⅛–1/16	.24	1.6
Pan	1 6	1.1
Total	15.22	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ..... mm.

Analyst .....
Date .....

Wt. of sample . . . . gm. 100.0% Shape Analysis:

Heavy Minerals . . . . gm. % A ..... %: a ..... %: C ..... %

Light Minerals . . . . gm. % r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %	Classification Grouping: Primary Minerals: ..... %	Absol. %
Total		100%		
Light Concentrate			Secondary Minerals: ..... %	
Total		100%	Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

DEEP WELL STUDY

Well No. W— 0005
Depth 1480 to 1500
No. samples used 2
Analyst T & G
Date 8-8-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P. 2.34
3. Wt. after solution, with filter paper	20.96 gm.		
4. Less wt. F. P. (2)	2.34 gm.		
5. Wt. Insol. Residue (3 minus 4)	18.62 gm.	46.6 %	
6. Wt. lost by solution (1 minus 5)	21.38 gm.	53.4 %	
7. To balance (5 plus 6)	40.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	6.25	34.0
1–½ mm	7.12	38.8
½–¼ mm	3.54	19.3
¼–⅛ mm	.84	4.6
⅛–1/16	.36	2.0
Pan	.25	1.3
Total	18.36	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Rowser
Date 12-28-34

Wt. of sample 152 gm. 100.0%

Heavy Minerals 16 gm. 10.5 %

Light Minerals 1.36 gm. 89.5 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate

	No. of Grains	Rel. %
Pyrite	762	59
Scale	524	41
Tourmaline	1	0
Hornblende	1	0
Total	1290	100%

Classification Grouping: Absol. %

Primary Minerals: 36.7 %

Tourmaline	0
Hornblende	0
Clay	32.2
Quartz	4.5

Light Concentrate

Clay	381	36
Chert	632	59
Quartz	56	5
Total	1069	100%

Secondary Minerals: 63.3 %

Pyrite	6.2
Chert	52.8
Scale	4.3
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

dolomite—5-30%, cream to lt grey, argill;
chert—±30%, whi; dense;
clay—±20%

DEEP WELL STUDY

Well No. W— 0005
Depth 1510 to 1530
No. samples used 2
Analyst J & G
Date 8-8-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P.	2.38
3. Wt. after solution, with filter paper	40.46 gm.			
4. Less wt. F. P. (2)	2.38 gm.			
5. Wt. Insol. Residue (3 minus 4)	38.08 gm.	76.3 %		
6. Wt. lost by solution (1 minus 5)	11.92 gm.	23.7 %		
7. To balance (5 plus 6)	50.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	13.83	36.5
1–½ mm	13.86	36.6
½–¼ mm	7.60	20.0
¼–⅛ mm	1.73	4.6
⅛–1/16	.55	1.5
Pan	.29	.8
Total	37.86	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Analyst
Date

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ¼-Pan mm.

Wt. of sample 2.61 gm. 100.0%

Heavy Minerals .03 gm. %

Light Minerals gm. %

Shape Analysis:

A %: a %: C %

r %: R %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Total		100%
Light Concentrate		
Total		100%

Classification Grouping:
Primary Minerals: %
Secondary Minerals: %

Absol. %
100%

Revised Lithologic Description (from descriptive log and laboratory data).

DEEP WELL STUDY

Well No. W— 0005
Depth 1540 to 1560
No. samples used 2
Analyst T & G
Date 8-8-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P.	2.33
3. Wt. after solution, with filter paper	32.47 gm.			
4. Less wt. F. P. (2)	2.33 gm.			
5. Wt. Insol. Residue (3 minus 4)	30.14 gm.	75.3 %		
6. Wt. lost by solution (1 minus 5)	9.86 gm.	24.7 %		
7. To balance (5 plus 6)	40.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	9.59	31.9
1–½ mm	11.27	37.5
½–¼ mm	6.86	22.8
¼–⅛ mm	1.59	5.3
⅛–1/16	.47	1.6
Pan	.26	.9
Total	30.04	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } ± 2.93 Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Pyre
Date 12/28/37

Wt. of sample . . . . 233 gm. 100.0%

Heavy Minerals . . . . .03 gm. 1.3 %

Light Minerals . . . . 1.30 gm. 98.7 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Zircon {unzoned / zoned}	8 / 7	1 / 1
Tourmaline {Green / Brown}	3 / 2	0 / 0
Tremolite	5	.5
Hornblende Green	5	.5
Epidote	2	0
Fluorite	1	0
Garnet	1	0
Chert	20	2
Pyrite	908	81
Casing Scale	162	14
Leucoxene	3	0
Ferro-dolomite	1	0
Total	1128	100%

Light Concentrate		
Chert	850	90
Quartz	35	4
Clay Minerals	30	3
Feldspar	25	3
Tremolite	4	0
Muscovite	1	0
Total	945	100%

Classification Grouping:	Absol. %
Primary Minerals: 9.7 %	
Zircon {unzoned / zoned}	0 / 0
Tourmaline {Green / Brown}	0 / 0
Tremolite {Heavy / Light}	0
Hornblende	0
Epidote	0
Garnet	3.9
Quartz	2.9
Feldspar	2.9
Clay minerals	
Muscovite	0
Secondary Minerals: 90.3 %	
Pyrite	1.1
Chert {Heavy / Light}	0 / 89.0
Fluorite	0
Scale	.2
Leucoxene	0
Ferro-dolomite	0
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Chert - greenish, filled with inclusions of clay & carbonaceous matter; 25% dolomite; < 1% pyrite in small x-tals; ± 1% detrital quartz in small grains; ± 1% clay minerals; < 1% feldspar in minute xtals;

DEEP WELL STUDY

Well No. W— 0005
Depth 1570 to 1590
No. samples used 2
Analyst T & G
Date 8-8-34.

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P. 2.35
3. Wt. after solution, with filter paper	8.89 gm.		
4. Less wt. F. P. (2)	2.35 gm.		
5. Wt. Insol. Residue (3 minus 4)	6.54 gm.	13.0 %	
6. Wt. lost by solution (1 minus 5)	43.46 gm.	87.0 %	
7. To balance (5 plus 6)	50.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	gm.	100.0%	
2. Cylinder (+1/32)	gm.	%	
3. Jar (1/32—1/64)	gm.	%	
4. Drain	gm.	%	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	2.97	46.7
1–½ mm	1.78	28.0
½–¼ mm	.86	13.5
¼–⅛ mm	.28	4.4
⅛–1/16	.22	3.5
Pan	.25	3.9
Total	6.36	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst D. Frasche
Date 12-15-34

Wt. of sample .800 gm. 100.0%

Heavy Minerals .047 gm. 5.9 %

Light Minerals .753 gm. 94.1 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified: Heavy Concentrate	No. of Grains	Rel. %
quartz	¼ - - 1	
amphibole	½ - - 1	
tourmaline	¾ - - 1	
feldspar	2 - - 0	
zircon	3 - - 0	
pyroxene	1 - - 0	
garnet	2 - - 0	
anatase	1 - - 0	
pyrite	922 - - 82	
leucoxene	2 - - 0	
hemetite	65 - - 6	
magnetite	93 - - 8	
scale		
Total	1129	100%

Classification Grouping:

	Absol. %
Primary Minerals: 93.2 %	
quartz (Heavy / Light)	5.0
amphibole	0
tourmaline	0
feldspar (Heavy / Light)	2.3
zircon	0
pyroxene	0
garnet	0
magnetite	85.9
clay minerals	

Light Concentrate		
feldspar	H3 - - 2.4	
quartz	93 - - 5.3	
clay minerals	1800 - - 91.1	
chert	22 - - 1.2	
Total	1958	100%

Secondary Minerals: 6.8 %

anatase	4.3
pyrite	0
leucoxene	.4
hemetite	1.1
chert	.5
scale	
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Limestone 87% fragments composed of dolomite rombs cemented with chert & calcite. Shale 13% with quartz grains well rounded - some authigenic feldspars.

DEEP WELL STUDY

Well No. W—0005
Depth 1600 to 1610
No. samples used 1
Analyst T & G
Date 8-8-34.

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight . . . . . 40 gm. 100.0% : 2. Wt. of F. P. 2.30
3. Wt. after solution, with filter paper . . . . . 3.99 gm.
4. Less wt. F. P. (2) . . . 2.30 gm.
5. Wt. Insol. Residue (3 minus 4) . . . . . 1.69 gm. 4.2 %
6. Wt. lost by solution (1 minus 5) . . . . . 38.31 gm. 95.8 %
7. To balance (5 plus 6) . . 40.00 gm. 100.0 %

B. Subsidation:

1. Original Wt. . . . . gm. 100.0%
2. Cylinder (+1/32) gm. %
3. Jar (1/32—1/64) gm. %
4. Drain . . . . . gm. %

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm		
¼–⅛ mm		
⅛–1/16		
Pan		
Total		100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ..... mm.

Analyst .....
Date .....

Wt. of sample . . . . gm. 100.0%

Heavy Minerals . . . . gm. %

Light Minerals . . . . gm. %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified:
Heavy Concentrate

No. of Grains	Rel. %

Classification Grouping:
Primary Minerals: ..... %

Absol. %

Total 100%

Light Concentrate

Secondary Minerals: ..... %

Total . . . . . 100% Total 100%

Revised Lithologic Description (from descriptive log and laboratory data).

DEEP WELL STUDY

Well No. W—0005
Depth 1610 to 1630
No. samples used 2
Analyst T & G
Date 8-8-30

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P. 2.39
3. Wt. after solution, with filter paper	45.2 gm.		
4. Less wt. F. P. (2)	2.39 gm.		
5. Wt. Insol. Residue (3 minus 4)	2.13 gm.	4.3 %	
6. Wt. lost by solution (1 minus 5)	47.87 gm.	95.7 %	
7. To balance (5 plus 6)	50.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	gm.	100.0%	
2. Cylinder (+1/32)	gm.	%	
3. Jar (1/32—1/64)	gm.	%	
4. Drain	gm.	%	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm		
¼–⅛ mm		
⅛–1/16		
Pan		
Total		100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ..... mm.

Analyst .....
Date .....

Wt. of sample . . . . gm. 100.0% **Shape Analysis:**

Heavy Minerals . . . . gm. % A ..... %: a ..... %: C ..... %

Light Minerals . . . . gm. % r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %

DEEP WELL STUDY

Well No. W— 0005
Depth 1640 to 1660
No. samples used 2
Analyst T & G
Date 8-8-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15%)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P.	2.38
3. Wt. after solution, with filter paper	4.46 gm.			
4. Less wt. F. P. (2)	2.38 gm.			
5. Wt. Insol. Residue (3 minus 4)	2.08 gm.	4.2 %		
6. Wt. lost by solution (1 minus 5)	47.92 gm.	95.8 %		
7. To balance (5 plus 6)	50.00 gm.	%		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm		
¼–⅛ mm		
⅛–1/16		
Pan		
Total		100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) Comp. mm.

Analyst Rauser
Date 12-29-34

Wt. of sample 2.00 gm. 100.0%

Heavy Minerals .11 gm. 5.5 %

Light Minerals 1.89 gm. 94.5 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Tourmaline	3	0
Tremolite	3	0
Zircon	2	1
barite	6	1
Hornblende	58	12
clay	15-7	27
Pyrite	361	59
Scale	782	
Total	1322	100%

Light Concentrate		
clay	878	78
Quartz	211	19
Feldspar	38	3
Total	1127	100%

Classification Grouping:

	Absol. %
Primary Minerals: 95.3 %	
Tourmaline	0
Tremolite	0
Zircon	0
Hornblende	.7
clay (light)	73.8
Quartz	18
Feldspar	2.8
Secondary Minerals: 4.7 %	
pyrite	1.5
barite	0
scale	3.2
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

dolo - 96%; qtz to cream; finely xlized;
clay - ±3%; Quartz ±1%. - Pyrite common.

DEEP WELL STUDY

Well No. W— 0005
Depth 1660 to 1680
No. samples used 2
Analyst T & G
Date 8-8-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15%)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P.	2.28
3. Wt. after solution, with filter paper	11.23 gm.			
4. Less wt. F. P. (2)	2.28 gm.			
5. Wt. Insol. Residue (3 minus 4)	8.95 gm.	17.9 %		
6. Wt. lost by solution (1 minus 5)	41.05 gm.	82.1 %		
7. To balance (5 plus 6)	50.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	8.95 gm.	100.0%	
2. Cylinder (+1/32) 10.53 − 2.30 = 8.23	8.23 gm.	92.0 %	
3. Jar (1/32—1/64) 2.51 − 2.38 = 0.13	0.13 gm.	1.4 %	
4. Drain	0.59 gm.	6.6 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus	.	
2–1 mm	2.76	33.0
1–½ mm	2.63	31.4
½–¼ mm	1.35	16.1
¼–⅛ mm	.78	9.3
⅛–1/16	.49	5.9
Pan	.36	4.3
Total	8.37	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ¼-1/32 mm.

Analyst D. Fraschè
Date 1-3-35

Wt. of sample 1540 gm. 100.0%

Heavy Minerals 174 gm. 11.3 %

Light Minerals 1366 gm. 88.7 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
quartz	11	1
amphibole	8	0
zircon	1	0
tourmaline (green)	4	0
barite	2	0
feldspars	9	0
garnet	1	0
clay minerals	383	17
sodic pyroxene	145	9
pyrite	1118	65
magnetite	29	2
hematite	42	3
leucoxene	1	0
Total	1652	100%

Light Concentrate		
glauconite	4	.4
feldspar	79	7.
quartz	45	4.
amphibole	3	.2
clay minerals	950	84.2
chert	49	4.2
Total	1129	100%

Classification Grouping:

Primary Minerals: 87.3 %

Secondary Minerals: 12.7 %

	Absol. %
quartz (heavy)	1
quartz (light)	3.5
amphibole (heavy)	0
amphibole (light)	.2
zircon	0
tourmaline	0
feldspars (heavy)	0
feldspars (light)	8.2
garnet	0
clay minerals (heavy)	1.9
clay minerals (light)	74.8
magnetite	.2
glauconite	.4
barite	0
calcite	1.0
pyrite	7.7
hematite	.3
leucoxene	0
chert	3.7
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Limestone 82% finely crystalline — Brownish-grey shale 17% with some well-rounded quartz and a few feldspar crystals

DEEP WELL STUDY

Well No. W— 0005

Depth 1690 to 1700

No. samples used 1

Analyst T & G

Date 8-8-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15%)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P.	2.36
3. Wt. after solution, with filter paper	8.45 gm.			
4. Less wt. F. P. (2)	2.36 gm.			
5. Wt. Insol. Residue (3 minus 4)	6.09 gm.	15.2 %		
6. Wt. lost by solution (1 minus 5)	33.91 gm.	84.8 %		
7. To balance (5 plus 6)	40.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	6.09 gm.	100.0%	
2. Cylinder (+1/32)	4.12 gm.	67.6 %	6.38 / 2.26
3. Jar (1/32—1/64)	0.61 gm.	10.0 %	4.12 / 2.99 / 2.38
4. Drain	1.36 gm.	22.4 %	0.61

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm	.47	11.2
¼–⅛ mm		
⅛–1/16	3.73	88.8
Pan		
Total	4.20	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ¼-⅛ mm.

Analyst .....

Date .....

Wt. of sample 3.66 gm. 100.0%

Heavy Minerals . Tube broken Sample lost. gm. %

Light Minerals . . . . gm. %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Total		100%

Classification Grouping: Absol. %

Primary Minerals: ..... %

Secondary Minerals: ..... %

Light Concentrate

Total 100% Total 100%

Revised Lithologic Description (from descriptive log and laboratory data).

DEEP WELL STUDY

Well No. W— 0005
Depth 1710 to 1730
No. samples used 2
Analyst T & G
Date 8-8-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P.	2.32
3. Wt. after solution, with filter paper	9.40 gm.			
4. Less wt. F. P. (2)	2.32 gm.			
5. Wt. Insol. Residue (3 minus 4)	7.08 gm.	14.2 %		
6. Wt. lost by solution (1 minus 5)	42.92 gm.	85.8 %		
7. To balance (5 plus 6)	50.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	7.08 gm.	100.0%	
2. Cylinder (+1/32) 7.59 − 2.34 = 5.25	5.25 gm.	74.2 %	
3. Jar (1/32—1/64) 5.25 − 2.77 = 2.27	0.50 gm.	7.0 %	
4. Drain 4.50	1.33 gm.	18.8 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm	.54	10.3
¼–⅛ mm		
⅛–1/16	4.72	89.7
Pan		
Total	5.26	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) 1/4 - 1/32 mm.

Analyst Price
Date

Wt. of sample 3.27 gm. 100.0%

Heavy Minerals 13 gm. 4.0%

Light Minerals 3.14 gm. 96.0%

Shape Analysis:
A ...%: a ...%: C ...%
r ...%: R ...%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %	Absol. %
Zircon {zoned	19	1.2	.1
Zircon {unzoned	47	3.8	.2
Garnet	2	.2	
Pyrite	1023	84.7	3.4
Tremolite	1	.1	
Sphalerite	1	.1	
Quartz	40	3.3	.1
Feldspar	6	.5	
Anatase	3	.2	
Rutile	3	.2	
Leucoxene	2	3.3	.1
Casing Scale	11	1.2	.1
Tourmaline {Green	1	.1	
Tourmaline {Blue	3	.2	
Tourmaline {Brown			
Tourmaline {Pink	2	.2	
Total	1210	100%	

Classification Grouping:

Primary Minerals: ...%
Zircon {zoned
Zircon {unzoned
Garnet
Tremolite
Quartz
Feldspar
Rutile
Tourmaline {Gr.
Tourmaline {Bl.
Tourmaline {Br.
Tourmaline {Pk.

Secondary Minerals: ...%
Pyrite
Sphalerite
Anatase
Leucoxene
Casing Scale

Light Concentrate

Missing

Total 100% Total 100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite —

No Light Concentrate

DEEP WELL STUDY

Well No. W— 6005
Depth 1730 to 1740
No. samples used 1
Analyst T & G
Date 8-8-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P.	2.33
3. Wt. after solution, with filter paper	7.05 gm.			
4. Less wt. F. P. (2)	2.33 gm.			
5. Wt. Insol. Residue (3 minus 4)	4.72 gm.	11.8 %		
6. Wt. lost by solution (1 minus 5)	35.28 gm.	88.2 %		
7. To balance (5 plus 6)	40.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	4.72 gm.	100.0%	
2. Cylinder (+1/32) 3.68, 2.38, 3.24	3.29 gm.	69.7 %	
3. Jar (1/32—1/64) 2.66, 2.39	.027 gm.	5.7 %	
4. Drain 1.27	1.16 gm.	24.6 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.54	17.0
1–½ mm		
½–¼ mm		
¼–⅛ mm	2.65	83.0
⅛–1/16		
Pan		
Total	3.19	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ½-1/32 mm.

Analyst D'Agostino
Date 1-3-35

Wt. of sample 2.70 gm. 100.0%

Heavy Minerals 208 gm. 7.7 %

Light Minerals 2.492 gm. 92.3 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified: Heavy Concentrate	No. of Grains	Rel. %
feldspar	2	.1
zircon	9	.6
quartz	14	.9
tourmaline	4	.3
garnet	2	.1
amphibole	3	.2
pyrite	1421	93.3
scale	69	4.5
Total	1524	100%

Light Concentrate		
feldspar	40	2
quartz	100	4
chert	17	0
clay minerals	2300	94
Total	2457	100%

Classification Grouping: Primary Minerals: 92.5 %	Absol. %
feldspar (Heavy / Light)	0 / 1.9
zircon	0
quartz (Heavy / Light)	.1 / 3.7
tourmaline	0
garnet	0
amphibole	0
chert	0
clay minerals	88.9

Secondary Minerals: 7.5 %

pyrite 9.2
scale .3

Total 100%

Revised Lithologic Description (from descriptive log and laboratory data).

Limestone 88.2% crystalline, fossiliferous, brach fragments. grey clay 11.8% with some rounded quartz and authegenic feldspars

DEEP WELL STUDY

Well No. W— 0005
Depth 1760 to 1760
No. samples used 2
Analyst T & G
Date 8-8-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P.	2.31
3. Wt. after solution, with filter paper	19.68 gm.			
4. Less wt. F. P. (2)	2.31 gm.			
5. Wt. Insol. Residue (3 minus 4)	17.37 gm.	43.4 %		
6. Wt. lost by solution (1 minus 5)	22.63 gm.	56.6 %		
7. To balance (5 plus 6)	40.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	5.55	32.3
1–½ mm	5.80	34.0
½–¼ mm	2.76	16.2
¼–⅛ mm	1.10	6.5
⅛–1/16	.93	5.5
Pan	.93	5.5
Total	17.07	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Analyst Rousey
Date 12-

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ⅛-Pan mm.

Wt. of sample 1.81 gm. 100.0%

Heavy Minerals 109 gm. 5.0 %

Light Minerals 1.72 gm. 95.0 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Hornblende	44	4
epidote	18	2
Zircon	1	0
Anhydrite	1	0
Garnet	2	0
Tourmaline (brown)	2	0
Sphalerite	1	0
Rutile	1	0
Pyrite	793	78
Scale	130	13
Leucoxene	26	3
Total	1019	100%

Light Concentrate		
Clay	1151	92
Quartz	95	8
Total	1246	100%

Classification Grouping:

Primary Minerals: 95.4 %

	Absol. %
Heavy – Light	.1
Clay	87.4
Quartz	7.6
Hornblende	.2
epidote	.1
Zircon	0
garnet	0
tourmaline	0
Rutile	0

Secondary Minerals: 4.6 %

Anhydrite	0
Sphalerite	0
Pyrite	3.9
Scale	.6
leucoxene	.1
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Limestone - 57% - buff - dolomitic;

shale - 43% - grey - fissil

DEEP WELL STUDY

Well No. W— 0005
Depth 1780 to 1790
No. samples used 1
Analyst T & G
Date 8-8-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	35 gm.	100.0%	2. Wt. of F. P.	2.35
3. Wt. after solution, with filter paper	33.20 gm.			
4. Less wt. F. P. (2)	2.35 gm.			
5. Wt. Insol. Residue (3 minus 4)	30.85 gm.	88.2 %		
6. Wt. lost by solution (1 minus 5)	4.15 gm.	11.8 %		
7. To balance (5 plus 6)	35.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	30.85 gm.	100.0%	
2. Cylinder (+1/32) 21.87 − 2.35 = 19.52	19.52 gm.	63.3 %	
3. Jar (1/32—1/64) 6.80 − 2.37 = 4.43	4.43 gm.	14.3 %	
4. Drain	6.90 gm.	22.4 %	

C. Screen Analysis

SIZE	GRAMS	%	
2 plus			
2–1 mm	.90	4.7	S.G.D. not valid
1–½ mm	2.40	12.5	
½–¼ mm	1.87	9.7	
¼–⅛ mm	3.30	17.2	
⅛–1/16	6.10	31.7	
Pan	4.64	24.2	
Total	19.21	100.0	

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ⅛-1/16 mm.

Analyst D. Frasche'
Date 1-4-35

Wt. of sample . . . . 366.0 gm. 100.0%

Heavy Minerals . . . . .088 gm. 2.4 %

Light Minerals . . . . 3.572 gm. 97.6 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
zircon	1	0
amphibole	1	0
feldspar	3	0
pyrite	1700 - 98	
casing scale	26 - 2	
Total	1731	100%

Light Concentrate		
feldspar	2 - 0	
clay minerals	2111 - 100	
Total	2113	100%

Classification Grouping:

Primary Minerals: 97.6 %	Absol. %
zircon	0
amphibole	0
feldspar	0
clay minerals	97.6

Secondary Minerals: 2.4 %	
pyrite	2.3
scale	.1
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Shale 88% - gray green - some pyrite embedded in clay particles - trace of rounded quartz grains, limestone 12%

DEEP WELL STUDY

Well No. W— 0005
Depth 1790 to 1800
No. samples used 1
Analyst T+G
Date 8/9/34

MECHANICAL ANALYSIS

A. ~~Acid treatment~~ (HCl ..... %)
Screen

1. Sample weight . . . . . 20.00 gm. 100.0%: 2. Wt. of F. P. .....
3. Wt. after solution, with filter paper . . . . . gm.
4. Less wt. F. P. (2) . . . gm.
5. Wt. Insol. Residue (3 minus 4) . . . . . gm. %
6. Wt. lost by solution (1 minus 5) . . . . . gm. %
7. To balance (5 plus 6) . . gm. %

B. Subsidation:

1. Original Wt. . . . . gm. 100.0%
2. Cylinder (+1/32) gm. %
3. Jar (1/32—1/64) gm. %
4. Drain . . . . . gm. %

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2+1 mm	.88	4.4
1–½ mm	1.25	6.2
½–¼ mm	10.92	54.2
¼–⅛ mm	6.34	31.0
⅛–1/16	.62	3.9
Pan	.07	.3
Total	20.08	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Rowser
Date 12-29-34

Wt. of sample . . . . 3.59 gm. 100.0%

Heavy Minerals . . . . .05 gm. 1.4 %

Light Minerals . . . . 3.54 gm. 98.6 %

Shape Analysis:

A ..... %: a 5 %: C 70 %

r 25 %: R ..... %.

Minerals Identified; Heavy Concentrate

	No. of Grains	Rel. %
Zircon (unzoned)	15	1.4
zoned	1	.1
Tourmaline	3	.3
sphalerite	2	.2
⊗ Chitin	14	1.3
Pyrite	95.6	91.6
garnet	1	.1
Scale	42	4.0
Quartz	8	.8
Dolomite	2	.2
Total	104.4	100%

Light Concentrate

Quartz	105.0	97
Dolomite	1.8	2
Clay	1.3	1
Total	108.3	100%

Classification Grouping:

Primary Minerals: 96.6 %	Absol. %
Zircon	0
Tourmaline	0
garnet	0
Quartz (Heavy / Light)	95.6
clay	1.0

Secondary Minerals: 3.4 %

	Absol. %
sphalerite	0
⊗ Pyrite	1.3
dolomite (Heavy / Light)	2.0
Scale	.1
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

SS – 100% – frosted Qtz snd – Mag. grd – ¼-¼ – 54%
Prin Sup – ¼-⅛ – 31%; Shape – a – 5% – C – 70% – r, 25%;
Shale – 2% of sample; from above

DEEP WELL STUDY

Well No. W— 0005

Depth 1800 to 1810

No. samples used 1

Analyst T + G

Date 8/9/34

MECHANICAL ANALYSIS

A. Acid treatment (HCl ..... %)

Screen

1. Sample weight . . . . . 20.00 gm. 100.0% 2. Wt. of F. P. .....
3. Wt. after solution, with filter paper . . . . . gm.
4. Less wt. F. P. (2) . . . gm.
5. Wt. Insol. Residue (3 minus 4) . . . . . gm. %
6. Wt. lost by solution (1 minus 5) . . . . . gm. %
7. To balance (5 plus 6) . . gm. %

B. Subsidation:

1. Original Wt. . . . . gm. 100.0%
2. Cylinder (+1/32) gm. %
3. Jar (1/32—1/64) gm. %
4. Drain . . . . . gm. %

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2+1 mm	2.90	14.4
1–½ mm	2.81	14.0
½–¼ mm	11.88	59.3
¼–⅛ mm	2.19	10.9
⅛–1/16	.24	1.2
Pan	.03	.2
Total	20.05	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / ~~Bromoform~~ ±2.93 Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Pyre

Date 12/29/34

Wt. of sample . . . . 2.38 gm. 100.0%

Heavy Minerals . . . . .09 gm. 1.7 %

Light Minerals . . . . 2.34 gm. 98.3 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Zircon (unzoned)	8	1.5
Calcite	10	1.9
Pyrite	449	85.2
Chalcedony	2	.4
Tourmaline	6	1.1
Quartz	16	3.1
Casing Scale	23	4.4
Rutile	1	.2
Sphalerite	1	.2
Hematite	2	.4
Unknown	8	1.5
Total	521	100%

Light Concentrate		
Quartz	979	89
Dolomite	51	5
Shale	69	6
	1099	
Total		100%

Classification Grouping:

Primary Minerals: 93.5 %

Secondary Minerals: 6.5 %

	Absol. %
Zircon	0
Tourmaline	.1
Quartz (heavy + light)	87.5
Rutile	0
Shale	5.9
Pyrite	1.5
Dolomite	4.9
Hematite	0
Chalcedony	.1
Casing Scale	0
Sphalerite	0
Unknown	0
Total Calcite	0
	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Sandstone — med. grade ½-¼ m.m. prin. subsid ½-⅛ mm.; C; Frosted; ±5% frags of dol.; 5-6% green shale from above; ± 1% pyrite in good sized x-tals;

#(over)

DEEP WELL STUDY

Well No. W— 0005
Depth 1820 to 1830
No. samples used 1
Analyst T & G
Date 8/11/34

MECHANICAL ANALYSIS

A. Acid treatment (HCl ..... %)

Screen

1. Sample weight . . . . . 20.00 gm. 100.0%: 2. Wt. of F. P. .....
3. Wt. after solution, with filter paper . . . . . gm.
4. Less wt. F. P. (2) . . . gm.
5. Wt. Insol. Residue (3 minus 4) . . . . . gm. %
6. Wt. lost by solution (1 minus 5) . . . . . gm. %
7. To balance (5 plus 6) . . gm. %

B. Subsidation:

1. Original Wt. . . . . gm. 100.0%
2. Cylinder (+1/32) gm. %
3. Jar (1/32—1/64) gm. %
4. Drain . . . . . gm. %

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.33	1.6
1–½ mm	.39	1.9
½–¼ mm	8.11	40.4
¼–⅛ mm	10.21	50.9
⅛–1/16	.93	4.6
Pan	.12	.6
Total	20.09	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / ~~Bromoform~~ } 2.93 ± Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Pyre
Date 12/31/34

Wt. of sample . . . . 3.12 (33) gm. 100.0%

Heavy Minerals . . . . .04 gm. 1.3 %

Light Minerals . . . . 3.08 gm. 98.7 %

Shape Analysis:

A ..... %: a 20 %: C 80 %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Pyrite	942	82.2
Calcite	17	1.5
Zircon {zoned	8	.7
Zircon {unzoned	10	.9
Tourmaline (Gr)	3	.3
Tremolite	4	.3
Sphalerite	3	.3
Casing scale	56	4.8
Quartz	11	.9
Magnetite & Ilmenite	8	.7
Feldspar	1	.1
*Phosphate	83	7.2
Total	114.6	100%

Light Concentrate		
Quartz	852	84
Shale	108	11
Calcite	30	3
Feldspar	24	2
Phosphate	2	0
Pyrite	2	0
Total	101.8	100%

Classification Grouping:

	Absol. %
Primary Minerals: 94.0 %	
Zircon {zoned	0
Zircon {unzoned	0
Tourmaline	0
Tremolite	0
Quartz {Heavy / Light	83.0
Magnetite & Ilmenite	0
Phosphate {Heavy / Light	.1
Shale	10.9
Secondary Minerals: 6.0 %	
Pyrite {M. Light	1.1
Calcite {M. Light	2.9
Sphalerite	0
Casing Scale	.1
Feldspar {M. Light	1.9
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Sandstone — mgl. grade ¼-⅛ m.m.; prin. subrd ½-¼ m.m.; a-c; ±20% green shale from above; ±5% soluble.

* (over)

DEEP WELL STUDY

Well No. W— 0005
Depth 1830 to 1840
No. samples used 1
Analyst T & G
Date 8-8-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	35 gm.	100.0%	2. Wt. of F. P.	2.31
3. Wt. after solution, with filter paper	20.30 gm.			
4. Less wt. F. P. (2)	2.31 gm.			
5. Wt. Insol. Residue (3 minus 4)	17.99 gm.	51.3 %		
6. Wt. lost by solution (1 minus 5)	17.01 gm.	48.7 %		
7. To balance (5 plus 6)	35.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	5.93	34.0
1–½ mm	4.95	28.5
½–¼ mm	4.52	26.0
¼–⅛ mm	1.57	9.0
⅛–1/16	.27	1.6
Pan	.16	.9
Total	17.40	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ¼–Pan mm.

Analyst Rowser
Date 12-31-34

Wt. of sample 2.02 gm. 100.0%

Heavy Minerals 1.06 gm. 3.0 %

Light Minerals 1.96 gm. 97.0 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Pyrite	791	64.1
anatase	2	.2
garnet	2	.2
zircon(zoned)	1	.1
barite	3	.2
amphibole(colorless)	416	33.7
clay	1	.1
Tourmaline	15	1.2
leucoxene		
Total	1233	100%

Light Concentrate		
clay	618	54
Quartz	522	46
Total	1140	100%

Classification Grouping:

Primary Minerals: 98.1 %

	Absol. %
clay (heavy)	1.0
clay (light)	52.5
garnet	0
zircon	0
amphibole	0
Tourmaline	0
Quartz	44.6

Secondary Minerals: 1.9 %

pyrite	1.9
anatase	0
barite	0
leucoxene	0
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Limestone - 40%, cream - dolomitic,
shale - ±30%, green - may be cavings
SS - ±20% - wh, qtz snd,

DEEP WELL STUDY

Well No. W— 0005
Depth 1850 to 1870
No. samples used 2
Analyst T & G
Date 8-8-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight . . . . . 30 gm. 100.0%: 2. Wt. of F. P. 2.35
3. Wt. after solution, with filter paper . . . . . 23.43 gm.
4. Less wt. F. P. (2) . . . 2.35 gm.
5. Wt. Insol. Residue (3 minus 4) . . . . . 21.08 gm. 70.3 %
6. Wt. lost by solution (1 minus 5) . . . . . 8.92 gm. 29.7 %
7. To balance (5 plus 6) . . 30.00 gm. 100.0 %

B. Subsidation:

1. Original Wt. . . . . gm. 100.0%
2. Cylinder (+1/32) gm. %
3. Jar (1/32—1/64) gm. %
4. Drain . . . . . gm. %

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.38	1.8
1–½ mm	4.65	21.9
½–¼ mm	11.41	53.9
¼–⅛ mm	4.14	19.6
⅛–1/16	.48	2.3
Pan	.10	.5
Total	21.16	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } 2.93± Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Gus Pyre
Date 12/11/34

Wt. of sample . . . . 3.640 gm. 100.0%

Heavy Minerals . . . . 133 gm. 3.7 %

Light Minerals . . . . 3.507 gm. 96.3 %

Shape Analysis:

A 80 %: a 15 %: C 5 %

r ____ %: R ____ %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Pyrite	1086	76
Casing Scale	228	16
Magnetite & Ilmenite	8	1
Zircon (unzoned	1	0
Limonite	67	5
Feldspar	1	0
Tourmaline (blue)	1	0
*Garnet (100% etched)	12	1
Quartz	21	1
Total	1425	100%

Classification Grouping:

Primary Minerals: 96.4 %	Absol. %
Magnetite & Ilmenite	0
Zircon	0
Feldspar (Heavy / Light)	3.9
Green Shale Frags.	12.5
Quartz (Heavy / Light)	80.
Garnet	0
Tourmaline	0

Light Concentrate		
Quartz	997	83
Green Shale Fragments	161	13
Feldspar	43	4
Total	1201	100%

Secondary Minerals: 3.6 %	
Pyrite	2.8
Casing Scale	.6
Limonite	.2
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Sandstone: major grade ½-¼ m.m.; qtz. 92%; ±5% feldspars; ±3% pyrite. 10% of sample is grn. shale from above (see log); secondary growths on both feldspar & qtz. are very marked in this sample, so that originally C grains have become A -a; solubility 30%.

*(over)

DEEP WELL STUDY

Well No. W— 0005
Depth 1870 to 1890
No. samples used 2
Analyst T & G
Date 8-8-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P.	2.30
3. Wt. after solution, with filter paper	15.24 gm.			
4. Less wt. F. P. (2)	2.30 gm.			
5. Wt. Insol. Residue (3 minus 4)	12.94 gm.	25.9 %		
6. Wt. lost by solution (1 minus 5)	37.06 gm.	74.1 %		
7. To balance (5 plus 6)	50.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm	1.05	8.1
½–¼ mm	5.70	44.2
¼–⅛ mm	4.60	36.5
⅛–1/16	1.21	9.2
Pan	.26	2.0
Total	12.82	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Rausch
Date 12-31-34

Wt. of sample 3.38 gm. 100.0%

Heavy Minerals 121 gm. 6.2 %

Light Minerals 3.17 gm. 93.8 %

Shape Analysis:
A ....%: a ....%: C ....%
r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Casing Scale (estimated)	1500	100
Tourmaline	1	0
Tremolite	5	0
Total	1506	100%

Classification Grouping:
Primary Minerals: 15.0 %

	Absol. %
Quartz	5.6
Clay	9.4
Tremolite	0
Tourmaline	0

Light Concentrate		
Chert	1011	84
Quartz	75	6
Clay	121	10
Total	1207	100%

Secondary Minerals: 85.0 %

Scale	6.2
Chert	78.8
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite - 70%; cream - fine xline;
chrt - 20% - wh - dense -
sand - 3%; Clay - 2%

DEEP WELL STUDY

Well No. W— 0005
Depth 1900 to 1920
No. samples used 2
Analyst T + G
Date 8-8-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P.	2.31
3. Wt. after solution, with filter paper	17.80 gm.			
4. Less wt. F. P. (2)	2.31 gm.			
5. Wt. Insol. Residue (3 minus 4)	15.49 gm.	31.0 %		
6. Wt. lost by solution (1 minus 5)	34.51 gm.	69.0 %		
7. To balance (5 plus 6)	50.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.91	5.9
1–½ mm	1.68	11.0
½–¼ mm	6.35	41.3
¼–⅛ mm	4.45	29.0
⅛–1/16	1.18	7.7
Pan	.79	5.1
Total	15.36	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / ~~Bromoform~~ ± 2.93 Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Pyre
Date 12/31/34

Wt. of sample 3.37 gm. 100.0%

Heavy Minerals .32 gm. 9.5 %

Light Minerals 3.05 gm. 90.5 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified;

Heavy Concentrate

		No. of Grains	Rel. %
Pyrite	2500 est.		9
Casing Scale	25		1
Zircon	10		0
Epidote	1		0
Rutile	1		0
Garnet	3		0
Amphibole	1		0
Quartz	40		2
Feldspar	3		0
Hematite	20		1
	2604		
Total			**100%**

Light Concentrate

Quartz	953		77
Chert	112		9
Shale	125		10
Feldspar	47		4
	1237		
Total			**100%**

Classification Grouping:

Primary Minerals: 78.9 %

	Absol. %
Zircon	0
Epidote	0
Rutile	0
Garnet	0
Amphibole	0
Quartz (Heavy)	.2
Quartz (Light)	69.7
Shale	9.0

Secondary Minerals: 21.1 %

Pyrite	9.1
Chert	8.2
Feldspar (Heavy)	0
Feldspar (Light)	3.6
Casing Scale	.1
Hematite	.1
Total	**100%**

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite – 69% soluble; cream x xln; ±20% qtz grains, small to large, many with secondary enlargement; ± 5% chert, lt green; 3-5% black carb shale; 2-3% pyrite in small grains; 3-4% green shale from above.

DEEP WELL STUDY

Well No. W— 0005
Depth 1920 to 1930
No. samples used 1
Analyst T & G
Date 8-8-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight . . . . . 35 gm. 100.0%: 2. Wt. of F. P. 2.32
3. Wt. after solution, with filter paper . . . . . 17.05 gm.
4. Less wt. F. P. (2) . . . 2.32 gm.
5. Wt. Insol. Residue (3 minus 4) . . . . . 14.73 gm. 42.0 %
6. Wt. lost by solution (1 minus 5) . . . . . 20.27 gm. 58.0 %
7. To balance (5 plus 6) . . 35.00 gm. 100.0 %

B. Subsidation:

1. Original Wt. . . . . 14.73 gm. 100.0%
2. Cylinder (+1/32) 13.26, 2.33, 11.43 11.43 gm. 77.6 %
3. Jar (1/32—1/64) 3.50, 2.38, 1.12 1.12 gm. 7.6 %
4. Drain . . . . . 2.18 gm. 14.8 %

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	2.66	23.5
1–½ mm	2.40	21.2
½–¼ mm	2.67	23.6
¼–⅛ mm	2.35	20.7
⅛–1/16	.76	6.8
Pan	.48	4.2
Total	11.32	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. ~~Bromoform~~ 2.93 Sp. gr. Size–Grade(s) ¼-1/32 mm.

Analyst Gus Pyre
Date 12/12/39

Wt. of sample . . . . 3.050 gm. 100.0%

Heavy Minerals . . . . .064 gm. 2.1 %

Light Minerals . . . . 2.986 gm. 97.9 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
*Anhydrite	12	1.0
zircon {zoned / unzoned}	1 / 1	0.0
Tourmaline (Green)	3	.3
*Sphalerite	95	8.2
Quartz	46	4.0
Feldspar	17	1.5
Calcite	1	.0
Pyrite	935	82.3
Magnetite + Ilmenite	36	3.1
Casing Scale	32	2.8
Hematite	37	3.2
Total	1146	100%

Classification Grouping: Primary Minerals: 87.4 %	Absol. %
Zircon {zoned / unzoned}	0 / 0
Tourmaline	.1
Quartz {Heavy / Light}	56.1 / .1
Magnetite + Ilmenite	31.1
Shale	

Light Concentrate		
Quartz	689	57.3
Shale	380	31.7
Chert	26	2.2
Anhydrite	5	.4
Feldspar	101	8.4
	1201	
Total		100%

Secondary Minerals: 12.6 %	
Calcite	.0
Anhydrite {Heavy / Light}	.4 / .1
Sphalerite	1.7
Pyrite	.1
Casing Scale	.0
Hematite	8.2
Feldspar {Heavy / Light}	.1 / 2.1
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Limestone — dolomitic; sal. 58% plus; ± 10% qtz shale probably from above; ± 25% qtz. commonly showing sec. growth; ± 3% feldspar with secondary growths; ± 1% pyrite; sphalerite & anhydrite common.

*(over)

DEEP WELL STUDY

Well No. W— 0005
Depth 1930 to 1950
No. samples used 2
Analyst J & G
Date 8-8-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight . . . . . 30 gm. 100.0%: 2. Wt. of F. P. 2.35
3. Wt. after solution, with filter paper . . . . . 23.99 gm.
4. Less wt. F. P. (2) . . . 2.35 gm.
5. Wt. Insol. Residue (3 minus 4) . . . . . 21.64 gm. 72.2 %
6. Wt. lost by solution (1 minus 5) . . . . . 8.36 gm. 27.8 %
7. To balance (5 plus 6) . . 30.00 gm. 100.0 %

B. Subsidation:

1. Original Wt. . . . . gm. 100.0%
2. Cylinder (+1/32) gm. %
3. Jar (1/32—1/64) gm. %
4. Drain . . . . . gm. %

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.25	1.2
1–½ mm	3.23	15.0
½–¼ mm	11.40	53.0
¼–⅛ mm	5.88	27.3
⅛–1/16	.62	2.9
Pan	.17	.6
Total	21.50	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / ~~Bromoform~~ 2.93+ Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Gus Pyre
Date 12/12/34

Wt. of sample . . . . 3.64 gm. 100.0%

Heavy Minerals . . . . .1034 gm. .9 %

Light Minerals . . . . 3.606 gm. 99.1 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified:

Heavy Concentrate	No. of Grains	Rel. %
Pyrite	1113	74.2
Zircon {zoned / unzoned}	3	.2
Hematite	206	13.7
Feldspar	5	.3
Magnetite & Ilmenite	60	3.9
Quartz	23	1.5
Sphalerite	13	.9
Garnet	5	.3
Tourmaline {green / blue}	3 / 2	.2 / .1
Calcite	1	.1
Epidote	1	.1
Casing scale	65	4.3
Total	1503	100%

Light Concentrate		
Quartz	867	86
Feldspar	112	11
Green Shale	29	3
Pyrite	2	0
Glauconite	1	0
Total	1011	100%

Classification Grouping:

	Absol. %
Primary Minerals: 88.3%	
Zircon {zoned / unzoned}	0
Green Shale	3.0
Magnetite & Ilmenite	0
Quartz {Heavy / Light}	.85.3
Garnet	0
Tourmaline {green / blue}	0
Epidote	0
Secondary Minerals: 11.7 %	
Pyrite {Heavy / Light}	.7
Glauconite	0
Feldspar {Heavy / Light}	.10.9 / .1
Hematite	0
Casing Scale	0
Calcite	
Sphalerite	0
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Sandstone: major grade ½-¼ mm.; 28% soluble; ±65% qtz; A-C; secondary growth common; ± 5% acid feldspars (usually authigenic; feldspar in general smaller than qtz.; ±1% pyrite; sphalerite present;

DEEP WELL STUDY

Well No. W— 0005

Depth 1960 to 1970

No. samples used 1

Analyst T. G.

Date 8/4/34

MECHANICAL ANALYSIS

A. Acid treatment (HCl ..... %)

Screen

1. Sample weight . . . . . 20.00 gm. 100.0%: 2. Wt. of F. P. .....
3. Wt. after solution, with filter paper . . . . . gm.
4. Less wt. F. P. (2) . . . gm.
5. Wt. Insol. Residue (3 minus 4) . . . . . gm. %
6. Wt. lost by solution (1 minus 5) . . . . . gm. %
7. To balance (5 plus 6) . . gm. %

B. Subsidation:

1. Original Wt. . . . . gm. 100.0%
2. Cylinder (+1/32) gm. %
3. Jar (1/32—1/64) gm. %
4. Drain . . . . . gm. %

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	1.15	5.8
1–½ mm	3.98	20.0
½–¼ mm	9.81	49.3
¼–⅛ mm	4.66	23.4
⅛–1/16	.28	1.4
Pan	.01	.1
Total	19.89	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Rousey

Date 12-31-34

Wt. of sample . . . . 3.32 gm. 100.0%

Heavy Minerals . . . . .01 gm. .3 %

Light Minerals . . . . 3.31 gm. 99.7 %

Shape Analysis:

A ..... %: a 10 %: C 70 %

r 20 %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Pyrite	25-0	3.0
Sphalerite	1 / —	1
⊕ garnet	2 —	0
dolomite	26 —	3
tourmaline	1 —	0
scale	481 —	57
Limonite	75 —	9
Total	846	100%

Classification Grouping:

Primary Minerals: 90.7 %

	Absol. %
garnet	0
Tourmaline	0
Quartz	83.7
Clay	7.0

Light Concentrate		
Quartz	875 —	84
dolomite	91 —	9
Clay	72 —	7
Total	1038	100%

Secondary Minerals: 9.3 %

dolomite	9.0
Pyrite	.1
Sphalerite	0 .2
scale	
Limonite	0
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

SS — white — some dolomitic cement — (±10%) Size — mag. grd. — ½-¼ — 49% prin. sub. ¼-⅛ 23% and 1-¼-20%

Shape — a-10% — C-70% — r-20% — some secondary enlargement

DEEP WELL STUDY

Well No. W— 0005
Depth 1980 to 2000
No. samples used 2
Analyst T & G
Date 8-8-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P.	2.33
3. Wt. after solution, with filter paper	14.79 gm.			
4. Less wt. F. P. (2)	2.33 gm.			
5. Wt. Insol. Residue (3 minus 4)	12.46 gm.	31.1 %		
6. Wt. lost by solution (1 minus 5)	27.54 gm.	68.9 %		
7. To balance (5 plus 6)	40.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.94	7.7
1–½ mm	.95	7.8
½–¼ mm	3.61	29.5
¼–⅛ mm	5.27	43.0
⅛–1/16	1.12	9.1
Pan	.35	2.9
Total	12.24	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Analyst Gus Pyke
Date 12/13/34

Acet. Tetrabr. ~~Bromoform~~ 2.93± Sp. gr. Size–Grade(s) ¼-Pan mm.

Wt. of sample 3.36 gm. 100.0%

Heavy Minerals 13 gm. 3.9 %

Light Minerals 3.23 gm. 96.1 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Pyrite	1500 (est.)	77.7
Mag+Ilmenite	7	.5
Tremolite	1	0
Muscovite	1	0
Zircon	2	.1
Calcite	1	.0
Tourmaline (green)	2	.1
Garnet	3	.2
Feldspar	3	.2
Quartz	15	.9
Casing Scale	4	.3
Total	1539	100%

Light Concentrate		
Quartz	746	80
Feldspar	128	14
Shale	60	6
Opal	1	0
Glauconite	1	0
Total	936	100%

Classification Grouping:

Primary Minerals: 82.7 %	Absol. %
Magnetite and Ilmenite	0
Tremolite	0
Muscovite	0
Zircon	0
Tourmaline	0
Garnet	0
Quartz (heavy + light)	76.9
Shale	5.8

Secondary Minerals: 17.3 %	
Pyrite	3.8
Feldspar (heavy + light)	13.5
Opal	0
Glauconite	0
Calcite	0
Casing Scale	
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite: 70% soluble; ±25% qtz. grains; A-C; many with secondary growths; maj grade ¼-⅛ m.m.; ±3% Feldspar, (authigenic); ±3% pyrite principally in minute crystals; other heavies not abund;

DEEP WELL STUDY

Well No. W—0005
Depth 2010 to 2030
No. samples used 2
Analyst T & G
Date 8-8-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P.	2.30
3. Wt. after solution, with filter paper	13.57 gm.			
4. Less wt. F. P. (2)	2.30 gm.			
5. Wt. Insol. Residue (3 minus 4)	11.27 gm.	28.2 %		
6. Wt. lost by solution (1 minus 5)	28.73 gm.	71.8 %		
7. To balance (5 plus 6)	40.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.12	1.1
1–½ mm	1.29	11.4
½–¼ mm	4.80	42.3
¼–⅛ mm	3.68	32.4
⅛–1/16	1.08	9.5
Pan	.37	3.3
Total	11.34	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ⅛-Pan mm.

Analyst Rowser
Date 1-1-35

Wt. of sample 1.29 gm. 100.0%

Heavy Minerals .09 gm. 7. %

Light Minerals 1.19 gm. 93. %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Pyrite	95	80.9
Zircon (zoned)	2	.2
Tourmaline (brown)	2	.2
Sphalerite	4	.3
Garnet	3	.2
Scale	217	18.4
Total	1179	100%

Light Concentrate			
Quartz	881	—	64
Chert	276	—	20
Clay	192	—	14
Feldspar	26	—	2
Total	1075	100%	

Classification Grouping:

	Absol. %
Primary Minerals: 74.4 %	
Quartz	59.5
Clay	13.0
Garnet	0
Zircon	0
Tourmaline	0
Feldspar	1.9
Secondary Minerals: 25.6 %	
Pyrite	5.7
Sphalerite	0
Scale	1.3
Chert	18.6
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite - 72%; cream - fine xline;
sand - 15% - embedded in dolo - Sh - 5% - Chert -
± 10% -

DEEP WELL STUDY

Well No. W— 0005

Depth 2030 to 2050

No. samples used 2

Analyst T & G

Date 8-8-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P.	2.28
3. Wt. after solution, with filter paper	20.99 gm.			
4. Less wt. F. P. (2)	2.28 gm.			
5. Wt. Insol. Residue (3 minus 4)	18.71 gm.	37.4 %		
6. Wt. lost by solution (1 minus 5)	31.29 gm.	62.6 %		
7. To balance (5 plus 6)	50.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32]	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	1.26	6.8
1–½ mm	2.61	14.1
½–¼ mm	5.03	27.2
¼–⅛ mm	6.07	32.8
⅛–1/16	2.64	14.3
Pan	98	4.8
Total	18.49	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ⅛-¼ mm.

Analyst

Date

Wt. of sample 2.63 gm. 100.0%

Heavy Minerals 20 gm. 7.6 %

Light Minerals 2.43 gm. 92.4 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Pyrite	729	59
Chert	508	41
sphalerite	2	0
garnet	1	0
Zircon	1	0
Total	1241	100%

Classification Grouping: Primary Minerals: 49.9 %	Absol. %
Quartz	45.3
clay	4.6
garnet	0
zircon	0

Light Concentrate			
Quartz	481	—	49
Chert	416	—	43
Clay	52	—	5
Feldspar	30	—	3
Total	979		100%

Secondary Minerals: 50.1 %

Pyrite (heavy)	4.5
Chert (light)	39.7
Feldspar	3.1
sphalerite	2.8
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

dolomite – 63% cream – fine xline;

snd – 20% – embedded in dolo; sh-17%; chert-10%

DEEP WELL STUDY

Well No. W— 0005
Depth 2060 to 2080
No. samples used 2
Analyst T + G
Date 8-9-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P.	2.28
3. Wt. after solution, with filter paper	11.21 gm.			
4. Less wt. F. P. (2)	2.28 gm.			
5. Wt. Insol. Residue (3 minus 4)	8.93 gm.	17.8 %		
6. Wt. lost by solution (1 minus 5)	41.07 gm.	82.2 %		
7. To balance (5 plus 6)	50.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.16	1.8
1–½ mm	.54	6.1
½–¼ mm	1.74	19.8
¼–⅛ mm	4.82	54.7
⅛–1/16	1.16	13.2
Pan	.39	4.4
Total	8.81	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Pyre
Date 1/11/35

Wt. of sample 1.49 gm. 100.0%

Heavy Minerals 125 gm. 16.7 %

Light Minerals 1.24 gm. 83.3 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate

	No. of Grains	Rel. %
Pyrite		±90%
Casing Scale		±10%
Hematite		
Garnet		<1
Sphalerite		<1
Zircon		<1
Tremolite		<1
Quartz		<1
Feldspar		±1
Chert		<1
Total		100%

Light Concentrate

Quartz	456		48
Chert	312		33
Shale	196		15
Feldspar	37		4
	951		
Total			100%

Classification Grouping:

	Absol. %
Primary Minerals: 52.5 %	
Garnet (Heavy)	0
zircon (Heavy)	0
Tremolite (Heavy)	0
Quartz (Heavy – Light)	40.0
Shale	12.5
Secondary Minerals: 47.5 %	
Pyrite (Heavy)	15.0
Scale (Heavy)	1.7
Hematite (Heavy)	0
Sphalerite (Heavy)	0
Chert (Heavy – Light)	27.5
Feldspar (Heavy – Light)	3.3
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite - 82% soluble; cream, crystalline; ±6% quartz, both detrital and secondary; ±2% shale in part from above; ±9% chert, lt. green; ±3% pyrite.

DEEP WELL STUDY

Well No. W— 0005
Depth 2090 to 2110
No. samples used 2
Analyst T & G
Date 8-9-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P.	2.30
3. Wt. after solution, with filter paper	11.65 gm.			
4. Less wt. F. P. (2)	2.30 gm.			
5. Wt. Insol. Residue (3 minus 4)	9.35 gm.	18.6 %		
6. Wt. lost by solution (1 minus 5)	40.65 gm.	81.4 %		
7. To balance (5 plus 6)	50.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	1.91	20.7
1–½ mm		
½–¼ mm	3.35	36.3
¼–⅛ mm		
⅛–1/16	3.97	43.0
Pan		
Total	9.23	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Rowser
Date 1-1-'35

Wt. of sample 3.95 gm. 100.0% Shape Analysis:

Heavy Minerals 0.96 gm. 24.3 % A ..... %: a ..... %: C ..... %

Light Minerals 2.99 gm. 75.7 % r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Pyrite		100%
Conegrain baute, one of biotite & one of bolite noted in slide)		
Total		100%

Classification Grouping: Absol. %

Primary Minerals: 67.4 %
Quartz — 62.1
Clay — 5.3

Light Concentrate

Quartz	988	82
Chert	127	11
Clay	85	7
Total	1200	100%

Secondary Minerals: 32.6 %
chert — 8.3
pyrite — 24.3
Total 100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite – 81% – cream to buff – fine xline;
ss – ±10% – Probably from above; sh – 10±%;
from above; chert – ±5%.

DEEP WELL STUDY

Well No. W— 0005
Depth 2120 to 2140
No. samples used 2
Analyst T & G
Date 8-9-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P.	2.31
3. Wt. after solution, with filter paper	13.29 gm.			
4. Less wt. F. P. (2)	2.31 gm.			
5. Wt. Insol. Residue (3 minus 4)	10.98 gm.	27.4 %		
6. Wt. lost by solution (1 minus 5)	29.02 gm.	72.6 %		
7. To balance (5 plus 6)	40.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	4.13	38.4
1–½ mm	1.94	18.1
½–¼ mm	2.15	20.0
¼–⅛ mm	1.75	16.3
⅛–1/16	.52	4.9
Pan	.22	2.3
Total	10.71	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } ±2.93 Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Rowser
Date 1-1-35

Wt. of sample 2.50 gm. 100.0%

Heavy Minerals 41 gm. 15.9 %

Light Minerals 2.17 gm. 84.1 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Pyrite	891	72
clay	276	22
scale	68	6
Sphalerite	3	0
barite	1	0
Zircon	1	0
Total	1240	100%

Light Concentrate		
clay-f	589	50
Quartz	418	35
Feldspar	21	2
Chert-l s-g	156	13
Total	1184	100%

Classification Grouping:

Primary Minerals: 76.7 %	Absol. %
clay+light	3.5
Zircon	42.1
Quartz	0
Feldspar	29.4
	1.7

Secondary Minerals: 23.3 %

Pyrite	11.5
Sphalerite	0
barite	0
scale	.9
chert	10.9
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite - 73% - cream, fine xline;
shale - ±20% - green - fissil - full of pyrite.
SS - ±8% - ab - clear - ¼-½ -

DEEP WELL STUDY

Well No. W— 0005
Depth 2140 to 2160
No. samples used 2
Analyst T & G
Date 8-9-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P. 2.34
3. Wt. after solution, with filter paper	7.57 gm.		
4. Less wt. F. P. (2)	2.34 gm.		
5. Wt. Insol. Residue (3 minus 4)	5.23 gm.	13.1 %	
6. Wt. lost by solution (1 minus 5)	34.77 gm.	86.9 %	
7. To balance (5 plus 6)	40.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	gm.	100.0%	
2. Cylinder (+1/32)	gm.	%	
3. Jar (1/32—1/64)	gm.	%	
4. Drain	gm.	%	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm	1.74	34.0
½–¼ mm		
¼–⅛ mm		
⅛–1/16	3.40	66.0
Pan		
Total	5.14	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. ~~Bromoform~~ 2.93± Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Pyre
Date 1/2/35

Wt. of sample 3.36 gm. 100.0%

Heavy Minerals 26 gm. 7.7 %

Light Minerals 3.10 gm. 92.3 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Pyrite	1200 (est)	98
Sphalerite	10	1
Calcite	2	0
Zircon	3	0
Tremolite	1	0
Quartz	7	1
Chert	3	0
	1226	
Total		100%

Classification Grouping:	Absol. %
Primary Minerals: 86.9 %	
Zircon	0
Quartz (heavy / light)	.1 / 49.0
Shale	37.8
Tremolite	0

Light Concentrate	No. of Grains	Rel. %
Quartz	566	53
Shale	930	41
Chert	91	4
Feldspar	22	2
Glauconite	2	0
Total	1061	100%

Secondary Minerals: 13.1 %	
Pyrite	7.5
Sphalerite	.1
Calcite	0
Chert (heavy / light)	0 / 3.7
Feldspar	1.8
Glauconite	0
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite - 87% soluble; ± 6% qtz. grains mod. grade ¼-⅛ m.m.; some with secondary growth; ± 5% shale; some from above; ± 1% chert; ± 1% feldspar in small grains; ± 1% pyrite;

DEEP WELL STUDY

Well No. W— 0005
Depth 2170 to 2180
No. samples used 1
Analyst T + G
Date 8-9-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P.	2.29
3. Wt. after solution, with filter paper	8.28 gm.			
4. Less wt. F. P. (2)	2.29 gm.			
5. Wt. Insol. Residue (3 minus 4)	5.99 gm.	15.0 %		
6. Wt. lost by solution (1 minus 5)	34.01 gm.	85.0 %		
7. To balance (5 plus 6)	40.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	5.99 gm.	100.0%	
2. Cylinder (+1/32) 6.92 − 2.40 = 4.52	4.52 gm.	75.4 %	
3. Jar (1/32—1/64) 2.63 − 2.40 = 0.23	0.23 gm.	3.8 %	
4. Drain	1.24 gm.	20.8 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm		
½–¼ mm	1.35	29.5
¼–⅛ mm		
⅛–1/16	3.23	70.5
Pan		
Total	4.58	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / ~~Bromoform~~ ±2.93 Sp. gr. Size–Grade(s) ¼-⅛ mm.

Analyst Cus Pyre
Date 12/19/34

Wt. of sample 3.220 gm. 100.0%

Heavy Minerals 143 gm. 4.5 %

Light Minerals 3.077 gm. 95.5 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Sphalerite	19	1.1
Zircon zoned	13	.7
Zircon unzoned	6	.3
Feldspar	55	3.3
Quartz	30	1.8
Tourmaline green	4	.2
Tourmaline brown	2	.1
Anatase	1	.0
Glauconite	2	.1
Muscovite	1	.0
Magnetite & Ilmenite	42	2.4
Pyrite	1466	86.9
Casing Scale	8	.5
Hematite	40	2.4
Total	1697	100%

Light Concentrate		
Feldspar	571	56
Quartz	214	21
Clay Frags.	212	21
Glauconite	8	1
Muscovite	7	1
Chert	3	0
Total	1015	100%

Classification Grouping:	Absol. %
Primary Minerals: 41.3 %	
Zircon zoned	0
Zircon unzoned	0
Tourmaline (Sp. Gr. heavy)	0
Quartz (Sp. Gr. heavy)	.1
Quartz (Sp. Gr. light)	20.1
Muscovite (Sp. Gr. heavy)	0
Muscovite (Sp. Gr. light)	.9
Magnetite & Ilmenite	.1
Clay Frags	20.1
Secondary Minerals: 58.7 %	
Pyrite	3.9
Feldspar (Sp. Gr. heavy)	.2
Feldspar (Sp. Gr. light)	53.5
Sphalerite	.1
Anatase	0
Glauconite (Sp. Gr. heavy)	.9
Glauconite (Sp. Gr. light)	0
Chert	.1
Hematite	0
Casing Scale	
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite: 85% sol: ± 5% feldspar, small, euhedral, authigenic; ± 4% pyrite; ± 2% clay; ± 2% qtz. in C grains; sphalerite + excellently zoned zircons common in heavies

DEEP WELL STUDY

Well No. W— 0005
Depth 2180 to 2200
No. samples used 2
Analyst T & G
Date 8/11/34

MECHANICAL ANALYSIS

A. Acid treatment (HCl ..... %)

Screen

1. Sample weight . . . . . 26.76 gm. 100.0%: 2. Wt. of F. P. .....
3. Wt. after solution, with filter paper . . . . . gm.
4. Less wt. F. P. (2) . . . . . gm.
5. Wt. Insol. Residue (3 minus 4) . . . . . gm. %
6. Wt. lost by solution (1 minus 5) . . . . . gm. %
7. To balance (5 plus 6) . . gm. %

B. Subsidation:

1. Original Wt. . . . . gm. 100.0%
2. Cylinder (+1/32) gm. %
3. Jar (1/32—1/64) gm. %
4. Drain . . . . . gm. %

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2+1 mm	1.10	4.1
1–½ mm	8.75	32.8
½–¼ mm	11.72	44.2
¼–⅛ mm	3.99	15.0
⅛–1/16	.80	3.0
Pan	.24	.9
Total	26.60	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Rausey
Date 1-7-35

Wt. of sample . . . . 3.46 gm. 100.0%

Heavy Minerals . . . . .03 gm. .9 %

Light Minerals . . . . 3.43 gm. 99.1 %

Shape Analysis:

A ..... %: a 10 %: C 60 %

r 30 %: R ..... %.

Minerals Identified: Heavy Concentrate	No. of Grains	Rel. %
dolomite	228	18
sphalerite	39	3
zircon (unzoned)	9	1
Pyrite	633	50
Scale	363	28
Total	1272	100%
Light Concentrate Quartz	620	75
dolomite	201	25
Total	821	100%

Classification Grouping: Absol. %

Primary Minerals: 74.3 %

Quartz — 74.3
zircon — 0

Secondary Minerals: 25.7 %

dolomite (rhombs light + cement) — 24.8
sphalerite — 0
Pyrite — .5
Scale — .2

Total 100%

Revised Lithologic Description (from descriptive log and laboratory data).

Sandstone — wh — gts sud — size — ½-¼-44%
Prin sub — 1-½ — 33%, shape — a-10%, C-60%, r-30%,
dolo — ±2.0%; as cement & in sep. rhombs,

DEEP WELL STUDY

Well No. W— 0005
Depth 2210 to 2230
No. samples used 2
Analyst T & G
Date 8-9-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight . . . . . 50 gm. 100.0%: 2. Wt. of F. P. 2.32
3. Wt. after solution, with filter paper . . . . . 17.41 gm.
4. Less wt. F. P. (2) . . . 2.32 gm.
5. Wt. Insol. Residue (3 minus 4) . . . . . 15.09 gm. 30.1 %
6. Wt. lost by solution (1 minus 5) . . . . . 34.91 gm. 69.9 %
7. To balance (5 plus 6) . . 50.00 gm. 100.0 %

B. Subsidation:

1. Original Wt. . . . . gm. 100.0%
2. Cylinder (+1/32) . . . . . gm. %
3. Jar (1/32—1/64) . . . . . gm. %
4. Drain . . . . . gm. %

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	4.95	33.0
1–½ mm	2.98	19.8
½–¼ mm	3.20	21.3
¼–⅛ mm	2.28	15.1
⅛–1/16	1.02	6.8
Pan	.60	4.0
Total	15.03	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / ~~Bromoform~~ ± 2.93 Sp. gr. Size–Grade(s) ¼ Pan mm.

Analyst Gus Pyre
Date 12/17/34

Wt. of sample . . . . 3.15 gm. 100.0%

Heavy Minerals . . . . .26 gm. 8.3 %

Light Minerals . . . . 2.89 gm. 91.7 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate

	No. of Grains	Rel. %
Pyrite	5000 (est.)	93
Zircon {zoned / unzoned}	2	.
Sphalerite	3	.
Quartz	200	4
Feldspar	60	1
Anatase	1	0
Muscovite	3	0
Calcite	2	0
Garnet	4	0
Amphibole (gr)	5	—
Magnetite + Ilmenite	80	2
Tourmaline (gr)	8	0
Total	5372	100%

Light Concentrate

*Quartz	611	70
Chert	231	26
Feldspar	34	4
	876	
Total		100%

Classification Grouping:

	Absol. %
Primary Minerals: 64.7 %	
Zircon {zoned / unzoned}	0 / 0
Quartz {Heavy / Light}	.3 / 64.2
Muscovite	0
Garnet	0
Amphibole	.2
Magnetite + Ilmenite	
Tourmaline	0
Secondary Minerals: 35.3 %	
Pyrite	7.7
Sphalerite	0
Feldspar {Heavy / Light}	.1 / 3.7
Anatase	0
Calcite	0
Chert	23.8
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite: 70%; 20-25% qtz. in C. grains; poorly sorted; ± 2% chert, greenish; authigenic feldspar present; ± 2% pyrite in small grains;

*(over)

DEEP WELL STUDY

Well No. W— 2005
Depth 2240 to 2260
No. samples used 2
Analyst T & G
Date 8-9-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P. 2.34
3. Wt. after solution, with filter paper	49.17 gm.		
4. Less wt. F. P. (2)	2.34 gm.		
5. Wt. Insol. Residue (3 minus 4)	6.83 gm.	13.6 %	
6. Wt. lost by solution (1 minus 5)	43.17 gm.	86.4 %	
7. To balance (5 plus 6)	50.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	6.83 gm.	100.0%	
2. Cylinder (+1/32) 8.38 − 2.34 = 6.04	6.04 gm.	88.3 %	
3. Jar (1/32—1/64) 2.49 − 2.35 = 0.14	0.14 gm.	2.1 %	
4. Drain	0.65 gm.	9.6 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.65	10.7
1–½ mm		
½–¼ mm	2.78	45.8
¼–⅛ mm		
⅛–1/16	2.64	43.5
Pan		
Total	6.07	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ¼-1/32 mm.

Analyst Rowser
Date 1-2-35

Wt. of sample 2.64 gm. 100.0%

Heavy Minerals 13 gm. 4.9 %

Light Minerals 2.51 gm. 95.1 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Pyrite	878	73
Scale	167	14
Tourmaline (brown)	1	0
Zircon (zoned)	1	0
Sphalerite	3	0
Clay	122	10
Quartz	30	3
Total	1202	100%

Light Concentrate		
Quartz	381	34
Feldspar	522	47
Clay	216	19
Total	1119	100%

Classification Grouping:

Primary Minerals: 51.0 %	Absol. %
Quartz (Heavy – Light)	.1 – 32.3
Clay (Heavy – Light)	.5 – 18.1
Tourmaline	0
Zircon	0

Secondary Minerals: 49.0 %	Absol. %
Pyrite	3.6
Sphalerite	0
Scale	.7
Feldspar	44.7
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite - 86%; cream; fine xline;
Snd - 6 or 7%; Clay - 6 or 7%;

DEEP WELL STUDY

Well No. W— 0005
Depth 2270 to 2290
No. samples used 2
Analyst T & G
Date 8-9-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P.	2.28
3. Wt. after solution, with filter paper	9.84 gm.			
4. Less wt. F. P. (2)	2.28 gm.			
5. Wt. Insol. Residue (3 minus 4)	7.56 gm.	15.2 %		
6. Wt. lost by solution (1 minus 5)	42.44 gm.	84.8 %		
7. To balance (5 plus 6)	50.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm	1.44	19.3
½–¼ mm		
¼–⅛ mm		
⅛–1/16	6.04	80.7
Pan		
Total	7.48	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Pyre
Date 1/2/35

Wt. of sample 2.44 gm. 100.0%

Heavy Minerals 17 gm. 7.0 %

Light Minerals 2.27 gm. 93.0 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate

	No. of Grains	Rel. %
Zircon zoned	26	2
Zircon unzoned	23	2
Quartz	62	5
Garnet	11	1
Sphalerite	20	2
Tremolite	2	0
Tourmaline (green)	11	1
Feldspar	37	3
Anatase (all tints to Leucoxene)	39	3
Leucoxene		0
Barite	1	0
Rutile	1	0
Pyrite	935	74
Hematite	45	3
Casing scale	50	4
Total	1263	100%

Light Concentrate

Feldspar	627	59.1
Quartz	237	22.3
Shale	196	18.4
Glaucosite	2	.2
Total	1062	100%

Classification Grouping: Absol. %

Primary Minerals: 38.7 %

Zircon {Zoned	.1
Zircon {Unzoned	.1
Quartz {Heavy / Light	.4 / 20.1
Garnet	.1
Tremolite	0
Tourmaline	.1
Rutile	0
Shale	17.1

Secondary Minerals: 61.3 %

Glaucosite	.2
Pyrite	5.2
Sphalerite	0
Feldspar {Heavy / Light	.2 / 56.0
Anatase	.2
Barite	0
Hematite	.2
Scale	.3
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite 85 % soluble; lt. cream to tan; ± 6 % authigenic feldspar in small x-tals; ± 6 % qtz.; ± 3 % shale; ± 1 % pyrite; sphalerite & anatase abund. in heavies;

DEEP WELL STUDY

Well No. W— 0005
Depth 2300 to 2320
No. samples used 2
Analyst T & G
Date 8-9-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P. 2.28
3. Wt. after solution, with filter paper	16.92 gm.		
4. Less wt. F. P. (2)	2.28 gm.		
5. Wt. Insol. Residue (3 minus 4)	14.64 gm.	29.3 %	
6. Wt. lost by solution (1 minus 5)	35.36 gm.	70.7 %	
7. To balance (5 plus 6)	50.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	14.64 gm.	100.0%	
2. Cylinder (+1/32) 13.08, 2.28, 10.80	10.80 gm.	73.8 %	
3. Jar (1/32—1/64) 3.96, 2.30	1.66 gm.	11.3 %	
4. Drain 1.66	2.18 gm.	14.9 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm	.70	6.5
½–¼ mm	1.67	15.6
¼–⅛ mm	1.41	13.1
⅛–1/16	2.71	25.3
Pan	4.22	39.6
Total	10.71	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ⅛-1/16 mm.

Analyst Powser
Date 1-2-35

Wt. of sample 2.72 gm. 100.0%

Heavy Minerals 107 gm. 2.6 %

Light Minerals 2.65 gm. 97.4 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Pyrite	81 - 78	
clay	76 - 5	
garnet	1 - 0	
sphalerite	3 - 0	
zircon	1 - 0	
scale	9 - 13	
Feldspar	56 - 4	
barite	2 - 0	
Total	1509	100%

Light Concentrate		
Feldspar	1060 - 71	
glauconite	31 - 2	
quartz	226 - 15	
clay	175 - 12	
Total	1492	100%

Classification Grouping:

Primary Minerals: 28.3 %

	Absol. %
clay (Heavy)	.1
clay (Light)	11.7
Quartz	14.6
garnet	0
glauconite	1.9
zircon	0

Secondary Minerals: 71.7 %

	Absol. %
Pyrite	2.0
clay	.1
Feldspar (Heavy)	69.3
Feldspar (Light)	0
sphalerite	0
barite	.3
scale	
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite 70% cream to buff fine x line snd - ±25% - fine - chiefly ⅛-1/16 - shale - ±4%.

DEEP WELL STUDY

Well No. W— 0005

Depth 2330 to 2350

No. samples used 2

Analyst T Y G

Date 8-9-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15%)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P.	2.30
3. Wt. after solution, with filter paper	21.02 gm.			
4. Less wt. F. P. (2)	2.30 gm.			
5. Wt. Insol. Residue (3 minus 4)	18.72 gm.	37.5 %		
6. Wt. lost by solution (1 minus 5)	31.28 gm.	62.5 %		
7. To balance (5 plus 6)	50.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	16.72 gm.	100.0%	
2. Cylinder (+1/32) 8.75, 2.30, 16.45	16.45 gm.	87.8 %	
3. Jar (1/32—1/64) 5.19, 2.26	0.93 gm.	5.0 %	
4. Drain 0.93	1.34 gm.	7.2 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.19	1.2
1–½ mm	1.07	6.5
½–¼ mm	3.86	23.4
¼–⅛ mm	2.49	15.1
⅛–1/16	3.66	22.2
Pan	5.22	31.6
Total	16.49	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ..... mm.

Analyst .....

Date .....

Wt. of sample . . . . gm. 100.0%

Heavy Minerals . . . . gm. %

Light Minerals . . . . gm. %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Total		100%

Classification Grouping: Absol. %

Primary Minerals: ..... %

Secondary Minerals: ..... %

Light Concentrate

Total . . . . 100% Total 100%

Revised Lithologic Description (from descriptive log and laboratory data).

DEEP WELL STUDY

Well No. W— 0005
Depth 2360 to 2380
No. samples used 2
Analyst T & G
Date 8-9-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P. 2.38
3. Wt. after solution, with filter paper	26.91 gm.		
4. Less wt. F. P. (2)	2.38 gm.		
5. Wt. Insol. Residue (3 minus 4)	18.53 gm.	37.0 %	
6. Wt. lost by solution (1 minus 5)	31.47 gm.	63.0 %	
7. To balance (5 plus 6)	50.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	gm.	100.0%	
2. Cylinder (+1/32)	gm.	%	
3. Jar (1/32—1/64)	gm.	%	
4. Drain	gm.	%	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.06	.3
1–½ mm	.60	3.2
½–¼ mm	2.23	12.1
¼–⅛ mm	3.17	17.2
⅛–1/16	6.35	34.4
Pan	6.05	32.8
Total	18.46	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ⅛–1/16 mm.

Analyst Rowser
Date 1-3-35

Wt. of sample 3.34 gm. 100.0%

Heavy Minerals .05 gm. 1.5 %

Light Minerals 3.29 gm. 98.5 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate

	No. of Grains	Rel. %
anatase	1	0
anhydrite	8	1
tourmaline (brown)	2	0
Feldspar	158	17
glauconite	18	2
garnet	2	0
sphalerite	3	0
Quartz	72	7
Pyrite	561	59
Scale	118	13
Total	943	100%

Light Concentrate

Feldspar	1158	66
Quartz	532	30
glauconite	64	4
Muscovite	4	0
Total	1758	100%

Classification Grouping:

	Absol. %
Primary Minerals: 33.6 %	
Quartz (Heavy / Light)	.1 / 29.6
glauconite (Heavy / Light)	0 / 3.9
Muscovite	0
Tourmaline	0
garnet	0
Secondary Minerals: 66.4 %	
anatase	0
anhydrite	0
Feldspar (Heavy / Light)	.3 / 65.
sphalerite	0
Pyrite	.9
Scale	.2
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite - 63 %; - cream, friable; glauconitic;
Sand - 37 % - chiefly small feldspars -

DEEP WELL STUDY

Well No. W— 0005

Depth 2380 to 2400

No. samples used 2

Analyst T & G

Date 8-9-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P.	2.37
3. Wt. after solution, with filter paper	20.40 gm.			
4. Less wt. F. P. (2)	2.37 gm.			
5. Wt. Insol. Residue (3 minus 4)	18.03 gm.	36.1 %		
6. Wt. lost by solution (1 minus 5)	31.97 gm.	63.9 %		
7. To balance (5 plus 6)	50.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	18.03 gm.	100.0%	
2. Cylinder (+1/32) 15.86 + 2.35 = 13.51	13.51 gm.	75.0 %	
3. Jar (1/32—1/64) 4.72 − 2.37 = 2.35	2.35 gm.	13.0 %	
4. Drain	2.17 gm.	12.0 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.09	.6
1–½ mm	.50	3.7
½–¼ mm	1.57	11.6
¼–⅛ mm	1.40	10.3
⅛–1/16	3.80	28.0
Pan	6.19	45.8
Total	13.55	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ⅛-¼ mm.

Analyst .....

Date .....

Wt. of sample 3.63 gm. 100.0%

Heavy Minerals .08 gm. %

Light Minerals gm. %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Total		100%

Classification Grouping: Primary Minerals: ..... %

Absol. %

Light Concentrate

Secondary Minerals: ..... %

Total 100% Total 100%

Revised Lithologic Description (from descriptive log and laboratory data).

DEEP WELL STUDY

Well No. W— 0005
Depth 2410 to 2430
No. samples used 2
Analyst T & G
Date 8-9-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P.	2.34
3. Wt. after solution, with filter paper	25.89 gm.			
4. Less wt. F. P. (2)	2.34 gm.			
5. Wt. Insol. Residue (3 minus 4)	23.55 gm.	47.0 %		
6. Wt. lost by solution (1 minus 5)	26.45 gm.	53.0 %		
7. To balance (5 plus 6)	50.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	23.55 gm.	100.0%	
2. Cylinder (+1/32) 28.86 − 2.35 = 18.51	18.51 gm.	78.6 %	
3. Jar (1/32—1/64) 4.52 − 2.35 = 2.17	2.17 gm.	9.2 %	
4. Drain 2.17	2.87 gm.	12.2 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm	.23	1.3
½–¼ mm	1.66	9.0
¼–⅛ mm	3.20	17.4
⅛–1/16	6.86	37.3
Pan	6.46	35.0
Total	18.41	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) 1/4-1/64 mm.

Analyst Pyre
Date 1/3/34

Wt. of sample . . . . 3.35 gm. 100.0%

Heavy Minerals . . . . .03 gm. 1.9 %

Light Minerals . . . . 3.32 gm. 99.1 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate

	No. of Grains	Rel. %
Garnet	16	1
Zircon Zoned	19	2
Zircon Unzoned	6	1
Tourmaline (Green)	11	1
Glauconite	96	3
Feldspar	80	2
Anatase-Leucoxene	23	0
Sphalerite	4	0
Rutile	1	60
Pyrite	684	19
Casing Scale	211	0
Muscovite	1	0
?? Barite-??	5	4
Quartz	93	
Total	1138	100%

Light Concentrate

Feldspar	599	50
Quartz	502	42
Glauconite	93	8
	1194	
Total		100%

Classification Grouping:

	Absol. %
Primary Minerals: 41.7 %	
Garnet	0
Zircon Zoned	0
Zircon Unzoned	0
Tourmaline	0
Rutile	0
Muscovite	0
Quartz Heavy	0
Quartz Light	41.7
Secondary Minerals: 58.3 %	
Feldspar Heavy	49.6
Feldspar Light	0
Anatase	0
Glauconite Heavy	7.9
Glauconite Light	0
Sphalerite	.2
Casing Scale	0
Barite	.5
Pyrite	
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite- 53% soluble; lt cream to buff; ±23% feldspar some definitely authigenic, most very ang., some rounded; ±20% quartz, some rounded; 3-9% glauconite;

DEEP WELL STUDY

Well No. W— 0005
Depth 2440 to 2450
No. samples used 1.
Analyst T & G
Date 8-9-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	35 gm.	100.0%	2. Wt. of F. P. 2.35
3. Wt. after solution, with filter paper	21.64 gm.		
4. Less wt. F. P. (2)	2.35 gm.		
5. Wt. Insol. Residue (3 minus 4)	19.29 gm.	55.0 %	
6. Wt. lost by solution (1 minus 5)	15.71 gm.	45.0 %	
7. To balance (5 plus 6)	35.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	19.29 gm.	100.0%	
2. Cylinder (+1/32) 12.39 + 2.40 = 9.99	9.99 gm.	51.7 %	
3. Jar (1/32—1/64) 5.56 − 2.40 = 3.16	3.16 gm.	16.4 %	
4. Drain 3.16	6.14 gm.	31.9 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.59	5.9
1–½ mm	.86	8.5
½–¼ mm	1.10	11.0
¼–⅛ mm	1.50	15.3
⅛–1/16	2.84	28.2
Pan	3.09	31.1
Total	9.98	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) 1/8-1/16 mm.

Analyst Byrne
Date 1/13/34

Wt. of sample 2.14 gm. 100.0%

Heavy Minerals .02 gm. .7 %

Light Minerals 2.72 gm. 99.3 %

Shape Analysis:

A ____%: a ____%: C ____%

r ____%: R ____%.

Minerals Identified:

Heavy Concentrate

		No. of Grains	Rel. %
Pyrite	1000 (est.)		84
Casing Scale	100		9
Leucoxene	10		.9
Zircon	1		.1
Sphalerite	2		.2
Feldspar	5		.4
Quartz	5		.4
	1123		
Total			100%

Light Concentrate

Feldspar	460		44
Quartz	431		41
Glauconite	79		8
Clay fragments	73		7
Muscovite	5		0
Total	1048		100%

Classification Grouping:

	Absol. %
Primary Minerals: 47.7 %	
Zircon	0
Quartz (Heavy / Light)	40.8
Muscovite	0
Clay fragments	6.9
	7.9
Secondary Minerals: 52.3 %	
Pyrite	.6
FELDSPAR (Heavy / Light)	43.7
Sphalerite	0
Leucoxene	.1
Casing Scale	
Glauconite	7.9
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite - 45% soluble; ± 22% Feldspar, authigenic at least in part; ±22% quartz; ± 5% glauconite; ± 5% shale frags; heavy concentrate ±100% opaques;

DEEP WELL STUDY

Well No. W— 0005
Depth 2450 to 2460
No. samples used 1
Analyst T & G
Date 8-9-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15%)

1. Sample weight	35 gm.	100.0%	2. Wt. of F. P.	2.34
3. Wt. after solution, with filter paper	26.99 gm.			
4. Less wt. F. P. (2)	2.34 gm.			
5. Wt. Insol. Residue (3 minus 4)	24.65 gm.	70.4 %		
6. Wt. lost by solution (1 minus 5)	10.35 gm.	29.6 %		
7. To balance (5 plus 6)	35.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	24.65 gm.	100.0%	
2. Cylinder (+1/32) 18.30, 2.30, 16.00	16.00 gm.	64.9 %	
3. Jar (1/32—1/64) 5.02, 2.39, 2.63	2.63 gm.	10.7 %	
4. Drain	6.02 gm.	24.4 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	2.36	14.5
1–½ mm	3.37	20.8
½–¼ mm	3.30	20.3
¼–⅛ mm	2.93	18.1
⅛–1/16	2.30	14.2
Pan	1.96	12.1
Total	16.12	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ¼-⅛ mm.

Analyst D. Frasche
Date 12-11-34

Wt. of sample 2.230 gm. 100.0%

Heavy Minerals .018 gm. .8 %

Light Minerals 2.212 gm. 99.2 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
tourmaline	5 - 1.5	
muscovite	19 - 1.5	
barite	2 - .12	
amphibole	4 - .3	
zircon	5 - .4	
feldspar	20 - 1.6	
quartz	2 - .12	
calcite	1 - .1	
Clay minerals	199 - 16.3	
pyrite	915 - 58.7	
magnetite	186 - 15.3	
hematite	95 - 3.9	
leucoxene	19 - 1.4	
Total	1219	100%

Classification Grouping: Primary Minerals: 99.5 %	Absol. %
tourmaline	0
muscovite	0
amphibole	0
zircon	0
feldspar {Heavy Light authigenic}	9.9
quartz {Heavy Light}	1.9
Clay minerals {Heavy Light}	85.6
magnetite	.1
glauconite	1.9

Light Concentrate		Rel. %
feldspar (authegenic)	87-10	
glauconite	15- 2	
quartz	22- 2	
Clay minerals	742-86	
Total	866	100%

Secondary Minerals: .5 %	Absol. %
barite	0
calcite	.5
pyrite	0
hematite	0
leucoxene	
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Grey-green shale 70% fissile, calc. with same authegenic feldspars. Data 7400'.

DEEP WELL STUDY

Well No. W— 0005
Depth 2460 to 2480
No. samples used 2
Analyst T & G
Date 8-9-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight . . . . . 50 gm. 100.0%: 2. Wt. of F. P. 2.40
3. Wt. after solution, with filter paper . . . . . 24.66 gm.
4. Less wt. F. P. (2) . . . 2.40 gm.
5. Wt. Insol. Residue (3 minus 4) . . . . . 22.26 gm. 44.6 %
6. Wt. lost by solution (1 minus 5) . . . . . 27.74 gm. 55.4 %
7. To balance (5 plus 6) . . 50.00 gm. 100.0 %

B. Subsidation:

1. Original Wt. . . . . gm. 100.0%
2. Cylinder (+1/32) gm. %
3. Jar (1/32—1/64) gm. %
4. Drain . . . . . gm. %

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.66	3.0
1–½ mm	2.51	11.3
½–¼ mm	6.69	30.1
¼–⅛ mm	5.74	25.9
⅛–1/16	3.10	14.0
Pan	3.48	15.7
Total	22.18	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ½-⅛ mm.

Analyst Pyre
Date 1/9/34

Wt. of sample . . . . 312 gm. 100.0%
Heavy Minerals . . . . 10 gm. 3.2 %
Light Minerals . . . . 3.02 gm. 96.8 %

Shape Analysis:
A ..... %: a ..... %: C ..... %
r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate

	No. of Grains	Rel. %
Pyrite	3000	76
Casing Scale	275	7.
Feldspar	325	8.1
Quartz	300	7.6
Garnet	14	.4
Zircon Szoned	7	.2
Zircon Uzoned	7	.2
Tourmaline	4	.1
Sphalerite	9	.2
Anatase	1	.0
Glauconite	3	.2
Muscovite	1	.0
Total	3946	100%

Light Concentrate

Feldspar	719	59
Quartz	439	36
Shale	38	3
Glauconite	14	1
Muscovite	10	1
Total	1220	100%

Classification Grouping:

	Absol. %
Primary Minerals: 34.9 %	
Garnet	0
Zircon Szoned	0
Zircon Uzoned	0
Tourmaline	0
Muscovite Heavy	.9
Muscovite Light	2.9
Shale	.2
Quartz Heavy	34.9
Quartz Light	
Secondary Minerals: 61.1 %	
Pyrite	2.4
Sphalerite	0
Glauconite Heavy	.0
Glauconite Light	.9
Feldspar Heavy	57.3
Feldspar Light	
Casing Scale	.2
Anatase	0
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite - 55% soluble; lt. cream to tan; saccharoidal; ± 27% feldspar most at least authigenic; ± 16% qtz; green shale fragments 2-3%; 1-2% glauconite; some muscovite; ± 1% pyrite;

DEEP WELL STUDY

Well No. W— 0005
Depth 2490 to 2500
No. samples used 1
Analyst T & G
Date 8-10-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P.	2.40
3. Wt. after solution, with filter paper	17.53 gm.			
4. Less wt. F. P. (2)	2.40 gm.			
5. Wt. Insol. Residue (3 minus 4)	15.13 gm.	37.9 %		
6. Wt. lost by solution (1 minus 5)	24.87 gm.	62.1 %		
7. To balance (5 plus 6)	40.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	15.13 gm.	100.0%	
2. Cylinder (+1/32) 16.07 − 2.28 = 13.79	13.79 gm.	91.0 %	
3. Jar (1/32—1/64) 2.86 − 2.34 = 0.52	0.52 gm.	3.5 %	
4. Drain 0.52	0.82 gm.	5.5 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm	.78	5.6
½–¼ mm	2.94	21.2
¼–⅛ mm	3.78	27.5
⅛–1/16	3.05	22.0
Pan	3.27	23.7
Total	13.82	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } ..... Sp. gr. Size–Grade(s) 1/8-1/16 mm.

Analyst Rowser
Date 1-3-35

Wt. of sample 296 gm. 100.0%

Heavy Minerals 12 gm. 4.1 %

Light Minerals 2.84 gm. 95.9 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified: Heavy Concentrate	No. of Grains	Rel. %
Pyrite	426	44
Chert	112	12
Sphalerite	11	1
Tourmaline	1	0
Quartz	14	1
Feldspar	8	1
Scale	398	41
Total	970	100%

Light Concentrate		
Feldspar	674	53
chert	184	14
Quartz	356	28
glauconite	22	2
Clay	35	3
Total	1271	100%

Classification Grouping:

	Absol. %
Primary Minerals: 31.7 %	
Quartz (Heavy)	0
Quartz (Light)	26.9
glauconite	1.9
clay	2.9
Tourmaline	0

Secondary Minerals: 68.3 %	
Pyrite	1.8
Feldspar (Light)	50.7
Feldspar (Heavy)	.5
chert (Light)	13.4
sphalerite	0
Scale	1.7
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite 60% — lgt. cream to buff; fine xline, sand; +30% size- 1/4 - 1/8 - 28% - prin. sub - 1/8-1/16 - 22%
Feldspar very abundant

DEEP WELL STUDY

Well No. W-- 0005

Depth 2500 to 2520

No. samples used 2

Analyst T & G

Date 8-10-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P.	2.35
3. Wt. after solution, with filter paper	34.18 gm.			
4. Less wt. F. P. (2)	2.35 gm.			
5. Wt. Insol. Residue (3 minus 4)	31.83 gm.	79.6 %		
6. Wt. lost by solution (1 minus 5)	8.17 gm.	20.4 %		
7. To balance (5 plus 6)	40.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	31.83 gm.	100.0%	
2. Cylinder (+1/32) 20.73, 2.25, 18.48	18.48 gm.	58.0 %	
3. Jar (1/32—1/64) 3.03, 1.96	1.07 gm.	3.5 %	
4. Drain 1.07	12.28 gm.	38.5 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.76	4.2
1–½ mm	1.60	8.8
½–¼ mm	1.84	10.1
¼–⅛ mm	4.34	23.9
⅛–1/16	5.35	29.4
Pan	4.30	23.6
Total	18.19	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ⅛-1/16 mm.

Analyst D. Fraschè

Date 1-4-35

Wt. of sample 3.15 gm. 100.0%

Heavy Minerals 101 gm. 3 %

Light Minerals 3.14 gm. 99.7 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
pyroxene	2 - 0	
quartz	20 - 1	
feldspar	6 - 0	
pyrite	1086 - 68	
hemetite	24 - 2	
scale	105 - 7	
clay minerals	354 - 22	
Total	1597	100%

Classification Grouping: Primary Minerals: 99.8 %	Absol. %
pyroxene	0
quartz	0
feldspar	0
clay minerals (heavy / light)	.1 / 99.7

Light Concentrate		
quartz	2 — 0	
clay minerals	7000 — 100	
Total	7002	100%

Secondary Minerals: 2 %

pyrite	.2
hemetite	0
scale	0
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Gray shale 79% fissile, calc. some sub-rounded grains of quartz. Limestone 20%

DEEP WELL STUDY

Well No. W— 0005
Depth 2530 to 2550
No. samples used 2
Analyst T + G
Date 8-10-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P.	2.42
3. Wt. after solution, with filter paper	34.49 gm.			
4. Less wt. F. P. (2)	2.42 gm.			
5. Wt. Insol. Residue (3 minus 4)	32.07 gm.	80.3 %		
6. Wt. lost by solution (1 minus 5)	7.93 gm.	19.7 %		
7. To balance (5 plus 6)	40.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	32.07 gm.	100.0%	
2. Cylinder (+1/32) 6.74, 2.33, 13.81	13.81 gm.	45.7 %	
3. Jar (1/32—1/64) 5.92, 2.32	3.60 gm.	43.1 %	
4. Drain 3.60	1466 gm.	11.2 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	4.07	
1–½ mm	2.27	
½–¼ mm	2.45	
¼–⅛ mm	2.05	
⅛–1/16	1.67	
Pan	1.39	
Total	13.85	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ⅛-¼ mm.

Analyst D. Frasché
Date 12-11-34

Wt. of sample 1.690 gm. 100.0%

Heavy Minerals 1.005 gm. .3 %

Light Minerals 1.685 gm. 99.7 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
feldspar	1	0
quartz	1	0
zircon	2	0
amphibole	0	0
carborundum	1	0
clay minerals	154	13
pyrite	435	36
limonite	180	15
magnetite	334	28
hematite	98	6
leucoxene	78	2
Total	1216	100%

Light Concentrate		
glauconite	9	1
chert	2	1
feldspar (authegenic?)	14	1
clay minerals	1120	97
Total	1160	100%

Classification Grouping:

Primary Minerals: 98.9 %

	Absol. %
feldspar (Heavy / Light)	0 / 1.0
quartz	0
zircon	0
amphibole	0
carborundum	0
clay minerals (Heavy / Light)	96.7
magnetite	1.0
glauconite	1.0

Secondary Minerals: 1.1 %

leucoxene	0
pyrite	1.1
limonite	0
hematite	0
chert	1.0
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Grey brown Shale 80% Some fine glauconite
Limestone 20% crystalline

DEEP WELL STUDY

Well No. W— 0005
Depth 2560 to 2580
No. samples used 2
Analyst T & G
Date 8-10-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P. 2.33
3. Wt. after solution, with filter paper	20.53 gm.		
4. Less wt. F. P. (2)	2.33 gm.		
5. Wt. Insol. Residue (3 minus 4)	18.20 gm.	45.5 %	
6. Wt. lost by solution (1 minus 5)	21.80 gm.	54.5 %	
7. To balance (5 plus 6)	40.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	gm.	100.0%	
2. Cylinder (+1/32)	gm.	%	
3. Jar (1/32—1/64)	gm.	%	
4. Drain	gm.	%	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	7.22	39.9
1–½ mm	4.15	23.4
½–¼ mm	1.80	9.9
¼–⅛ mm	1.14	6.3
⅛–1/16	1.85	10.2
Pan	1.87	10.3
Total	18.03	100.0

S.G. not valid

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ⅛-Pan mm.

Analyst D. Fraschè
Date 1-7-35

Wt. of sample 2.10 gm. 100.0%

Heavy Minerals .04 gm. 1.9 %

Light Minerals 2.06 gm. 98.1 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified: Heavy Concentrate	No. of Grains	Rel. %
tourmaline	33	3
quartz	54	5
feldspars	21	2
zircon	29	2
leucoxene	39	4
limonite	819	75
scale	66	6
pyrite	33	3
Total	1094	100%

Light Concentrate		
feldspar	106	4
glauconite	129	5
quartz	67	3
clay minerals	2107	88
Total	3409	100%

Classification Grouping:

Primary Minerals: 98.3 %	Absol. %
tourmaline	.1
quartz (heavy)	3.6
feldspars	3.9
zircon	0
glauconite	4.9
clay minerals	86.4

Secondary Minerals: 1.7 %	
leucoxene	.1
limonite	1.4
pyrite	.1
scale	.1
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

limestone 54% white to tan crystalline with embedded glauconite. Shale 45% gray-many subedral feldspars- glauconite present

DEEP WELL STUDY

Well No. W— 0005
Depth 2580 to 2600
No. samples used 2
Analyst T & G
Date 8-10-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	40 gm.	100.0%	2. Wt. of F. P. 2.34
3. Wt. after solution, with filter paper	22.41 gm.		
4. Less wt. F. P. (2)	2.34 gm.		
5. Wt. Insol. Residue (3 minus 4)	20.07 gm.	50.2 %	
6. Wt. lost by solution (1 minus 5)	19.93 gm.	49.8 %	
7. To balance (5 plus 6)	40.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	3.66	18.6
1–½ mm	6.83	34.6
½–¼ mm	4.17	21.2
¼–⅛ mm	1.66	8.4
⅛–1/16	1.92	9.8
Pan	1.45	7.4
Total	19.69	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Analyst Pyre
Date 1/4/34

Acet. Tetrabr. / ~~Bromoform~~ ±2.93 Sp. gr. Size–Grade(s) ⅛-Pan mm.

Wt. of sample 3.35 gm. 100.0%

Heavy Minerals 0.09 gm. 2.7 %

Light Minerals 3.26 gm. 97.3 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified; Heavy Concentrate

	No. of Grains	Rel. %
Zircon Szoned / unzoned	95 / 98	3 / 4
Tourmaline	9	1
Anatase	15	1
Leucoxene	162	12
Limonite	703	53
Pyrite	181	14
Rutile	1	0
Tremolite	3	0
* Monazite ??	1	0
Casing Scale	158	12
Total	1316	100%

Classification Grouping:

	Absol. %
Primary Minerals: 76.2 %	
Zircon Szoned	.1
unzoned	.1
Tourmaline	0
Rutile	0
Monazite	0
Quartz	23.4
Shale	52.6
Tremolite	0

Light Concentrate

Feldspar	92	10
Quartz	215	24
Glauconite	108	12
Shale	487	54
Total	902	100%

Secondary Minerals: 23.8 %	
Anatase	0
Leucoxene	.3
Limonite	1.4
Pyrite	.4
Casing Scale	.3
Feldspar	9.7
Glauconite	11.7
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite – 50% soluble: shale particles ± 30%; quartz ± 10%; feldspar ± 5%; glauconite ± 5%; iron oxide common;

* over

DEEP WELL STUDY

Well No. W— 0005
Depth 2610 to 2620
No. samples used 1
Analyst T & G
Date 8-10-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	30 gm.	100.0%	2. Wt. of F. P.	4.71
3. Wt. after solution, with filter paper	25.91 gm.			
4. Less wt. F. P. (2)	4.71 gm.			
5. Wt. Insol. Residue (3 minus 4)	21.20 gm.	70.6 %		
6. Wt. lost by solution (1 minus 5)	8.80 gm.	29.4 %		
7. To balance (5 plus 6)	30.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	12.76	60.2
1–½ mm	2.83	13.3
½–¼ mm	2.15	10.8
¼–⅛ mm	1.57	7.4
⅛–1/16	1.00	4.7
Pan	.87	4.1
Total	21.18	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ⅛-Pan mm.

Analyst D. Frasche'
Date 12–14–34

Wt. of sample 1.74 gm. 100.0% Shape Analysis:

Heavy Minerals .015 gm. .9 % A ___ %: a ___ %: C ___ %

Light Minerals 1.725 gm. 99.1 % r ___ %: R ___ %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
zircon	96	5
tourmaline	7	.5
quartz	5	0
feldspar	39	3
amphibole	7	.5
anatase	1	0
leucoxene	312	15
pyrite	66	5
limonite	43	3
magnetite or ilmenite	933	67
glauconite	3	1
garnet	1	0
Total	1400	100%

Light Concentrate		
feldspar	803	27
glauconite	62	2
Clay minerals	2138	71
Total	3003	100%

Classification Grouping:

	Absol. %
Primary Minerals: 99.7 %	
zircon	0
tourmaline	0
quartz (Heavy)	0
feldspar (Light)	26.8
amphibole	0
magnetite or ilmenite	.6
glauconite (Heavy)	2.0
clay minerals (Light)	70.5
garnet — 0	
Secondary Minerals: .1 %	
anatase	0
leucoxene	.1
pyrite	0
limonite	0
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Gray green shale 70% high in feldspars
Limestone 29%

DEEP WELL STUDY

Well No. W— 0005
Depth 2620 to 2640
No. samples used 2
Analyst T + G
Date 8-10-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P. 2.34
3. Wt. after solution, with filter paper	28.10 gm.		
4. Less wt. F. P. (2)	2.34 gm.		
5. Wt. Insol. Residue (3 minus 4)	25.76 gm.	51.4	%
6. Wt. lost by solution (1 minus 5)	24.24 gm.	48.6	%
7. To balance (5 plus 6)	50.00 gm.	100.0	%

B. Subsidation:

1. Original Wt.		25.76 gm.	100.0%	
2. Cylinder (+1/32)	20.48 2.30 18.18	18.18 gm.	70.6	%
3. Jar (1/32—1/64)	4.05 2.35	1.70 gm.	6.6	%
4. Drain	1.70	5.88 gm.	22.8	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	1.80	9.9
1–½ mm	3.17	17.4
½–¼ mm	3.90	21.5
¼–⅛ mm	3.40	18.6
⅛–1/16	3.33	18.3
Pan	2.61	14.3
Total	18.21	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Analyst D. Frasché
Date 12-12-34

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ⅛-1/16 mm.

Wt. of sample 330 gm. 100.0%

Heavy Minerals 11.3 gm. 3.4 %

Light Minerals 3.187 gm. 96.6 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
amphibole	31	2
quartz	23	2
feldspar	15	2
zircon	5	1
carbonates	3	0
anatase	2	0
tourmaline	2	0
epidote	1	0
muscovite	1	0
garnet	12	1
glauconite	93	8
magnetite	611	63
pyrite	38	4
ilmenite	153	16
leucoxene	13	1
Total	972	100%

Classification Grouping:

	Absol. %
Primary Minerals: 99.4 %	
amphibole	.1
quartz	18.6
feldspar	34.1
zircon	0
tourmaline	0
epidote	0
muscovite	0
garnet	6.3
glauconite	6.9
magnetite	2.1
clay-minerals	37.1
Secondary Minerals: .6 %	
carbonates	0
anatase	.1
pyrite	.5
ilmenite	
leucoxene	0
Total	100%

Light Concentrate		
glauconite	134	7.1
feldspar	664	35.3
quartz	361	19.2
clay-minerals	721	38.4
Total	1880	100%

Revised Lithologic Description (from descriptive log and laboratory data).

48% 15 + 36% gray green shale - 2% feldspar
8% quartz - pyrite -

DEEP WELL STUDY

Well No. W— 0005
Depth 2650 to 2670
No. samples used 2
Analyst T & G
Date 8-10-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P.	2.36
3. Wt. after solution, with filter paper	16.47 gm.			
4. Less wt. F. P. (2)	2.36 gm.			
5. Wt. Insol. Residue (3 minus 4)	14.11 gm.	28.3 %		
6. Wt. lost by solution (1 minus 5)	35.89 gm.	71.7 %		
7. To balance (5 plus 6)	50.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	14.11 gm.	100.0%	
2. Cylinder (+1/32) 13.50 + 2.26 = 11.24	11.24 gm.	79.6 %	
3. Jar (1/32—1/64) 3.25 − 2.35 = 0.90	0.90 gm.	6.4 %	
4. Drain 0.90	1.97 gm.	14.0 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.08	.8
1–½ mm	.22	1.9
½–¼ mm	.58	5.1
¼–⅛ mm	2.13	18.8
⅛–1/16	4.55	40.3
Pan	3.74	33.1
Total	11.30	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) 1/8-1/16 mm.

Analyst D. Fraschè
Date 12-13-34

Wt. of sample 3.41 gm. 100.0%

Heavy Minerals 0.72 gm. 2.1 %

Light Minerals 3.33 gm. 97.9 %

Shape Analysis:

A 5 %: a 95 %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
quartz	28 - 3	
feldspar	51 - 5	
zircon	8 - 1	
amphibole	2 - 0	
tourmaline	2 - 0	
garnet	0	
magnetite or ilmenite	69½ - 64	
limonite	279 - 25	
pyrite	11 - 1	
leucoxene	9 - 1	
anatase	-	
Total	1082	100%

Light Concentrate		
glauconite	492 - 44	
feldspar	390 - 35	
quartz	240 - 21	
Total	1122	100%

Classification Grouping:

	Absol. %
Primary Minerals: 99.5 %	
Quartz Heavy	.1
Quartz Light	20.6
Feldspar Heavy	34.3
Feldspar Light	0
Zircon	.1
Amphibole	0
Tourmaline	0
Garnet	0
Magnetite	1.3
Glauconite	43.1
Secondary Minerals: .5 %	.5
Limonite	0
Pyrite	0
Leucoxene	0
Anatase	0
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Limestone rich granular, dolomitic, embedded glauconite, glauconitic sand 25% - 2% feldspars 1/8 - 1/16 mm

DEEP WELL STUDY

Well No. W— 0005
Depth 2680 to 2700
No. samples used 2
Analyst T & G
Date 8-10-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	50 gm.	100.0%	2. Wt. of F. P. 2.28
3. Wt. after solution, with filter paper	10.99 gm.		
4. Less wt. F. P. (2)	2.28 gm.		
5. Wt. Insol. Residue (3 minus 4)	8.71 gm.	17.5 %	
6. Wt. lost by solution (1 minus 5)	41.29 gm.	82.5 %	
7. To balance (5 plus 6)	50.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	8.71 gm.	100.0%	
2. Cylinder (+1/32) 9.61 − 2.26 = 7.33	7.33 gm.	84.1 %	
3. Jar (1/32—1/64) 2.83 − 2.44 = 0.39	0.39 gm.	4.5 %	
4. Drain 0.39	0.99 gm.	11.4 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm	.98	13.4
½–¼ mm		
¼–⅛ mm		
⅛–1/16	6.34	86.6
Pan		
Total	7.32	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) 1/4-1/32 mm.

Analyst Rowsey
Date 1-3-35

Wt. of sample 3.35 gm. 100.0%

Heavy Minerals 62 gm. 18.5 %

Light Minerals 2.73 gm. 81.5 %

Shape Analysis:

A ....%: a ....%: C ....%

r ....%: R ....%.

Minerals Identified: Heavy Concentrate	No. of Grains	Rel. %
Limonite	865	82
glauconite	10	1
barite	1	0
Feldspar	15	0
Quartz	8	1
Scale	166	16
Total	10.55	100%

Light Concentrate		
Quartz	618	44
Feldspar	696	50
glauconite	77	6
Total	13.91	100%

Classification Grouping:

Primary Minerals: 41.2 %

		Absol. %
Quartz	Heavy	.2
	Light	35.9
glauconite	Heavy	.2
	Light	4.9

Secondary Minerals: 58.8 %

		Absol. %
Feldspar	Heavy	0
	Light	40.7
limonite		15.2
barite		0
Scale		2.9
Total		100%

Revised Lithologic Description (from descriptive log and laboratory data).

Dolomite - 83% - brown to buff - fine xline - iron stained; snd - 15%; fine - feldspar abundant; shale - 2% - iron rich.

DEEP WELL STUDY

Well No. W— 0005
Depth 2710 to 2720
No. samples used 1
Analyst T & G
Date 8-10-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	30 gm.	100.0%	2. Wt. of F. P. 2.29
3. Wt. after solution, with filter paper	20.14 gm.		
4. Less wt. F. P. (2)	2.29 gm.		
5. Wt. Insol. Residue (3 minus 4)	17.85 gm.	59.5 %	
6. Wt. lost by solution (1 minus 5)	12.15 gm.	40.5 %	
7. To balance (5 plus 6)	30.00 gm.	100.0 %	

B. Subsidation:

1. Original Wt.	17.85 gm.	100.0%	
2. Cylinder (+1/32) 13.78 2.40 12.78	12.78 gm.	71.5 %	
3. Jar (1/32—1/64) 3.77 2.34 1.43	1.43 gm.	8.1 %	
4. Drain	3.64 gm.	20.4 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.31	2.4
1–½ mm	.33	2.6
½–¼ mm	.84	6.6
¼–⅛ mm	3.52	27.7
⅛–1/16	5.56	43.5
Pan	2.19	17.2
Total	12.75	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ⅛-¼ mm.

Analyst Rowser
Date 1-3-35

Wt. of sample 922 gm. 100.0%

Heavy Minerals 15 gm. 4.7 %

Light Minerals 3.07 gm. 95.3 %

Shape Analysis:

A ____ %: a 21 %: C 64 %

r 15 %: R ____ %.

Minerals Identified: Heavy Concentrate	No. of Grains	Rel. %
Zircon (zoned)	7	1
(unzoned)	2	0
Limonite	721	77
Pyrite	9	1
Tourmaline (blue)	1	0
Scale	200	21
Total	940	100%

Light Concentrate		
Feldspar	481	41
Quartz	526	45
Glauconite	3	0
Clay	172	14
Total	1182	100%

Classification Grouping:

Primary Minerals: 56.3 %	Absol. %
Clay	13.4
Quartz	42.9
Glauconite	0
Zircon	0
Tourmaline	0

Secondary Minerals: 43.7 %	
Feldspar	39.1
Limonite	3.6
Scale	1.0
Pyrite	0
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

SS – 59% – fine – Prin. grd. 44%, Prin. sub – ⅛-¼ – 28%
Shape – a – 21% – C – 64% – r – 15% –
dolo – 41% – lgt cream to buff, fine x fine,

DEEP WELL STUDY

Well No. W— 0005
Depth 2720 to 2740
No. samples used 2
Analyst T + G
Date 8/11/34

MECHANICAL ANALYSIS

A. ~~Acid treatment (HCl ..... %)~~ Screen

1. Sample weight . . . . . 25.47 gm. 100.0%
2. Wt. of F. P. .....
3. Wt. after solution, with filter paper . . . . . gm.
4. Less wt. F. P. (2) . . . . gm.
5. Wt. Insol. Residue (3 minus 4) . . . . . gm. %
6. Wt. lost by solution (1 minus 5) . . . . . gm. %
7. To balance (5 plus 6) . . . gm. %

B. Subsidation:

1. Original Wt. . . . . gm. 100.0%
2. Cylinder (+1/32) gm. %
3. Jar (1/32—1/64) gm. %
4. Drain . . . . . gm. %

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.05	.2
1–½ mm	.09	.3
½–¼ mm	1.86	7.3
¼–⅛ mm	15.34	60.6
⅛–1/16	7.67	30.3
Pan	.32	1.3
Total	25.33	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ⅛-1/16 mm.

Analyst Pyre
Date 1/7/35

Wt. of sample . . . . 4.13 gm. 100.0%

Heavy Minerals . . . . .03 gm. .7 %

Light Minerals . . . . 4.10 gm. 99.3 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified:

Heavy Concentrate		No. of Grains	Rel. %
Zircon {zoned / unzoned	7	1	
Tourmaline {green / blue / brown	13 / 9 / 2	2 / 1 / 0	
Anatase	6	1	
*Phosphate	87	16	
Pyrite	137	24	
Casing Scale	40	7	
*Hematite	67	12	
Leucoxene	12	2	
Quartz	61	11	
Dolomite	112	20	
Glauconite	3	1	
	560		
Total			100%

Light Concentrate			
Quartz	1126	88	
Feldspar	130	10	
Dolomite	20	2	
	1276		
Total			100%

Classification Grouping:

Primary Minerals: ..... %	Absol. %
Zircon {zoned / unzoned	0 / 0
Tour. {green / blue / brown	0 / 0 / 0
Quartz {Heavy / Light	.1 / 87.5
Feldspar	9.9
Phosphate	.1
Dolomite {Heavy / Light	.1 / 2.0

Secondary Minerals: ..... %	
Anatase	0
Leucoxene	.2
Pyrite	0
Calcite	.1
Hematite	0
Casing Scale	0
Glauconite	
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Sandstone - maj. grade ¼-½; prin. subsid ⅛-1/16; A-C; ±10% feldspar mostly orthoclase + microcline; 2-3% dolomite.

*(over)

DEEP WELL STUDY

Well No. W— 0005

Depth 2750 to 2770

No. samples used 2

Analyst T + G

Date 8/11/34

MECHANICAL ANALYSIS

A. Acid treatment (HCl ..... %) Screen

1. Sample weight . . . . . 32.01 gm. 100.0%: 2. Wt. of F. P. .....
3. Wt. after solution, with filter paper . . . . . gm.
4. Less wt. F. P. (2) . . . gm.
5. Wt. Insol. Residue (3 minus 4) . . . . . gm. %
6. Wt. lost by solution (1 minus 5) . . . . . gm. %
7. To balance (5 plus 6) . . gm. %

B. Subsidation:

1. Original Wt. . . . . gm. 100.0%
2. Cylinder (+1/32) gm. %
3. Jar (1/32—1/64) gm. %
4. Drain . . . . . gm. %

C. Screen Analysis

SIZE	GRAMS	%
2 plus	.17	.5
2–1 mm	5.02	15.6
1–½ mm	10.45	32.6
½–¼ mm	10.86	33.8
¼–⅛ mm	4.83	15.0
⅛–1/16	.70	2.2
Pan	.11	.3
Total	32.14	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst D. Frasche

Date 12-13-34

Wt. of sample . . . . 3.330 gm. 100.0% Shape Analysis:

Heavy Minerals . . . . .038 gm. 1.1 % A ..... %: a ..... %: C ..... %

Light Minerals . . . . 3.292 gm. 98.9 % r ..... %: R ..... %.

Minerals Identified: Heavy Concentrate	No. of Grains	Rel. %
Carbonates	352	47
Zircon	88	7.5
Tourmaline	9	.8
Feldspars	4	.3
Amphibole	4	.3
Magnetite – Ilmenite	305	26.1
Hematite	154	13.1
Anatase	2	.2
Leucoxene	4	.3
Pyrite	13	1.1
Muscovite	5	.4
Quartz	34	2.9
Total	1174	100%

Classification Grouping: Primary Minerals: 99.4 %	Absol. %
Zircon	.1
Tourmaline	0
Feldspars {Heavy / Light}	.8 / 8.9
Amphibole	.3
Magnetite	0
Muscovite	0
Quartz {Heavy / Light}	.1 / 90.
Glauconite	0

Light Concentrate		
Quartz	907	91
Glauconite	2	0
Feldspars	86	9
Total	995	100%

Secondary Minerals: .6 %

Carbonates	.5
Hematite	.1
Anatase	0
Leucoxene	0
Pyrite	0
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Sandstone- White to buff- Fe stained feldspathic- Major grade ¼ - ½ mm. Sub-angular.

DEEP WELL STUDY

Well No. W— 0005
Depth 2780 to 2800
No. samples used 2
Analyst T + G
Date 8-10-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15%)

1. Sample weight	35 gm.	100.0%	2. Wt. of F. P.	2.28
3. Wt. after solution, with filter paper	32.99 gm.			
4. Less wt. F. P. (2)	2.28 gm.			
5. Wt. Insol. Residue (3 minus 4)	30.71 gm.	87.8 %		
6. Wt. lost by solution (1 minus 5)	4.29 gm.	12.2 %		
7. To balance (5 plus 6)	35.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	gm.	100.0%
2. Cylinder (+1/32)	gm.	%
3. Jar (1/32—1/64)	gm.	%
4. Drain	gm.	%

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.72	2.4
1–½ mm	12.63	41.7
½–¼ mm	11.14	36.8
¼–⅛ mm	4.52	14.9
⅛–1/16	.88	2.9
Pan	.41	1.3
Total	30.30	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Rowser
Date 1-7-35

Wt. of sample 312 gm. 100.0%

Heavy Minerals 4.09 gm. 1.3 %

Light Minerals 3.08 gm. 98.7 %

Shape Analysis:

A 15 %: a 35 %: C 50 %

r %: R %.

Minerals Identified; Heavy Concentrate

	No. of Grains	Rel. %
Anatase	7	1
Zircon zoned	6	1
unzoned	25	2
Tourmaline brown	1	0
green	3	0
anhydrite	236	3
Limonite	452	38
Pyrite	664	55
epidote	5	0
casing scale	1	0
Total	1200	100%

Classification Grouping:

	Absol. %
Primary Minerals: 98.5 %	
Zircon	0
Tourmaline	0
epidote	0
Quartz	91.0
Feldspar	6.1
Clay	1.4

Light Concentrate

Quartz	982	92.1
Feldspar	66	6.2
clay	15	1.4
dolomite	3	.3
Total	1066	100%

Secondary Minerals: 1.5 %

Anatase	0
anhydrite	0
Limonite	.5
Pyrite	.7
casing scale	0
dolomite	.3
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Sandstone – brown – iron stained – size – 1-¼ mm – 42%
Prin. sub. – ½ – ¼ – 37% – shape – A – 15% – a – 35% – C – 50%
solubility – 12%

DEEP WELL STUDY

Well No. W— 0005

Depth 2800 to 2810

No. samples used 1

Analyst T

Date 8/13/34

MECHANICAL ANALYSIS

A. Acid treatment (HCl ..... %)

Screen

1. Sample weight . . . . . 21.39 gm. 100.0%
2. Wt. of F. P. .....
3. Wt. after solution, with filter paper . . . . . gm.
4. Less wt. F. P. (2) . . . gm.
5. Wt. Insol. Residue (3 minus 4) . . . . . gm. %
6. Wt. lost by solution (1 minus 5) . . . . . gm. %
7. To balance (5 plus 6) . . gm. %

B. Subsidation:

1. Original Wt. . . . . gm. 100.0%
2. Cylinder (+1/32) gm. %
3. Jar (1/32—1/64) gm. %
4. Drain . . . . . gm. %

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.25	1.2
1–½ mm	6.01	28.0
½–¼ mm	11.90	56.0
¼–⅛ mm	3.05	14.2
⅛–1/16	.13	.6
Pan	.00	.0
Total	21.34	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ¼–⅛ mm.

Analyst Rowsey

Date 1-7-34

Wt. of sample . . . . 3.19 gm. 100.0%

Heavy Minerals . . . . .09 gm. 2.8 %

Light Minerals . . . . 3.10 gm. 97.2 %

Shape Analysis:

A 5 %: a 45 %: C 40 %

r 10 %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Magnetite	481	41
Limonite	138	12
Zircon (unzoned)	2	0
Quartz	1	0
Scale	562	47
dolomite	5	0
Total	1189	100%

Classification Grouping:

Primary Minerals: 98.4 %

	Absol. %
Magnetite	1.2
Zircon	0
Quartz (Heavy)	0
Quartz (Light)	97.2

Light Concentrate Quartz 100%

Secondary Minerals: 1.6 %

Scale	1.3
Limonite	.3

Total . . . . . 100% Total 100%

Revised Lithologic Description (from descriptive log and laboratory data).

Sandstone - rather coarse - ½-¼ - 56% - Pwin sub 1-½-28%

Shape - A-5% - a-45% - C-40% - r 10% -

dolomite - a trace.

DEEP WELL STUDY

Well No. W— 0005
Depth 2810 to 2820
No. samples used 1
Analyst T & G
Date 8-10-34

MECHANICAL ANALYSIS

A. Acid treatment (HCl 15 %)

1. Sample weight	20 gm.	100.0%	2. Wt. of F. P.	2.31
3. Wt. after solution, with filter paper	21.80 gm.			
4. Less wt. F. P. (2)	2.31 gm.			
5. Wt. Insol. Residue (3 minus 4)	19.49 gm.	97.2 %		
6. Wt. lost by solution (1 minus 5)	0.51 gm.	2.8 %		
7. To balance (5 plus 6)	20.00 gm.	100.0 %		

B. Subsidation:

1. Original Wt.	19.49 gm.	100.0%	
2. Cylinder (+1/32)	16.47 gm.	84.6 %	18.39 − 2.32 = 16.47
3. Jar (1/32—1/64)	096 gm.	5.0 %	3.28 − 2.32 = 0.96
4. Drain	2.06 gm.	10.4 %	

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.35	2.1
1–½ mm	1.99	11.9
½–¼ mm	4.86	29.3
¼–⅛ mm	4.28	25.7
⅛–1/16	3.01	18.1
Pan	2.15	12.9
Total	16.64	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform } ..... Sp. gr. Size–Grade(s) 1/8-1/16 mm.

Analyst D. Frasché
Date 12-12-34

Wt. of sample . . . . 2940 gm. 100.0% Shape Analysis:

Heavy Minerals . . . . 058 gm. 2.0 % A 10 %: a 90 %: C ..... %

Light Minerals . . . . 2882 gm. 98.0 % r ..... %: R ..... %.

Minerals Identified: Heavy Concentrate	No. of Grains	Rel. %
zircon	54	4
tourmaline	9	.5
quartz	53	4
feldspar	72	6
hornblende	9	.5
amphibole	3	0
almandite	17	1
leucoxene	3	0
pyrite	410	30
ilmenite	820	60
magnetite		
Total	1369	100%

Classification Grouping:

	Absol. %
Primary Minerals: 99.4 %	
zircon	.1
tourmaline	.1
quartz (heavy) (light)	90.6
feldspar (heavy) (light)	7.4
amphibole	0
mag.-ilmenite	1.2

Light Concentrate		
feldspar	98 – 75	
quartz	960 – 925	
Total	1038	100%

Secondary Minerals: .6 %

anatase	0
leucoxene	0
pyrite	0
ilmenite	.6
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Sandstone 90% fr. stained-Major grade 1/4-1/8 mm;
chief sub. 1/8-1/16 mm — F-C

DEEP WELL STUDY

Well No. W— 0005

Depth 2825 to 2835

No. samples used 1

Analyst T

Date 8/13/34

MECHANICAL ANALYSIS

A. Acid treatment (HCl ..... %) Sorben

1. Sample weight . . . . . 20.00 gm. 100.0%: 2. Wt. of F. P. .....
3. Wt. after solution, with filter paper . . . . . gm.
4. Less wt. F. P. (2) . . . gm.
5. Wt. Insol. Residue (3 minus 4) . . . . . gm. %
6. Wt. lost by solution (1 minus 5) . . . . . gm. %
7. To balance (5 plus 6) . . gm. %

B. Subsidation:

1. Original Wt. . . . . gm. 100.0%
2. Cylinder (+1/32) 0.90 4.70 gm. %
3. Jar (1/32—1/64) gm. %
4. Drain . . . . . gm. %

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm		
1–½ mm	.14	.7
½–¼ mm	5.22	26.4
¼–⅛ mm	11.27	57.2
⅛–1/16	2.88	14.6
Pan	.22	1.1
Total	19.73	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ½-Pan mm.

Analyst Pyke

Date 1/7/35

Wt. of sample . . . . 320 gm. 100.0%

Heavy Minerals . . . . 69 gm. 21.6 %

Light Minerals . . . . 251 gm. 78.4 %

Shape Analysis:

A ..... %: a ..... %: C ..... %

r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
*Chlorite	68	11
*Black opaques with white matter on surfaces	261	40
Hematite, chiefly casing scale	276	43
Garnet	1	0
Dolomite	29	4
Quartz	11	2
Pyrite	2	0
Zircon	2	0
Total	645	100%

Light Concentrate		
Quartz	826	83
Chlorite	56	6
Dolomite	16	2
Feldspar	35	3
Shale	57	6
Total	990	100%

Classification Grouping:	Absol. %
Primary Minerals: 88.2 %	
Chlorite {Heavy	2.4
Chlorite {Light	4.7
Garnet	0
Quartz {Heavy	.4
Quartz {Light	65.0
Zircon	0
Feldspar	2.4
Shale	4.7
Black opaques	8.6
Secondary Minerals: 11.8 %	
Dolomite {Heavy	.9
Dolomite {Light	1.6
Pyrite	0
Hematite	9.3
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Sandstone - maj. grade ¼-⅛ m.m.; prin. subsid. ½-¼ m.m.; H; +5% chlorite;

DEEP WELL STUDY

Well No. W— 0005
Depth 2835 to 2840
No. samples used 1
Analyst T
Date 8/13/34

MECHANICAL ANALYSIS

A. Acid treatment (HCl ..... %)
Screen

1. Sample weight . . . . . 20.00 gm. 100.0%: 2. Wt. of F. P. .....
3. Wt. after solution, with filter paper . . . . gm.
4. Less wt. F. P. (2) . . . . gm.
5. Wt. Insol. Residue (3 minus 4) . . . . gm. ..... %
6. Wt. lost by solution (1 minus 5) . . . . gm. ..... %
7. To balance (5 plus 6) . . .. gm. ..... %

B. Subsidation:
1. Original Wt. . . . . gm. 100.0%
2. Cylinder (+1/32) ..... gm. ..... %
3. Jar (1/32—1/64) ..... gm. ..... %
4. Drain . . . . gm. ..... %

C. Screen Analysis

SIZE	GRAMS	%
2 plus		
2–1 mm	.61	3.1
1–½ mm	1.88	9.5
½–¼ mm	6.76	34.0
¼–⅛ mm	8.71	44.1
⅛–1/16	1.71	8.7
Pan	.12	.6
Total	19.79	100.0

MINERALOGICAL ANALYSIS

(Use opposite side of page for details of minerals)

Acet. Tetrabr. / Bromoform ..... Sp. gr. Size–Grade(s) ¼-Pan mm.

Analyst Ryre
Date 1/8/35

Wt. of sample . . . . 3.91 gm. 100.0%

Heavy Minerals . . . . 1.11 gm. 28.4 %

Light Minerals . . . . 2.80 gm. 71.6 %

Shape Analysis:
A 90 %: a 10 %: C ..... %
r ..... %: R ..... %.

Minerals Identified; Heavy Concentrate	No. of Grains	Rel. %
Magnetite + Ilmenite	500 est.	46.5
Casing Scale	500 est.	46.5
Tremolite	1	.1
Dolomite	25	2.3
*Chlorite-glauconite	50	4.6
	1076	
Total		100%

Light Concentrate		
Quartz	781	77.2
*Chlorite-Glauconite	81	8.0
Shale + Fe-stained opaque quartz	82	8.1
Feldspar	42	4.2
Dolomite	25	2.5
	1011	
Total		100%

Classification Grouping: Primary Minerals: 77.3 %	Absol. %
Mag. & Ilm.	13.2
Tremolite	0
Quartz	55.2
Feldspar	3.1
Shale	5.8

Secondary Minerals: 22.7 %	
Casing Scale	13.2
Chlorite & Glauconite {Heavy / Light}	1.3 / 5.7
Dolomite {Heavy / Light}	.7 / 1.8
Total	100%

Revised Lithologic Description (from descriptive log and laboratory data).

Sandstone — mod. grade ¼-⅛; prin. subrd ½-¼; 5-10% magnetite & ilmenite; ±5% green mineral; * considerable Fe-staining;

* (over)

MAP NO. OGDEN

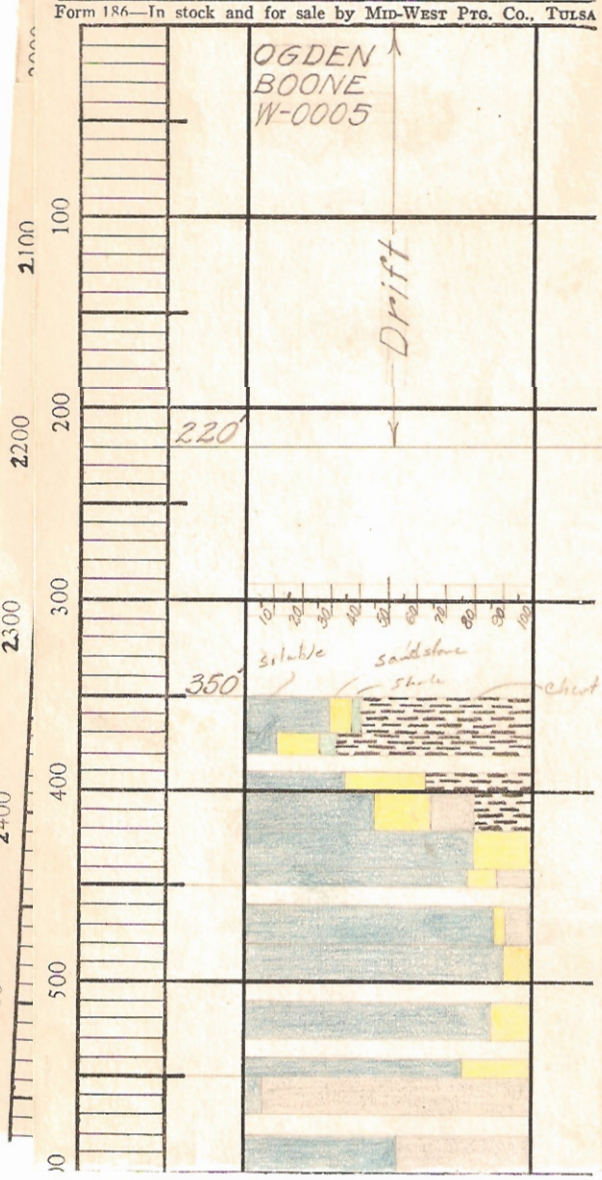
STATE: Iowa	COMPANY
COUNTY: Boone	FARM / WELL NO.: W-0005
T. / R.	CONTRACTOR
	COMMENCED
	COMPLETED
	REMARKS
ALTITUDE	
PRODUCTION	

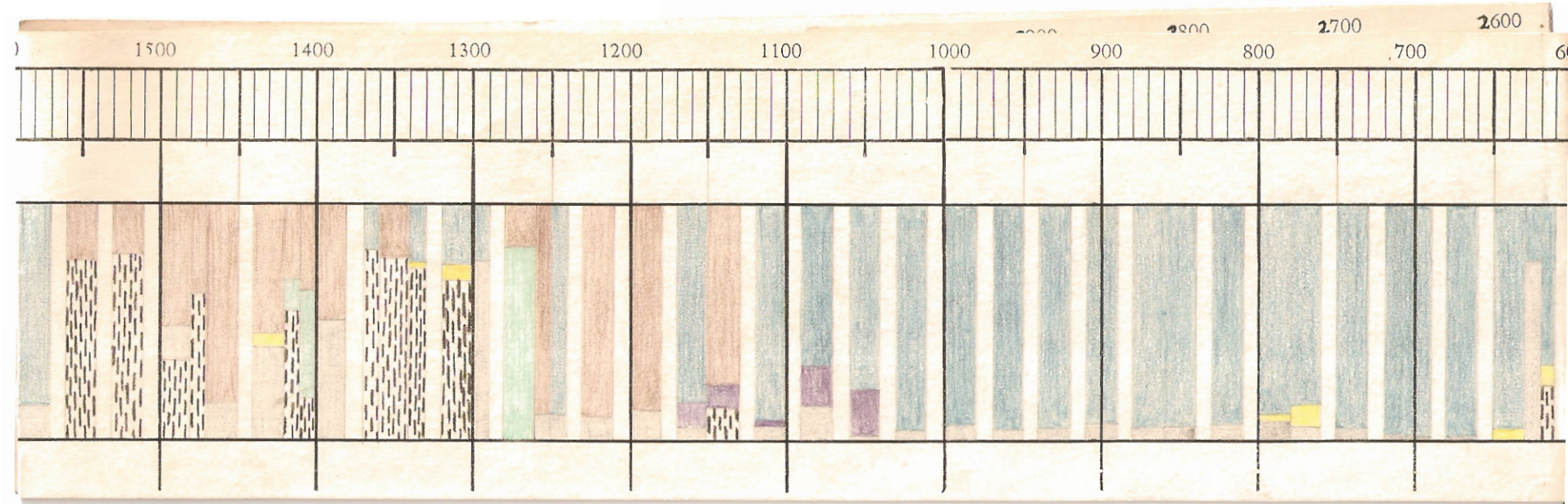
CASING RECORD

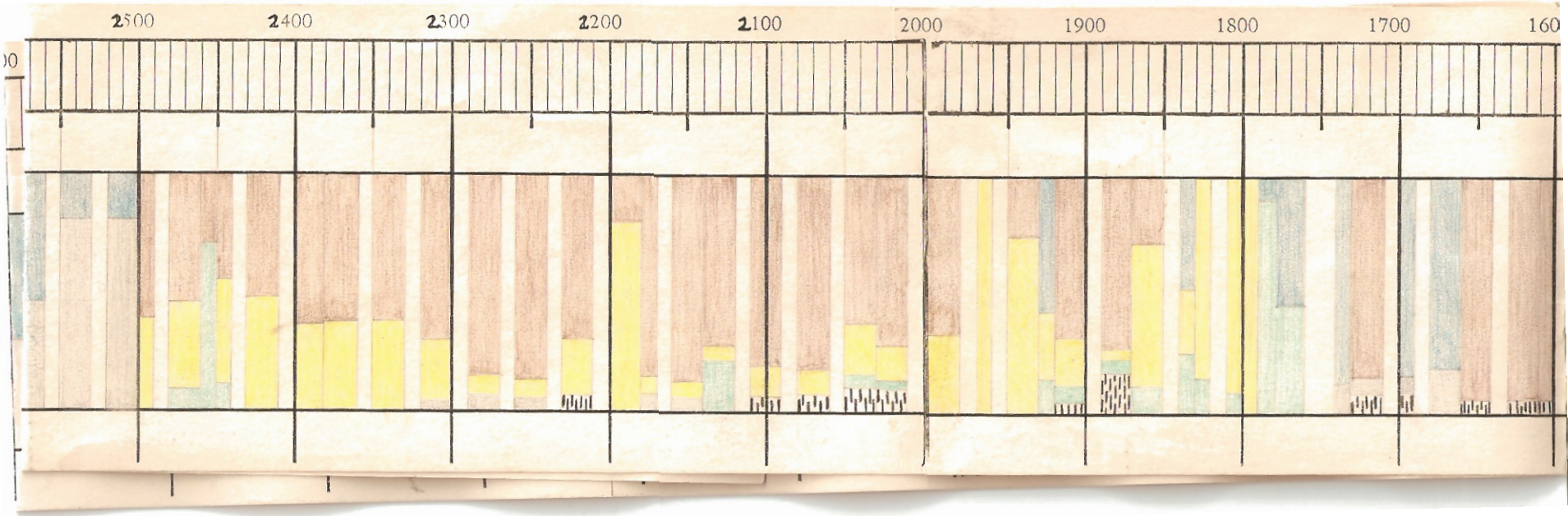
	10"
	8¼"
20"	6⅝"
15½"	5 3/16"
12½"	

SHOT QUARTS BETWEEN

Form 186—In stock and for sale by MID-WEST PTG. CO., TULSA




1500
1400
1300
1200
1100
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900
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700
2700
2600


2500
2400
2300
2200
2100
2000
1900
1800
1700
160

2600
2700
2800
2900
3000
T.D.
2852
10
20
30
40
50
60
70
80
90
100
County: Boone
City: Ogden
W-0005