M-d

Lockhart - Babbitt #1, Coconino Co.
NE/NE Sec 21-T27N-R9E 3-4

** agrees with elev. on USGS 7½' quad Grayson.

County ~~Coconino~~

Area ~~Gray Mt.~~

Lease No. _____

Well Name L. M. Lockhart #1 Babbitt

Location ~~NE NE~~ Sec ~~21~~ Twp ~~27N~~ Range ~~9E~~ Footage ~~660 FNL; 660 FEL~~

Elev ~~5096~~ ** LS Gr ~~5106 est~~ KB ? 5214 Spud Date ~~9-1-48~~ Completed Abandon ~~149~~ Total Depth ~~3624~~

Contractor: _____ Approx. Cost $ _____

Drilled by Rotary x
Cable Tool ___

Casing Size	Depth	Cement

Production Horizon _____

Initial Production D&A

REMARKS ~~41 Cores: See file~~

~~Coconino 65 Tapeats 3364~~

~~Supai 1800 Quartzite 3523~~

~~Redwell 2730 Pre-Cam 3570 (3570)~~

~~Temple Butte 3100 Granite 3622~~

Elec. Logs _____

Sample Log Am Strat
Sample Descrip. x
Sample Set T-38, P-48, 580
Cores _____

Applic to Plug ___ Plugging Record ___ Completion Report ___

Water well - accepted by _____

Bond Co. & No. _____

Bond Am't $ _____ Cancelled _____ Date Organization Report _____

Filing Receipt _____ Dated _____ Well Book x Plat Book x

Loc. Plat x Dedication _____

API # 02-005-05016

PERMIT NUMBER ~~none~~ Date Issued _____

#3-4

Core Description of L. M. LOCKHART -BABBITT No. 1 COCONINO COUNTY
Sec. 21, T. 27 N., 9E.

Core No.	Interval	Recovery	Lithologic Description
1	2042-2045	3'	Chocolate to red brown arenaceous highly calcareous shale. Minute calcite X-lyn small grain inclusions. Same. Highly mottled with green-gray to light shaley calcite veining. Hard light gray granular slightly arenaceous lime with small calcite xtal facets. Minute flakes biotite?
2	2045-2050	5'	1½' Lime as above ½' Varigated gray and red slightly arenaceous, calcareous shale showing minute calcite xtal facets grading into red-brown shale. 3' Red-brown shale.
3	2050-2058	8'	1½' Red Nodular slightly arenaceous micaceous (Muscovite) shale, slightly calcareous. 6½' Red-brown slightly arenaceous, slightly Micaceous highly calcareous massive and granular structure shale with minute xtal facets of calcite.
4	2058-2066	8'	Shale as above, slightly mottled with gray-green some rare lime inclusions of black and dark gray fomeiu (?) X-lyn lime 3'. 3' Red-brown highly mottled with gray-green. Gray-green more highly calcareous almost granular lime in spots. 2' Red-brown shale as above. Very slightly gray-green mottled.
5	2066-2074	8'	5' Very hard highly calcareous red shale with minute xtalfacets of calcite. So highly calcareous it approaches argillaceous granular lime in spots. 3' Shale as above with small clusters of minute calcite xtals. More abundant facets of calcite.
6	2074-2080	6'	1' Red calcareous shale. Sharp decrease calc. Very slightly arenaceous. Fractures irregular pattern. 4' Red-brown mottled gray-green very highly calcareous shale showing abundant calcite facets. Approached argillaceous lime in spots. 1' Granular to finely X-lyn gray-green and red lime. Very hard and tight.
7	2080-2090	10'	1½' Red gray lime as above. 4' Red & red-brown highly micaceous calcareous shale. Some calcite xtal facets. 3' Micaceous reddish brown mottled with gray-green calcareous shale showing some minute calcite xtal facets. 1½' Mottled gray-green and red-brown slightly Micaceous highly calcareous shale. Inclusions of calcite xtals.
8	2090-2099	9'	Hard red argillaceous granular lime with some very fine xtals. 6' Alternating red nodular calcareous slightly micaceous shale with calcite xtals as inclusions. Alternating with highly cal. gray-green slightly micaceous shale which in spots approaches argillaceous lime in spots.
9	2099-2108	9'	9' Red and red-brown highly calcareous shale with occasional inclusions calcite xtals. Rare micaceous calcite xtal facets. Occasional gray-green calcareous shale inclusions.

L. M. LOCKHART - BABBITT NO. 1 COCONINO COUNTY

Core No.	Interval	Recovery	Lithologic Description
10	2108-2117	9'	6' Red to reddish brown micaceous calcareous Shale with some calcite xtal facets. 3' As above, but much higher calcareous content and harder. Inclusions of gray-green highly calcareous shale.
11	2117-2126	9'	9' Red to reddish brown highly micaceous (both muscovite and biotite) calcareous, hard slightly arenaceous shale with rare calcite veining showing minute facets of calcite xtals. Rare small gray-green shale inclusions.
12	2126-2133	7'	1' Shale as above. Slightly nodular. 1½' Shale as above, showing irregular platey partings. 5½' Red to reddish brown slightly arenaceous highly calcareous slightly micaceous hard shale, grading into much higher calcareous shale (almost argillaceous lime with rare gray-green inclusions and some calcite xtals
Drilled from 2133-2405			
13	2405-2413	2'	Red and reddish-brown argillaceous granular to very fine xtalline lime with very thin bedding planes and vertical fracturing.
14	2413-2416	3'	Nodular, slightly micaceous calcareous varigated red and gray-green hard shale.
Drilled from 2416-2736			
15	2736-2744	2'	1' Red shale with seams reddish-brown sandy calcareous shale with large frosted well rounded sand grains. 1' White to pink-white X-lyn lime some cross X-lgnation as if at least two periods of xtalation. Some indication of fracturing which has been filled with calcite.
16	2744-2750	2'	1½' Pink and white lime as above. ½' White lime as above.
17	2750-2755	2'	1'4" Pink & white lime as above with inclusions red shale. 0'8" White lime as above. Some evidence of vertical fractures in both pieces.
18	2755-2762	2½'	2½' Lime as above. Xtals somewhat smaller, spots of granular lime. Red and pink more brilliant. Vertical fracturing as well as random fracturing along which solution has passed.
19	2762-2768	6'	Pink and white coarsely X-lyn lime with cross X-lgnation. Evidence of random fracturing which has been filled with re-xtallized red calcite.
Drilled from 2768-2929			
20	2929-2933	2½'	1' Maroon massive shale with weak bedding planes. Small calcite inclusions. 1½' Shale as above more massive large calcite inclusions.
21	2933-2942	9'	7' Maroon and gray highly calcareous shale showing somewhat cross bedded character. Some large frosted sub-rounded quartz xtals. Inclusions appear to be glauconite. Grades downward into more massive and more calcareous & dolomitic material. 2' Hard dense maroon grading to gray argillaceous dolomitic inclusions, some microscopic xtals, dolomitic lime.

L. M. LOCKHART - BABBITT NO. 1 COCONINO COUNTY

Core No.	Interval	Recovery	Lithologic Description
22	2942-2946	4'	½' Dolomitic inclusions as above. Large seams filled, green material. 1½' Massive as above with porosity apparently resulting from solution. 2' Banded somewhat more granular grading into dolomite.
Drilled from 2946-3254			
23	3254-3259	5'	Light gray granular & massive limey dolomite with large amount subangular to sub-rounded frosted sand grains interbedded. Some almost pebble size grains cross bedding in top.
24	3259-3266	1'	3" Brown and red-brown chert slightly calaceous. 9" Sandy light gray limey dolomite as in core No. 23.
25	3266-3268	0	-------
26	No recovery		Drilled from 3268-3325
27	3325-3328	1'	Dark gray and brown highly fractured dolomite with streaks porosity. Res. Pet. in fractures.
28	3328-3332	2'	Dolomite and dolomitic lime as above.
Drilled from 3332-3373			
29	3373-3378	0	
30	3378-3384	2'	6" Medium to fine angular quartzite buff to brown frosted sand pack around shale. 1'6" Highly micaceous arenaceous cross bedded dark gray shale with reddish cast.
31	3384-3394	0	
32	3394-3402	6"	Medium to coarse gray to brown sub-angular frosted porous conglomerate. Numerous heavy minerals, garnet and green tourmaline?
33	3402-3421	19'	Conventional core. 5' Congl. as above. Somewhat coarser than above, fine heavy minerals. ½' highly micaceous arenaceous dark gray shale with reddish cast. 1½' Congl. with cross-bedded shale partings. 11' Congl. as above, highly cross-bedded with fine sand cross bedding.
34	3421-3435	14'	9' Congl. & congl. sand. Congl. Porous and cross-bedded. 1' Micaceous arenaceous shale. 4' Congl. and congl. sand.
35	3435-3454	19'	19' Congl. and congl. sand as above with cross-bedded mica shale partings.
36	3454-3474	20'	20' Congl. and congl. sand with shale partings as above. Some prounced vertical fracturing.

L. M. LOCKHART - BABBITT NO. 1 COCONINO COUNTY

Core No.	Interval	Recovery	Lithologic Description
37	3474-3480	6'	3' Congl. as above ½' Red arenaceous, mica shale 2½' Congl. as above
Drilled from 3480-3528			
38	3528-3531	1'	Congl. shale partings
39	3531-3541	10'	7' Congl. as above ½' Purple highly micaceous shale 2' Congl. abundant shale ½' Purple shale
Drilled from 3541-3573			
40	3573-3575	1½'	1½' Stained, white and pink quartzitic sand
Drilled from 3575-3592			
41	3592-3598	4'	Fine to medium coarse fractured quartzitic sand and quartsite.
Drilled from 3598-3621			
42	3621-3623½	2½'	Red to purple staining in fine to medium coarse quartz sandstone and quartzite.

Core Description of L.M. Lockhart
Babbit No. 1-Sec. 21 T 27N-R9E
Coconino County, Arizona

Core No.	Interval	Recovery	Lithologic Description
1	2042-2045	3'	Chocolate to red brown arenaceous highly calcareous shale. Minute calcite X-lyn small grain inclusions. Same. Highly mottled with green-gray to light shaley calcite veining. Hard light gray granular slightly arenaceous lime with small calcite xtal facets. Minute flakes biotite?
2	2045-2050	5'	1½' Lime as above ½' Varigated gray and red slightly arenaceous, calcareous shale showing minute calcite xtal facets grading into red-brown shale. 3' Red-brown shale.
3	2050-2058	8'	1½' Red Nodular slightly arenaceous micaceous (Muscovite) shale. Slightly calcareous. 6½' Red-brown slightly arenaceous, slightly micaceous highly calcareous massive and granular structure shale with minute xtal facets of calcite.
4	2058-2066	8'	Shale as above, slightly mottled with gray-green some rare lime inclusions of black and dark gray fomelu(?) X-lyn lime 3'. 3' Red-brown highly mottled with gray-green. Gray-green more highly calcareous almost granular lime in spots. 2' Red-brown shale as above. Very slightly gray-green mottled.
5	2066-2074	8'	5' Very hard highly calcareous red shale with minute xtal facts of calcite. So highly calcareous it approaches argillaceous granular lime in spots. 3' Shale as above with small clusters of minute calcite xtals. More abundant facets of calcite.
6	2074-2080	6'	1' Red calcareous shale. Sharp decrease calc. Very slightly arenaceous. Fractures irregular pattern. 4' Red-brown mottled gray-green very highly calcareous shale showing abundant calcite facets. Approached argillaceous lime in spots. 1' Granular to finely X-lyn gray-green and red lime. Very hard and tight.
7	2080-2090	10'	1½' Red gray lime as above. 4' Red & red-brown highly micaceous calcareous shale. Some calcite xtal facets. 3' Micaceous reddish brown mottled with gray-green calcareous shale showing some minute calcite xtal facets. 1½' Mottled gray-green and red-brown slightly Micaceous highly calcareous shale. Inclusions of calcite xtals.
8	2090-2099	9'	Hard red argillaceous granular lime with some very fine xtals. 6' Alternating red nodular calcareous slightly micaceous shale with calcite xtals as inclusions. Alternating with highly cal. gray-green slightly micaceous shale which in spots approaches argillaceous lime in spots.
9	2099-2108	9'	9' Red and red-brown highly calcareous shale with occasional inclusions calcite xtals. Rare micaceous calcite xtal facets. Occasional gray-green calcareous shale inclusions.

No permit

Core No.	Interval	Recv.		Lithologic Description
10	2108-2117	9'	6'	Red to reddish brown micaceous calcareous Shale with some calcite xtal facets.
			3'	As above, but much higher calcareous content and harder. Inclusions of gray-green highly calcareous shale.
11	2117-2126	9'	9'	Red to reddish brown highly micaceous (both muscovite and biotite) calcareous, hard slightly arenaceous shale with rare calcite veining showing minute facets of calcite xtals. Rare small gray-green shale inclusions.
12	2126-2133	7'	1'	Shale as above. Slightly nodular.
			1½'	Shale as above, showing irregular platey partings.
			5½'	Red to reddish brown slightly arenaceous highly calcareous slightly micaceous hard shale, grading into much higher calcareous shale (almost argillaceous lime with rare gray-green inclusions and some calcite xtals
	Drilled from 2133-2405			
13	2405-2413	2'		Red and reddish-brown argillaceous granular to very finely xtalline lime with very thin bedding planes and vertical fracturing.
14	2413-2416	3'		Nodular, slightly micaceous calcareous varigated red and gray-green hard shale.
	Drilled from 2416-2736			
15	2736-2744	2'	1'	Red shale with seams reddish-brown sandy calcareous shale with large frosted well rounded sand grains.
			1'	White to pink-white X-lyn lime some cross X-lgnation as if at least two periods of xtalation. Some indication of fracturing which has been filled with calcite.
16	2744-2750	2'	1½'	Pink and white lime as above.
			½'	White lime as above.
17	2750-2755	2'	1'4"	Pink & white lime as above with inclusions red shale.
			0'8"	White lime as above. Some evidence of vertical fractures in both pieces.
18	2755-2762	2½'	2½'	Lime as above. Xtals somewhate smaller, spots of granular lime. Red and pink more brilliant. Vertical fracturing as well as random fracturing along which solution has passed.
19	2762-2768	6'		Pink and white coarsely X-lyn lime with cross X-lgnation. Evidence of random fracturing which has been filled with re-xtallized red calcite.
	Drilled from 2768-2929			
20	2929-2933	2½'	1'	Maroon massive shale with week bedding planes. Small calcite inclusions.
			1½'	Shale as above more massive large calcite inclusions.
21	2933-2942	9'	7'	Maroon and gray highly calcareous shale showing somewhat cross bedded character. Some large frosted sub rounded quartz xtals. Inclusions appear to be glauconite. Grades downward into more massive and more calcareous & dolomitic material.
			2'	hard dense maroon grading to gray argillaceous dolomitic inclusions, some microscopic xtals, dolomitic lime.

14

L.M. Lockhart Babbit No. 1

Core No.	Interval	Recv.		Lithologic Description
22	2942-2946	4'	½'	Dolomitic inclusions as above. Large seams filled-green material.
			1½'	Massive as above with porosity apparently resulting from solution.
			2'	Banded somewhat more granular greding into dolomite.
		Drilled from 2946-3254		
23	3254-3259	5'		Light gray granular & massive limey dolomite with large amounts subangular to sub-rounded frosted sand grains interbedded. Some almost pebble in size grains cross bedding in top.
24	3259-3266	1'	3"	Brown and red-brown chert slightly calaceous
			9"	Sandy light gray limey dolomite as in core No. 23.
25	3266-3268	0	--------	
26	no recovery	Drilled from 3268-3325		
27	3325-3328	1'		Dark gray and brown highly fractured dolomite with streaks porosity. Res. Pet. in fractures.
28	3328-3332	2'		Dolomite and dolomitic lime as above.
		Drilled from 3332-3373		
29	3373-3378	0		
30	3378-3384	2'	6"	Medium to fine angular quartzitic buff to brown frosted sand pack around shale.
			1'6"	Highly micaceous arenaceous cross bedded dark gray shale with reddish cast.
31	3384-3394	0		
32	3394-3402	6"		Medium to coarse gray to brown sub-angular frosted porous conglomerate. Numerous heavy minerals, garnet and green tourmaline?
33	3402-3421	19'		Conventional core.
			5'	Congl. as above. Somewhat coarser than above, fine heavy minerals.
			½'	Highly micaceous arenaceous dark gray shale with reddish cast.
			1½'	Congl. with cross-bedded shale partings.
			11'	Congl. as above, highly cross-bedded with-fine sand cross bedding.
34	3421-3435	14'	9'	Congl. & congl. sand. Congl. porous and cross-bedded.
			1'	Micaceous arenaceous shale.
			4'	Congl. and congl. sand.
35	3435-3454	19'	19'	Congl. and cong. sand as above with cross-bedded mica shale partings.
36	3454-3474	20'	20'	Congl. and congl. sand with shale partings as above. Some pronounced vertical fracturing
37	3474-3480	6'	3'	Congl. as above
			½'	Red arenaceous, mica shale
			2½	Congl. as above

15
No permit

Code No.	Interval	Recv.		Lithologic Description
		Drilled from 3480-3528		
38	3528-3531	1'		Congl. shale partings
39	3531-3541	10'	7'	Congl. As above
			½'	Purple highly micaceous shale
			2'	Congl. abundant shale
			½'	Purple shale
		Drilled from 3541-3573		
40	3573-3575	1½'	1½'	Stained, white and pink quartzitic sand
		Drilled from 3575-3592		
41	3592-3598	4'		Fine to medium coarse fractured quartzitic sand and quartzite
		Drilled from 3598-3621		
42	3621-3623½	2½'		Red to purple staining in fine to medium coarse quartz sandstone and quartzite.

16

No permit

Core Description of
L.M. Lockhart Babbit No. 1
Section 21 Twp. 27N Range 9E
Coconino County, Arizona

Core No.	Interval	Recovery	Lithologic Description
1	2042-2045	3'	Chocolate to red brown aeraneous highly calcareous shale. Minute calcite X-lyn small grain inclusions. Same. Highly mottled with gray-green to light shaley calcite veining. Hard light gray granular slightly aeronaceous lime with small calcite crystal facets. Minute flakes biotite?
2	2045-2050	5'	1½' Lime as above ½' Varigated gray and red slightly aeraneous, slightly calcareous shale showing minute calcite crystal facets grading into red-brown shale. 3' Red-brown shale.
3	2050-2058	8'	1½' Red nodular slightly aeronaeous micaceous (Muscovite) shale. Slightly calcareous. 6½' Red brown slightly aeranerous, slightly micaceous highly calcareous massive and granular structure shale with minute crystal facets of calcite.
4	2058-2066	8'	Shale as above, slightly mottled with gray-green. Some rare lime inclusions of black and dark gray fomelu x-lyn lime 3'. 3' Red-brown highly mottled with gray-green. Gray-green more highly calcareous almost granular lime in spots. 2' Red-brown shale as above. Very slightly gray-green mottled.
5	2066-2074	8'	5' Very hard highly calcareous red shale with minute crystal facets of calcite. So highly calcareous it approaches argillaceous granular lime in spots. 3' Shale as above with small clusters of minute calcite crystals. More abundant facets of calcite.
6	2074-2080	6'	1' Red calcareous shale. Sharp decrease cal. Very slight aeraneous. Fractures irregular pattern. 4' Red-brown mottled gray-green very highly calcareous shale showing abundant calcite facets. Approached argillaceous lime in spots. 1' Granular to finely x-lyn gray-green and red lime. Very hard and tight.
7	2080-2090	10'	1½' Red gray lime as above. 4' Red and red-brown highly micaceous calcareous shale. Some calcite crystal facets. 3' Micaceous reddish brown mottled with gray-green calcareous shale showing some minute calcite crystal facets. 1½' Mottled gray-green and red-brown slightly micaceous highly calcareous shale. Inclusions of calcite crystals.
8	2090-2099	9'	3' Hard red argillaceous granular lime with some very fine crystals. 6' Alternating red nodular calcareous slightly micaceous shale with calcite crystals as inclusions. Alternating with highly cal. gray-green slightly micaceous shale which in spots approaches argillaceous lime in spots.
9	2099-2108	9'	9' Red and red-brown highly calcareous shale with occasional inclusions calcite crystals. Rare micaceous calcite crystal facets. Occasional gray-green calcareous shale inclusions.
10	2108-2117	9'	6' Red to reddish brown micaceous calcareous shale with some calcite crystal facets. 3' As above, but much higher calcareous content and harder. Inclusions of gray-green highly calcareous shale.

17 3-4
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Core No.	Interval	Recovery	Lithologic Description
11	2117-2126	9'	Red to reddish-brown highly micaceous (both biotite and muscovite) calcareous, hard slightly aeronaceous shale with rare calcite veining showing minute facts of calcite crystals. Rare small gray-green shale inclusions.
12	2126-2133	7'	1' Shale as above. Slightly nodular. 1½' Shale as above, showing irregular platey partings. 5½' Red to reddish brown slightly aeronaceous highly calcareous slightly micaceous hard shale, grading into much higher calcareous shale (almost argillaceous lime with rare gray-green inclusions and some calcite crystals.)
			Drilled from 2133-2405
13	2405-2413	2'	Red and reddish-brown argillaceous granular to very finely crystalline lime with very thin bedding planes and vertical fracturing.
14	2413-2416	3'	Nodular, slightly micaceous calcareous varigated red and gray-green hard shale.
			Drilled from 2416-2736
15	2736-2744	2'	See description below 1' Red shale with seams reddish-brown sandy calcareous shale with large frosted well rounded sand grains. 1' White to pink-white X-lyn lime some cross X-lgnation as if at least two periods of crystallation. Some indication of fracturing which has been filled with calcite.
16	2744-2750	2'	1½' Pink and white lime as above. ½' White lime as above.
17	2750-2755	2'	1'4" Pink and white lime as above with inclusions red shale 0'8" White lime as above. Some evidence of vertical fractures in both pieces.
18	2755-2762	2½'	2½' Lime as above. Crystals somewhat smaller, spots of granular lime. Red and pink color more brilliant. Vertical fracturing as well as random fracturing along which solution has passed.
19	2762-2768	6'	Pink and white coarsely X-lyn lime with cross X-lgnation. Evidence of random fracturing which has been filled with re-crystallized red calcite.
			Drilled from 2768-2929
20	2929-2933	2½'	1' Maroon massive shale with weak bedding planes. Small calcite inclusions. 1½' Shale as above more massive large calcite inclusions.
21	2933-2942	9'	7' Maroon and gray highly calcareous shale showing somewhat cross bedded character. Some large frosted sub-rounded quartz crystals. Inclusions appear to be glauconite. Grades downward into more massive and more calcareous and dolomitic material. 2' Hard dense maroon grading to gray argillaceous dolomitic inclusions, some microscopic crystals, dolomitic lime.
22	2942-2946	4'	½' Dolomitic inclusions as above. Large seam filled green material. 1½' Massive as above with porosity apparently resulting from solution. 2' Banded somewhat more granular grading into pure dolomite.
			Drilled from 2946-3254
23	3254-3259	5'	Light gray granular and massive limey dolomite with large amount sub-angular to sub-rounded frosted sand grains interbedded. Some almost pebble size grains cross bedding in top.

18
the permit

Core No.	Interval	Recovery	Lithologic Description
24	3259-3266	1'	3" Brown and red-brown chert slightly calcareous. 9" Sandy light gray limey dolomite as in core No. 23.
25	3266-3268	0	
26	No recovery		Drilled from 3268-3325
27	3325-3328	1'	Dark gray and brown highly fractured dolomite with streaks porosity. Res. Pet. in fractures.
28	3328-3332	2'	Dolomite and dolomitic lime as above.
			Drilled from 3332-3373
29	3373-3378	0	
30	3378-3384	2'	6" Medium to fine angular quartzitic buff to brown frosted sand pack around shale. 1'6" Highly micaceous aeronaceous cross bedded dark gray shale with reddish cast.
31	3384-3394	0	
32	3394-3402	6"	Medium to coarse gray to brown sub-angular frosted porous conglommerate. Numerous heavy minerals, garnate and green tourmaline?
33	3402-3421	19'	Conventional core. 5' Congl. as above. Somewhat coarser than above, fine heavy minerals. ½' Highly micaceous aeronaceous dark gray shale with reddish cast. 1½' Congl. with cross bedded shale partings. 11' Congl. as above, highly cross-bedded with fine sand cross bedding.
34	3421-3435	14'	9' Congl. and congl. sand. Congl. porous and cross-bedded. 1' Micaceous aeronaceous shale 4' Congl. and congl. sand.
35	3425-3454	19'	19' Congl. and congl. sand as above with cross-bedded mica shale partings.
36	3454-3474	20'	20' Congl. and congl. sand with shale partings as above. Some pronounced vertical fracturing.
37	3474-3480	6'	3' Congl. as above ½' Red aeronaceous, mica shale 2½' Congl. as above
			Drilled from 3480-3528
38	3528-3531	1'	Congl. shale partings
39	3531-3541	10'	7' Congl. as above ½' Purple highly micaceous shale 2' Congl. abundant shale ½' Purple shale
			Drilled from 3541-3573
40	3573-3575	1½'	1½' Stained, white and pink quartzitic sand
			Drilled from 3575-3592
41	3592-3598	4'	Fine to medium coarse fractured quartzitic sand and quartzite.
			Drilled from 3598-3621
42	3621-3623½	2½'	Red to purple staining in fine to medium coarse quartz sandstone and quartzite.

19
No permit

Core Description of
L. M. Lockhart Babbit No. 1
Section 21 T 27 N, R. 9 E.
Coconino County, Arizona

Core No.	Interval	Recovery	Lithologic Description
1	2042-2045	3'	Chocolate to red brown arenaceous highly calcareous shale. Minute calcite X-lyn small grain inclusions. Same. Highly mottled with green-gray to light shaley calcite veining. Hard light gray granular slightly arenaceous lime with small calcite xtal facets. Minute flakes biotite ?
2	2045-2050	5'	1½' Lime as above ½' Varigated gray and red slightly arenaceous, calcareous shale showing minute calcite xtal facets grading into red-brown shale. 3' Red-brown shale.
3	2050-2058	8'	1½' Red medular slightly arenaceous micaceous (Muscovite) shale. Slightly calcareous. 6½' Red-brown slightly arenaceous, slightly micaceous highly calcareous massive and granular structure shale with minute xtal facets of calcite.
4	2058-2066	8'	Shale as above, slightly mottled with gray-green Some rare lime inclusions of black and dark gray fomelu(?) X-lyn lime 9'. 3' Red-brown highly mottled with gray-green. Gary-green more highly calcareous almost granular lime in spots. 2' Red-brown shale as above. Very slightly gray-green mottled.
5	2066-2074	8 '	5' Very hard highly calcareous red shale with minute xtal facets of calcite. So highly calcareous it approaches argillaceous granular lime in spots. 3' Shale as above with small clusters of minute calcite xtals. More abundant facets of calcite.
6	2074-2080	6'	1' Red calcareous shale. Sharp decrease calc. Very slightly arenaceous. Fractures irregular pattern. 4' Red-brown mottled gray-green very highly calcareous shale showin abundant calcite facets. Approached argillaceous lime in spots. 1' Granular to finely X-lyn gray-green and red lime. Very hard and tight.
7	2080-209-	10'	1½' Red gray lime as above. 4' Red & red-brown highly micaceous calcareous shale. Some calcite xtal facets. 3' Micaceous reddish brown mottled with gray-green calcareous shale showing some minute calcite xtal facets.

No permit

Core No.	Interval	Recov.	Lithologic Description
7			1½' Mottled gray-green and red-brown slightly micaceous highly calcareous shale. Inclusions of calcite xtals.
8	2090-2099	9'	3' Hard red argillaceous granular lime with some very fine xtals. 6' Alternating red nodular calcareous slightly micaceous shale with calcite xtals as inclusions. Alternating with highly cal. gray-green slightly micaceous shalewhich in spots approaches argillaceous lime in spots.
9	2099-2108	9'	9' Red and red-brown highly calcareous shale with occasional inclusions calcite xtals. Rare micaceous calcite xtal facets. Occasional gray-green calcareous shale inclusions.
10	2108-2117	9'	6' Red to reddish brown micaceous calcareous shale with some calcite xtal facets. 3' As above, but much higher calcareous content and harder. Inclusions of gray-green highly calcareous shale.
11	2117-2126	9'	9' Red to reddish brown highly micaceous (both muscovite and biotite) calcareous, hard slightly arenaceous shale with rare calcite veining showing minute facets of calcite xtals. Rare small gray-green shale inclusions.
12	2126-2133	7'	1' Shale as above. Slightly nodular. 1½' Shale as above, showing irregular platey partings. 5½' Red to reddish brown slightly arenaceous highly calcareous slightly micaceous hard shale, grading into much higher calcareous shale (almost argillaceous lime with rare gray-green inclusions and some calcite xtals.)
	Drilled from 2133- 2405		
13	2405-2413	2'	Red and reddish-brown argillaceous granular to very finely xtalline lime with very thin bedding planes and vertical fracturing.
14	2413-2416	3'	Nodular, slightly micaceous calcareous varigated red and gray-green hard shale.
	Drilled from 2416-2736		
15	2736-2744	2'	1' Red shale with seams reddish-brown sandy calcareous shale with large frosted well rounded sand grains. 1' White to pink-white X-lyn lime some cross X-lgnation as if at least two periods of xtallation. some indication of fracturing which has been filled with calcite.
16	2744-2750	2'	1½' Pink and white lime as above. ½' White lime as above.
17	2750-2755	2'	1'4" Pink & white lime as above with inclusions red shale.

10

Separate X

Core No.	Interval	Recov.	Lithologic Description
17			6'8" White lime as above. Some evidence of vertical fractures in both pieces.
18	2755-2762	2½'	2½' Lime as above. Xtals somewhat smaller, spots of granular lime. Red and pink color more brilliant. Vertical fracturing as well as random fracturing along which solution has passed.
19	2762-2768	6'	Pink and white coarsely X-lyn lime with cross X-lgnation. Evidence of random fracturing which has been filled with re-xtallized red calcite.
	Drilled from 2768-2929		
20	2929-2933	2½'	1' Maroon massive shale with weak bedding planes. Small calcite inclusions. 1½' Shale as above more massive large clacite inclusions.
21	2933-2942	9'	7' Maroon and gray highly calcareous shale showing somewhat cross bedded character. Some large frosted sub rounded quartz xtals. Inklusions appear to be glauconite. Grades downward into more massive and more calcareous & dolomitic material. 2' Hard dense maroon grading to gray argillaceous dolomitic inclusions, some microscopic xtals, dolomitic lime.
22	2942-2946	4'	½' Dolomitic inclusions as above. Large seams filled green material. 1½' Massive as above with porosity apparently resulting from solution. 2' Banded somewhat more granular greding into dolomite
	Drilled from 2946-3254		
23	3254-3259	5'	Light gray granular & massive limey dolomite with large amount subangular to sub-rounded frosted sand grains interbedded. Some almost pebble in size grains cross bedding in top.
24	3259-3266	1'	3" Brown and red-brown chert slightly calaceous. 9" Sandy light gray limey dolomite as in core NO. 23.
25	3266-3268	0	-------
26	No recovery		Drilled from 3268-3325
27	3325-3328	1'	Dark gray and brown highly fractured dolomite with streaks porosity. Res. Pet. in fractures.
28	3328-3332	2'	Dolomite and dolomitic lime as above.
	Drilled from 3332-3373		
29	3373-3378	0	

No permit

Core No.	Interval	Recov.	Lithologic Description
30	3378-3384	2'	6" Medium to fine angular quartzitic buff to brown frosted sand pack around shale. 1'6" Highly micaceous arenaceous cross bedded dark gray shale with reddish cast.
31	3384-3394	0	
32	3394-3402	6"	Medium to coarse gray to brown sub-angular frosted porous conglomerate. Numerous heavy minerals, garnet and green tourmaline?
33	3402-3421	19'	Conventional core. 5' Congl. as above. Somewhat coarser than above, fine heavy minerals. ½' Highly micaceous arenaceous dark gray shale with reddish cast. 1½' Congl. with cross-bedded shale partings. 11' Congl. as above, highly cross-bedded withfine sand cross bedding.
34	3421-3435	14'	9' Congl. & congl. sand. Congl. porous and cross-bedded. 1' Micaceous arenaceous shale. 4' Congl. and congl. sand.
35	3435-3454	19'	19' Congl. and congl. sand as above with cross-bedded mica shale partings.
36	3454-3474	20'	20' Congl. and congl. sand with shale partings as above. Some pronounced vertical fracturing.
37	3474-3480	6'	3' Congl. as above ½' Red arenaceous, mica shale 2½' Congl. as above
	Drilled from 3480-3528		
38	3528-3531	1'	Congl. shale partings
39	3531-3541	10'	7' Congl. as above ½' Purple highly micaceous shale 2' Congl. abundant shale ½' Purple shale
	Drilled from 3541-3573		
40	3573-3575	1½'	1½' Stained, white and pink quartzitic sand
	Drilled from 3575-3592		
41	3592-3598	4'	Fine to medium coarse fractured quartzitic sand and quartzite.
	Drilled from 3598-3621		
42	3621-3623½	2½'	Red to purple staining in fine to medium coarse quartz sandstone and quartzite.

12

No permit

Lockhart-Babbitt #1 well.

Notes taken while cutting samples on the Lockhard-Babbitt #1 well at Grey Mt. on February 9 and 10, 1949 Notes by [illegible]eindl.

1060-1180' No cutting samples. Lost circulation

1220-1290' No returns. Lost circulation

2030-2140' No cuttings

3305-3491' No cuttings

Cutting 3592'. Appears contaminated with oil. Strong smell of oil and the paper container glazed with oil soaking through.

CORES

Core #1-2042-2045' 3' cored, 3' recovered, white ls bottom, red sh top

Core #2?- 2045?-2050?, untagged but lying between 2042-2045 and 2050-2058' core trays. Sequence looks good. 3 trays.

Core #3- 2050-2058' Only trays #2 and #3 marked. The third of the unmarked trays assumed for Core #2 may be tray #1 of core #3. This would fit better with the depths cores, making the first two trays of Core #2 the whole of the 5' cored.

Core #4- 2058-2066 3 trays 8' cored, 8' recovered

Core #5- 2066-2074 3 trays 8' cored, 8' recovered

Core #6- 2074-2080 3 trays 6' cored, 6' recovered

Core #7- 2080-2090 4 trays 10' cored, 10' recovered

Core #8- 2090-2099 3 trays 9' cored, 9' recovered

Core #9- 2099-2108 4 trays, 9' cored, 9' recovered

Core #10- 2108-2117 4 trays, 9' cored, 9' recovered

Core #11- 2117-2126 4 trays, 9' cored, 9' recovered

Core #12- 2126-2133 3 trays 7' cored, 7' recovered

Core #13-Unnumbered. Untagged. Assumed to be Core #13 from position among trays. No tag. 1 tray.

Core #14- 2413-2416 1 tray, ~~3~~ 3' cored, complete recovery

[illegible]

Page 2, notes by cutting samples Lockhart-Babbitt well. Notes by LAH
L.A. Heindl, USGS,

Core #15- 2726-2744 1 tray, 18' cored, 1' recovered.

Core #16- 2744-2750 1 tray, 6' cored, 1' recovered.

Core #17- 2750-2755 1 tray, 5' cored, 1' recovered

Core #18- 2755-2762 1 tray, 7' cored, 1' recovered

Core #19- 2762-2768 1 tray, 6' cored, 6 inches recovered

Core #20- 2929-2933 1 tray, 4' cored, 1' recovered

Core #21- 2933-2942 3 trays, 9' cored, 9' recovered

Core #22- 2942-2946 2 trays, 4' cored, 4' recovered

Core #23- 3254-3259 2 trays, 5' cored, 5' recovered

Core #24- 3259-3266 1 tray, 7' cored, 1 inch recovered

Core #25- no samples found

Core #26- no samples found

Core #27- 3325-3328 1 tray, 3' cored, 2 inches recovered

Core #28- 3328-3332 1 tray, 4' cored, 1' recovered

Core #29- no samples found

Core #30- 3378-3384 1 tray, 6' cored, 6 inches recovered

Core #31- no samples found

Core #32- 3394'-3402 1 tray, 8' cored, 4 inches recovered

All the above cores are 2" cores. Cores #33-#37 are 4" cores. Cores #38 to #41 are 3" cores.

Core #33- 3402-3421 7 trays, 19' cored, 19' recovered

Core #34-3421-3435 5 trays 14' cored, 14' recovered

Core #35- 3435-3454 7 trays, 19' cored, 19' recovered

Core #36- 3454-3474 7 trays, 20' cored, 20' recovered

Core #37- 3474-3488 2 trays, 14' cored, 5' recovered

No permit

Following cores are 3" cores
Core #38- 3528-3531 1 tray, 3' cored, 6½ inches recovered

Core #39- 3531-3541 3 trays, 10' cored, 6" inches recovered

Core #39- This core was also tagged #39. Different drillers.
3573-3575 1 tray 2' cored, 5 inches recovered

Core #40- 3592-3598 2 trays, 6' cored, 4' recovered

Core #41- 3621-3623½ 1 tray, 2½' cored, 6 inches recovered.

----p----a----u----

No permit

FORM O. & G. 1
18

ARIZONA STATE LAND DEPARTMENT

Sundry Notices and Reports on Wells

Lease or Permit No. BABBITT

Notice of intention to drill	
Notice of intention to change plans	
Notice of date for test of water shut-off	
Report on result of test of water shut-off	
Notice of intention to re-drill or repair well	
Notice of intention to shoot	
Subsequent record of shooting	
Record of perforating casing	
Notice of intention to pull or otherwise alter casing	
Notice of intention to abandon well	X
Subsequent report of abandonment	
Supplementary well history	

(Indicate above by check mark nature of report, notice or other data)

February 14 1949

Following is a (Notice of intention to do work) on land under (permit) described as follows:
(Report of work done) (lease)

Well No. L. M. Lockhart "Babbitt" No. 1 on lease from C. O. Barr Livestock Company

in Section 21 (Section) Township 27 North (Township) Range 9 East (Range)

The well is located 660 feet (N) (S) of the North line and 660 feet (E) (W) of the East line of

Section 21, Township 27 North, Range 9 East, G & S R M, Coconino County, Arizona

The elevation of the derrick floor above sea level is 5210 feet

DETAILS OF PLAN OF WORK

(State names of an expected depth to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other proposed work.)

Total depth 3624 reached on 2-4-49. No oil or gas formations encountered. A protection string of 7" 23# casing was run and cemented at 3464; consisting of 2376 feet of 10-thread lapweld and 1088 feet of 8 round thread seamless. Decided to abandon well and salvage as much casing as possible. We propose to obtain verbal permission from O. C. Williams to abandon well and to consult with Mr. Paul Babbitt and Mr. John Babbitt regarding our abandonment program. If satisfactory with above parties, we will recover as much of the 7" casing as possible, weld a steel plate over the top of the 12-3/4" surface casing, fill up cellar to ground level and abandon well.

Approved
Date

Arizona State Land Department

Address

Company L. M. Lockhart

By Glenn M. Earl

Glenn M. Earl, Engineer
Title

Address 824 Wilshire Blvd., Los Angeles 14, Calif.

NOTE:—Reports on this form to be submitted in triplicate to the Commissioner for approval.

No permit

ARIZONA STATE LAND DEPARTMENT
SUNDRY NOTICES AND REPORTS ON WELLS

Lease or
Permit No. _____

Notice of intention to drill ____X____
Notice of intention to change plans _____
Notice of date for test of water shut-off _____
Report on result of test of water shut-off _____
Notice of intention to re-drill or repair well _____
Notice of intention to shoot _____
Subsequent record of shooting _____
Record of perforating casing _____
Notice of intention to pull or otherwise alter casing _____
Notice of intention to abandon well _____
Subsequent report of abandonment _____
Supplementary well history _____

(Indicate above by check mark nature of report, notice or other data)

September 13, 1948

Following is a notice of intention to work on land under lease from C. O. Barr Live Stock Company, described as follows:

Well: L. M. Lockhart's Babbit No. 1, located 660 feet south and 660 feet west from the northeast corner of Section 21, Township 27 north, Range 9 east, G. & S. R. B. & M., Coconino County, State of Arizona.

The elevation of the derrick floor above sea level is 5,210 feet.

DETAILS OF PLAN OF WORK

(State names of an expected depth to objective sands; show sizes, weights, and lengths of proposed casing; indicate mudding jobs, cementing points and all other proposed work.)

Expect to encounter objective sands at 2250 feet and will drill with rotary equipment to 4300 feet or basement. Will use 150 feet of surface casing, 12-3/4 inches, 45 lb. Lapweld casing, cemented to surface. Will drill to proposed depth and if oil formation encountered to justify tests, will set ~~and lower~~ 7 inch, 23 lb. new J-55 seamless casing, cementing the same above or through objective sands.

Mud of sufficient weight and substance to prevent blow-out will be used at all times and adequate blow-out prevention equipment will be installed and kept ready for operation at all times.

Approved Sept. 16, 1948
Date

J. C. Williams
State Land Commissioner
Arizona State Land Department

Address Phoenix, Arizona

Company L. M. Lockhart
L. M. Lockhart
By [illegible] Agt.

Address: 301 Subway Terminal Bldg.
417 So. Hill Street
Los Angeles 13, California

Phone: MIchigan 3697

NOTE:--Reports on this form to be submitted in triplicate to the Commissioner for approval.

No permit

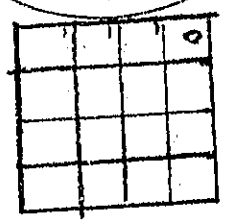
UNITED STATES DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY CONSERVATION BRANCH

PATENTED LAND INDIVIDUAL WELL RECORD Sec. 21, T. 27 N., R. 9E.
G&SR ____ Mer.
Reference No. 2

March 10, 1949
Lessee: Babbitt State: Arizona County: Coconino
Operator: Lockhart Brothers Field: Wildcat District: Farmington
Well No. 1 Subdivision: C NE¼NE¼

Location 660 feet from north and east lines
Drilling approved:
Drilling commenced September 1, 1948 Well elevation: ~~5814~~ 5096 feet
Drilling ceased: February 9, 1949 Total Depth: ~~3364 feet~~ 3624

Geologic Formations	
Surface	Lowest tested
Permian	Granite

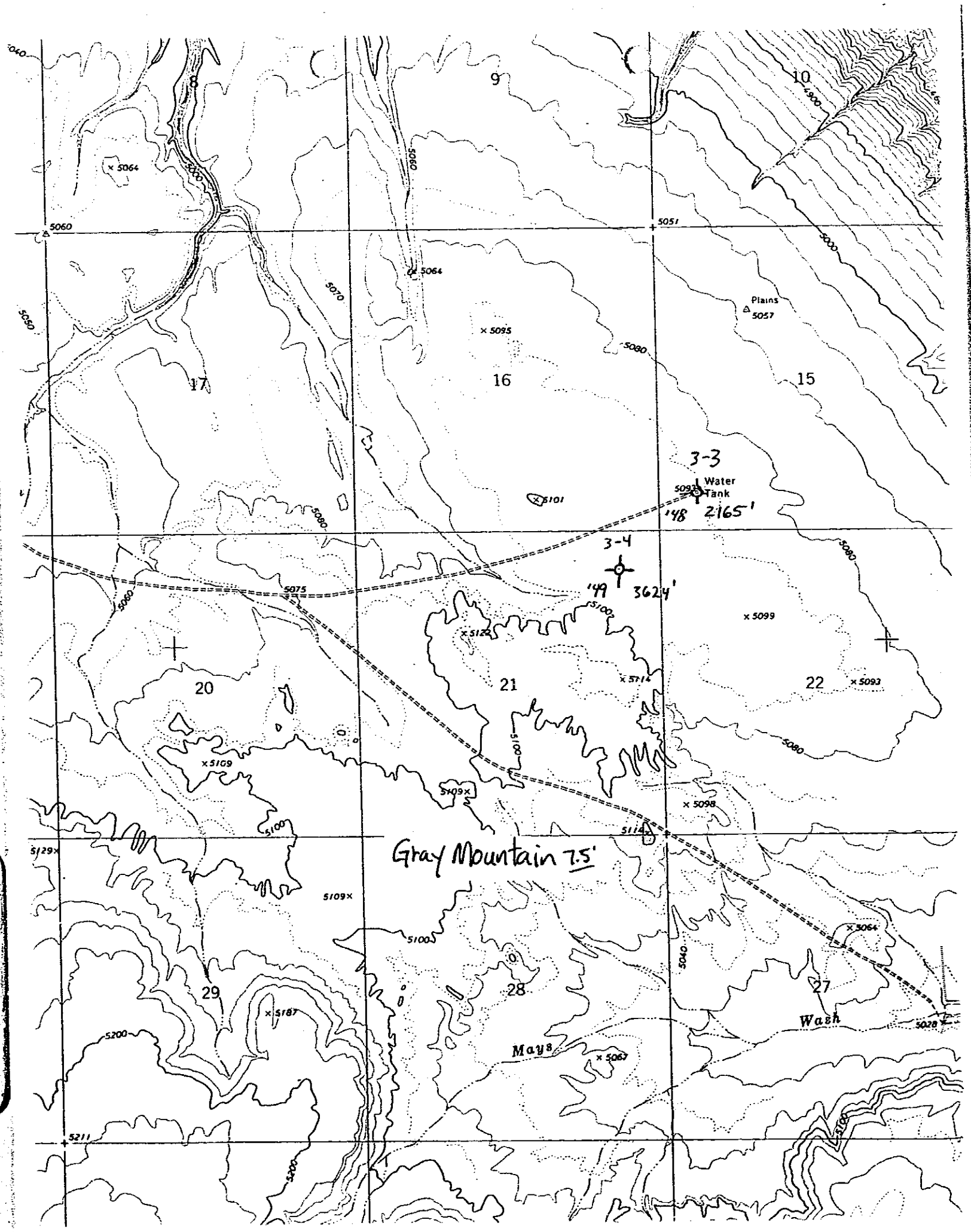


Well Status:
September, 1948-Drg.
February, 1949-Abd.

REMARKS: Do
Correcting location from section 16.
Top Granite 3622; Top Coconino 65; Top Supai 1800; Top Redwall 2730;
Top Temple Butte 3100; Top Tapeats 3364; Top Quartzite 3523.

3-4

Permanent


Gray Mountain 7.5'
Water Tank
Plains
Mays Wash
3-3
148 2165'
3-4
149 3624'
8
9
10
15
16
17
20
21
22
27
28
29
5060
5051
5064
5095
5101
5099
5093
5114
5109
5098
5129
5187
5067
5028
5211
5200
5100
5080
5075
5070
5050
5040
5000
4900

SCAL, INC.

SPECIAL CORE ANALYSIS LABORATORIES

H. L. Brown, Jr.

file 3-4

Lithologic Description of Cuttings and Core Chips, Mercury Injection Capillary Pressure, Pore Size Distribution, and Porosity and Permeability Calculations

CONFIDENTIAL

Release Date 4-25-01

OCT 2000
ARIZONA GEOLOGICAL SURVEY

Lockhart #1 Babbit
Coconino County, Arizona.

file 3-4

The analysis, interpretations or opinions expressed in our reports represent the best judgement of Special Core Analysis Laboratories Inc.. Special Core Analysis Laboratories Inc. assumes no responsibility and makes no warranties of any kind as to the productivity, proper operation or profitability of any oil, gas or any other mineral in connection which such a report is used or relied upon.

P.O. BOX 9730 • MIDLAND, TX 79708-2730 • (915) 561-5406 • FAX (915) 561-5339

State of Arizona
Arizona Geological Survey
416 W. Congress, Suite 100
Tucson, Arizona 85701
(520) 770-3500

Jane Dee Hull
Governor

Larry D. Fellows
Director and State Geologist

October 25, 2000

Mr. H.L. Brown Jr.
300 West Louisiana
Midland TX 79702

Dear Mr. Brown:

This will acknowledge receipt of the SCAL, Inc. report of the Commission's samples from the Lockhart #1 Babbitt well in Coconino County, Arizona.

The report shall be kept confidential for 6 months. The Commission may grant a 6-month extension. I will let them know of your request for an extension at their next meeting on January 19, 2001.

Sincerely,

Steve

Steven L. Rauzi
Oil & Gas Administrator

Enclosure

H. L. BROWN, JR.
POST OFFICE BOX 2237
MIDLAND, TEXAS 79702-2237

October 24, 2000

Stephen L. Rauzi
Oil &Gas Program Administrator
416 W Congress, Suite 100
Tucson, Arizona 85701

Dear Mr. Rauzi,

Enclosed please find a copy of a study of cuttings and core chips from the Lockhart #1 Babbit well in Coconino County, Arizona. Anish Kumar of Special Core Analysis Laboratories performed this study on October 11, 2000. It is our understanding that you will keep any information that we send to you confidential for the period of one year.

I also wanted to thank you for your cooperation on our visits to your office. If there is anything else that we can do for you please let us know. Thank you again.

Sincerely,

H.L. Brown, Jr

TELEPHONE (915) 683-5216 300 WEST LOUISIANA FAX (915) 688-3737

SCAL, Inc.

SPECIAL CORE ANALYSIS LABORATORIES, INC.

October 11, 2000.

Mr. H. L. Brown, Jr.

600 West Louisiana

Midland, TX 79701.

RE: Lithologic Description of Cuttings and Core Chips, and
Mercury Injection Capillary Pressure and Pore Size Distribution
Porosity and Permeability Calculation
File: G1162
Well: Lockhart #1 Babbit, Coconino County, Arizona.

Dear Mr. Brown:

Please find enclosed the report on the lithologic description of cuttings and core chips, mercury injection capillary pressure and pore size distribution, and porosity and permeability calculation of the samples of the above well.

The samples were examined at the Arizona State Geological Survey facility in Tucson, Arizona. The well was drilled in the latter part of 1948 and was plugged in February of 1949. Hence, the samples have been exposed to the elements for over five decades.

Five samples were selected for mercury-injection capillary pressure tests. These tests were done to calculate the porosity and permeability of the samples. The samples were evacuated before mercury injection. Mercury injection was performed over 2 to 60,000 psia pressure range. The pore size distribution was calculated along with the capillary pressure. Porosity and permeability were calculated for the samples. A capillary pressure $J_{(S_w)}$ function was also calculated.

$$J_{(S_w)} = \frac{P_c}{\sigma_{air-Hg} \times \cos(\theta)} \times \left(\frac{k}{\phi}\right)^{1/2}$$

where:	P_c	Capillary pressure.
	σ_{air-Hg}	Interfacial tension (480 dynes/cm).
	θ	Contact angle (140°).
	k	Gas permeability.
	ϕ	Porosity.

P. O. Box 9730 • Midland, TX 79708-2730 • 1-888-561-5407 • (915)-561-5406 • FAX (915)-561-5339 • scalinc@msn.com

It was a pleasure performing these analyses for you. If you need additional information or there are any questions concerning the interpretation of the data, please do contact us.

Thank you for using SCAL, Inc..

Sincerely,

Anish Kumar, Ph.D.
Geological Services Manager

Mihai Vasilache
President

Company	:	**H. L. Brown, Jr.**
File No.	:	**G1162**
Well	:	**Lockhart #1 Babbit**
		Coconino County, Arizona.
Location	:	**C NE NE Sec 21, T27N R9E**
Well Plugged	:	**February, 1949.**

Lithological Description of Core Chips and Cuttings

Introduction

Core chips and drill cuttings of the Lockhart #1 Babbit, Coconino County, were examined at the Arizona State Geological Survey facility in Tucson, Arizona. This well was plugged in February, 1949.

General Descriptions

The samples described were mainly fine to coarse to gravel sandstones to conglomerates, mostly subangular, well to very poorly sorted, moderately cemented. They appear in small bands, alternating between fine to medium grained sandstone and conglomerate. The samples appear to mostly have a porosity (visual estimation) of 6-10 %, however at places the samples displayed porosities (visual estimation) of about 15 %, and at other places 2 – 4 %. The predominant constituent was quartz, however some feldspars were also present. The majority of the samples were cemented with quartz overgrowth cement. Some samples also had calcite cement. Other cements observed were iron oxide, and clays.

Fluorescence

The samples did not show any fluorescence when first examined, however some samples did fluoresce when submerged in chloroethane for about 30 minutes. Some of the samples showed a slight cut when submerged in chloroethane for about 30 minutes. At depths of 3,478 feet and 3,488 feet the cuts were a lot quicker (about 5 minutes). At the depth of 3,568 feet a streaming cut was noticed when the sample was submerged in chloroethane.

Most of the cuts were noticed in samples that appeared to have relatively less porosity and permeability. This implies that if oil was present in this reservoir and in these samples, it has evaporated and oxidized over the years in the more porous and permeable rocks. The cuts that are seen in the tighter part of the reservoir are due to the heavier remnants of the oil that may have been present. It is difficult to conclude whether the oil that was present in the samples was from oil in place or from oil that migrated through.

Lithological Description of Core Chips and Cuttings

Note: The well was plugged in February, 1949.

Depth (feet)	Lithology	Description	Fluorescence	Estimated Porosity
3,400 cuttings	Sandstone	White, cream, light gray, fine to medium grained, subangular to angular, moderately sorted, moderately cemented, some quartz overgrowth cement, some muscovite, some feldspar, some dark mineral	None; Yellow after cut.	6 - 8 %
3,404 core chip	Sandstone (bands)	White, cream, pink, fine grained, subangular to angular, well sorted, moderately to well cemented, some quartz overgrowth cement, some feldspar, trace dark mineral	None; Yellow after cut	14 - 16 %
		White, light gray, fine to very coarse grained, subangular to angular, poorly sorted, moderately cemented, some quartz overgrowth cement	None; Yellow after cut	8 - 10 %
3,410 core chip	Conglomerate/ sandstone/ schist bands	Conglomerate: White, cream, fine to gravel grained, subangular to angular, very poorly sorted, moderately to poorly cemented, some quartz overgrowth cement, possible clays	None	20 %
		Sandstone: White, cream, light gray, fine to medium grained, subangular to angular, moderately sorted, moderately cemented, some quartz overgrowth cement, some feldspar, some possible clays	None	6 - 8 %
		Schist (or coarse micaceous shale): Golden green to black, coarse grains, some quartz grains	None	Traces
3,412 core chip	Conglomerate/ sandstone/ schist bands	Conglomerate: White, cream, fine to gravel grained, subangular to angular, very poorly sorted, moderately to poorly cemented, some quartz overgrowth cement, possible clays	None	20 %
		Sandstone: White, cream, light gray, fine to medium grained, subangular to angular, moderately sorted, moderately cemented,	None	6 -8 %

		some quartz overgrowth cement, some feldspar, some possible clays		
		Schist (or coarse micaceous shale): Golden green to black, coarse grains, some quartz grains	None	Traces
3,418 core chip	Conglomerate/ sandstone thin bands	Conglomerate: Light gray, pink, very fine to gravel, subangular to angular, very poorly sorted, moderately cemented, some quartz overgrowth cement, possible clays, some iron mineralization	None	15 - 20 %
		Sandstone: Cream, pink, very fine to fine grained, subangular to angular, moderately to well sorted, moderately cemented, some quartz overgrowth cement, some feldspar	None	6 -8 %
3,420 cuttings	Sandstone	Cream, pink, very fine to medium grained, subangular to angular, moderately sorted, moderately cemented, some quartz overgrowth cement, some feldspar, possible clays	None; Yellow after cut, Cut: Slight	8 - 10 %
3,421 core chip	Sandstone/ schist	Sandstone: Cream, pink, very fine to medium grained, subangular to angular, moderately sorted, moderately to well cemented, some quartz overgrowth cement, some feldspar	None	4 - 6 %
		Schist (or coarse micaceous shale): Golden yellow to black, coarse grains, some quartz grains, load casts	None	Traces
3,422 core chip	Sandstone	Cream, pink, very fine to medium grained, subangular to angular, moderately sorted, moderately to well cemented, some quartz overgrowth cement, some feldspar	None; Yellow after cut Cut: Slight	6 - 8 %
3,428 core chip	Conglomerate/ Sandstone/ shale bands	Conglomerate: White, cream, fine to gravel grained, subangular to angular, very poorly sorted, moderately to poorly cemented, some quartz overgrowth cement, possible clays, 1 cm thick bands, coarsening possibly upwards (?).	None	10 -12 %
		Sandstone: White, cream, light gray, fine to very fine grained, subangular, moderately to well sorted, moderately to well cemented, some quartz overgrowth cement, some feldspar, some	None; Yellow after cut Cut: Slight (++)	6 -8 %

		possible clays	None	Traces
		Shale: Green, laminae, some quartz grains	None	Traces
3,430 core chip	Shale	Brown black, medium grained mica flakes, some quartz grains	None; Yellow after cut Cut: Slight	10 - 12 %
3,435 core chip	Conglomerate	Cream, pink, very fine to very coarse to gravel, subangular to angular, well sorted to poorly sorted, moderately cemented, some quartz overgrowth cement, some iron oxide cement, some feldspar, some possible clays, 1.5 cm thick bands, coarsening possibly upwards (?).	None; Yellow after cut Some mineral fluorescence	4 - 6 %
3,445 core chip	Conglomerate	Pink-purple, very fine to very coarse to gravel, subangular to angular, very poorly sorted, moderately to well cemented, some quartz overgrowth cement, some feldspar	None	14 - 16 %
3,446 core chip	Conglomerate	Pink-light gray, very fine to very coarse to gravel, subangular to subrounded, very poorly sorted, moderately cemented, some quartz overgrowth cement, some feldspar, possible clays	None; Yellow after cut	6 - 8 %
3,454 core chip	Conglomerate	Pink-light gray, fine to very coarse to gravel, subangular, very poorly sorted, moderately cemented, some quartz overgrowth cement, some feldspar, some iron oxide	None; Yellow after cut Cut: Slight (++) with slight ring	12 - 16 %
3,464a core chip	Sandstone 4-10 mm bands	Sandstone: Pink, light gray, fine to very coarse grained, subangular, poorly sorted, moderately cemented, some quartz overgrowth cement, some feldspar, some possible clays	None; Yellow after cut	3 - 4 %
		Sandstone: Purple, pink, very fine to fine grained, subangular, moderately to well sorted, moderately cemented, some quartz overgrowth cement		

3,464b core chip	Conglomerate	Cream-pink-light green, fine to very coarse to gravel, subangular to subrounded, very poorly sorted, moderately cemented, some quartz overgrowth cement, some feldspar, some iron oxide	None	8 - 10 %
3,477 core chip	Sandstone	Cream-pink, very fine to coarse grained, subangular to angular, poorly sorted, moderately cemented, some quartz overgrowth cement, some feldspar, some iron oxide	None	8 - 10 %
3,478 core chip	Sandstone	Cream-pink, very fine to coarse grained, subangular to angular, poorly sorted, moderately cemented, some quartz overgrowth cement, some feldspar, some iron oxide	No Fluorescence Cut: Quick, Slight (++) with slight (++) ring	8 - 10 %
3,488 core chip	Conglomerate	Light Gray, very fine to very coarse to gravel, subangular to subrounded, very poorly sorted, moderately cemented, some quartz overgrowth cement, some iron oxide cement, some feldspar, some possible clays, bands coarsening possibly upwards (?).	No Fluorescence Cut: Quick, Slight (++) with slight (++) ring	6 - 8 %
3,489 cuttings	Sandstone grains	Light gray, very fine to very coarse grained, subangular, some quartz overgrowth cement, lots casing cement.	None	----
3,493 cuttings	Sandstone grains	Light gray, very fine to very coarse grained, subangular, some quartz overgrowth cement, lots casing cement.	None	----
3,507 cuttings	Sandstone	Cream-light gray, very fine to medium grained, subangular, moderately sorted, moderately cemented, some calcite cement, lots casing cement	None	8 - 10 %
3,511 cuttings	Sandstone	Cream-light gray, very fine to medium grained - some gravel, subangular to subrounded, poorly sorted, moderately cemented, some quartz overgrowth cement, some calcite cement, some feldspar, some possible clays, some casing cement	None; Yellow after cut Cut: Slight (++) cut with slight ring	6 - 8 %
3,519	Sandstone	Cream-light gray, very fine to medium grained - some gravel,	None; Yellow after cut	6 - 8 %

cuttings		subangular to subrounded, poorly sorted, moderately cemented, some quartz overgrowth cement, some calcite cement, some feldspar, some possible clays, trace casing cement	Cut: Slight	
3,529 cuttings	Sandstone	Cream-light gray, very fine to medium grained - some gravel, subangular to subrounded, poorly sorted, moderately cemented, some quartz overgrowth cement, some calcite cement, some feldspar, some possible clays, some casing cement	None; Yellow after cut Cut: Slight	6 - 8 %
3,533 cuttings	Sandstone	Cream-light gray, very fine to medium grained - some gravel, subangular to subrounded, poorly sorted, moderately cemented, some quartz overgrowth cement, some calcite cement, some feldspar, some possible clays	None; Yellow after cut Cut: Slight	8 - 10 %
3,541 core chip	Conglomerate/ Sandstone bands	Conglomerate: Cream, very fine to very coarse to gravel, subangular to subrounded, very poorly sorted, moderately cemented, some quartz overgrowth cement, some calcite cement, some feldspar, some possible clays	No Fluorescence Cut: Slight (++)	6 - 8 %
		Sandstone: Cream, very fine to medium grained, subangular, moderate to poorly sorted, moderately cemented, some quartz overgrowth cement, some calcite cement, some feldspar, some possible clays	No Fluorescence Cut: Slight (++)	6 - 8 %
3,548 cuttings	Sandstone	Sandstone: Cream-light gray, very fine to medium grained - some gravel, subangular to subrounded, poorly sorted, moderately cemented, some quartz overgrowth cement, some calcite cement, some feldspar, some possible clays, some casing cement	None; Yellow after cut Cut: Slight	6 - 8 %
		Sandstone: Purple-brown, fine to coarse grained, subangular, moderately to poorly sorted, moderately cemented	None; Yellow after cut Cut: Slight (++)	4 - 6 %
3,560 cuttings	Sandstone	Sandstone: Cream-light gray, very fine to medium grained - some gravel, subangular to subrounded, poorly sorted, moderately	None; Yellow after cut Cut: Slight	6 - 8 %

		cemented, some quartz overgrowth cement, some calcite cement, some feldspar, some possible clays		
		Sandstone: Purple-brown, fine to coarse grained, subangular, moderately to poorly sorted, moderately cemented	None; Yellow after cut Cut: Slight	4 - 6 %
3,564 core chip	Sandstone bands	Sandstone: Light gray, fine to very coarse grained - some gravel, subangular to subrounded, very poorly sorted, moderately cemented, some quartz overgrowth cement, some calcite cement, some feldspar, some possible clays	None; Yellow after cut Cut: Slight	6 - 8 %
		Sandstone: Purple-brown, fine to coarse grained, subangular, moderately to poorly sorted, moderately cemented	None; Yellow after cut Cut: Slight	4 - 6 %
3,568 cuttings	Sandstone	Sandstone: Cream-light gray, very fine to medium grained - some gravel, subangular to subrounded, poorly sorted, moderately cemented, some quartz overgrowth cement, some calcite cement, some feldspar, some possible clays	None; Yellow after cut Cut: Bright streaming cut, Slight overall cut	6 - 8 %
		Sandstone: Purple-brown, fine to coarse grained, subangular, moderately to poorly sorted, moderately cemented	None; Yellow after cut Cut: Slight	4 - 6 %
3,570 cuttings	Sandstone	Cream-light gray, very fine to medium grained - some gravel, subangular to subrounded, poorly sorted, moderately cemented, some quartz overgrowth cement, some feldspar, some possible clays, some black mineral	No Fluorescence Cut: Slight cut with ring	6 - 8 %
3,574 cuttings	Sandstone	Cream-light gray, very fine to medium grained - some gravel, subangular to subrounded, poorly sorted, moderately cemented, some quartz overgrowth cement, some feldspar, some possible clays, some black mineral	No Fluorescence Cut: Slight cut with ring	6 - 8 %

3,575 cuttings	Sandstone	Light brown-pink, very fine to fine grained, subangular to angular, well sorted, moderately to well cemented, some calcite cement	No Fluorescence Cut: Slight cut with ring	4 - 6 %
3,585 cuttings	Sandstone/ Conglomerate	Sandstone: Cream, very fine to fine, subangular, well sorted, some calcite cement	No fluorescence Cut: Slight cut with slight ring	4 - 6 %
		Sandstone: Brown, fine to medium, subangular, well sorted, some feldspar, some calcite cement	No fluorescence Cut: Slight cut with slight ring	4 - 6 %
		Conglomerate: Cream, fine to very coarse to gravel, subangular to subrounded, very poorly sorted	No fluorescence Cut: Slight cut with slight ring	4 - 6 %
3,592 cuttings	Sandstone/ Conglomerate	Sandstone: Cream, very fine to fine, subangular, well sorted, some calcite cement	None; Yellow after cut Cut: Slight cut with slight ring	4 - 6 %
		Sandstone: Brown, fine to medium, subangular, well sorted, some feldspar, some calcite cement	None; Yellow after cut Cut: Slight cut with slight ring	4 - 6 %
		Conglomerate: Cream, fine to very coarse to gravel, subangular to subrounded, very poorly sorted	None; Yellow after cut Cut: Slight cut with slight ring	4 - 6 %
3,598 cuttings	Sandstone	Sandstone: Cream, very fine to fine grained, subangular, well sorted, moderately cemented	None; Yellow after cut Cut: Slight cut with slight ring	4 - 6 %
		Sandstone: Cream, very fine to medium grained, subangular to subrounded, moderately sorted, moderately cemented	None; Yellow after cut Cut: Slight cut with slight ring	4 - 6 %
(3,592 -) 3,598 core chip	Sandstone	Purple to reddish brown, fine to very coarse, subrounded, poorly sorted, well cemented, some shale laminations	No Fluorescence Cut: Slight (-) cut with slight ring	2 - 4 %

3,608 cuttings	Sandstone	Purple to reddish brown, fine to very coarse, subrounded, poorly sorted, well cemented, some shale laminations	No Fluorescence Cut: Slight (-) cut with slight ring	2 - 4 %
3,623 cuttings	Sandstone	Brown to dark brown, very fine to coarse, subrounded, poorly sorted, moderately to well cemented, some quartz overgrowth cement, some feldspar, some possible clays, some iron oxide cement	No Fluorescence Cut: Slight (-) cut with slight ring	2 - 4 %

Note: Well plugged in February, 1949.

Capillary Pressure Air-Mercury

Company : *H.L. Brown*

Well Name : *Lockhart #1 Babbit, Coconino County, Arizona*

Sample : 1
Depth : 3,404.0

Porosity : 13.02 %
Permeability : 0.162 mD
Grain Density : 2.65 g/cc

No.	Capillary Pressure psia	Wetting Phase Saturation %	Pore Entry Radius microns	J Function
1	1.2	100.00		
2	1.4	100.00		
3	1.7	100.00		
4	1.9	100.00		
5	2.1	100.00		
6	2.3	100.00		
7	2.6	100.00		
8	2.9	100.00		
9	3.2	100.00		
10	3.5	100.00		
11	3.8	100.00		
12	4.1	100.00		
13	4.4	100.00		
14	4.8	100.00		
15	5.2	100.00		
16	5.6	100.00		
17	6.0	99.58	17.644	0.00
18	6.5	98.46	16.494	0.00
19	6.9	98.04	15.486	0.00
20	7.4	97.07	14.459	0.00
21	7.9	95.39	13.443	0.01
22	8.5	94.20	12.564	0.01
23	9.0	92.60	11.795	0.01
24	9.6	90.08	11.118	0.01
25	10.2	87.92	10.419	0.01
26	10.9	85.89	9.767	0.01
27	11.6	84.22	9.195	0.01
28	12.3	81.15	8.665	0.01
29	13.1	77.51	8.135	0.01
30	13.9	74.72	7.670	0.01
31	14.7	71.58	7.234	0.01
32	15.6	68.51	6.816	0.01
33	16.6	65.50	6.439	0.01
34	17.6	62.15	6.073	0.01
35	18.6	58.94	5.740	0.01
36	19.7	55.31	5.425	0.01
37	21	52.03	5.126	0.01
38	22	49.30	4.848	0.01

SCAL, Inc.

Note: Well plugged in February, 1949.

Capillary Pressure Air-Mercury

Company : *H.L. Brown*

Well Name : *Lockhart #1 Babbit, Coconino County, Arizona*

Sample : 1
Depth : 3,404.0

Porosity : 13.02 %
Permeability : 0.162 mD
Grain Density : 2.65 g/cc

No.	Capillary Pressure psia	Wetting Phase Saturation %	Pore Entry Radius microns	J Function
-				
39	23	46.51	4.587	0.02
40	41	34.43	2.600	0.03
41	82	23.53	1.300	0.05
42	122	19.06	0.874	0.08
43	164	16.13	0.650	0.11
44	207	14.04	0.515	0.14
45	261	12.22	0.408	0.17
46	314	10.82	0.339	0.21
47	369	9.78	0.289	0.24
48	429	9.01	0.248	0.28
49	490	8.31	0.218	0.32
50	554	7.82	0.192	0.36
51	622	7.33	0.171	0.41
52	705	6.98	0.151	0.46
53	780	6.56	0.137	0.51
54	864	6.22	0.123	0.57
55	953	5.94	0.112	0.63
56	1,050	5.66	0.102	0.69
57	1,145	5.38	0.093	0.75
58	1,247	5.10	0.085	0.82
59	1,350	4.96	0.079	0.89
60	1,473	4.68	0.072	0.97
61	1,593	4.54	0.067	1.05
62	1,728	4.26	0.062	1.14
63	1,865	4.12	0.057	1.23
64	2,004	3.91	0.053	1.32
65	2,146	3.84	0.050	1.41
66	2,306	3.70	0.046	1.52
67	2,474	3.63	0.043	1.63
68	2,652	3.56	0.040	1.74
69	2,836	3.49	0.038	1.86
70	3,025	3.42	0.035	1.99
71	3,236	3.28	0.033	2.13
72	3,457	3.21	0.031	2.27
73	3,690	3.14	0.029	2.42
74	3,924	3.14	0.027	2.58
75	4,172	3.00	0.026	2.74
76	4,436	2.93	0.024	2.91

SCAL, Inc.

Note: Well plugged in February, 1949.

Capillary Pressure Air-Mercury

Company : *H.L. Brown*

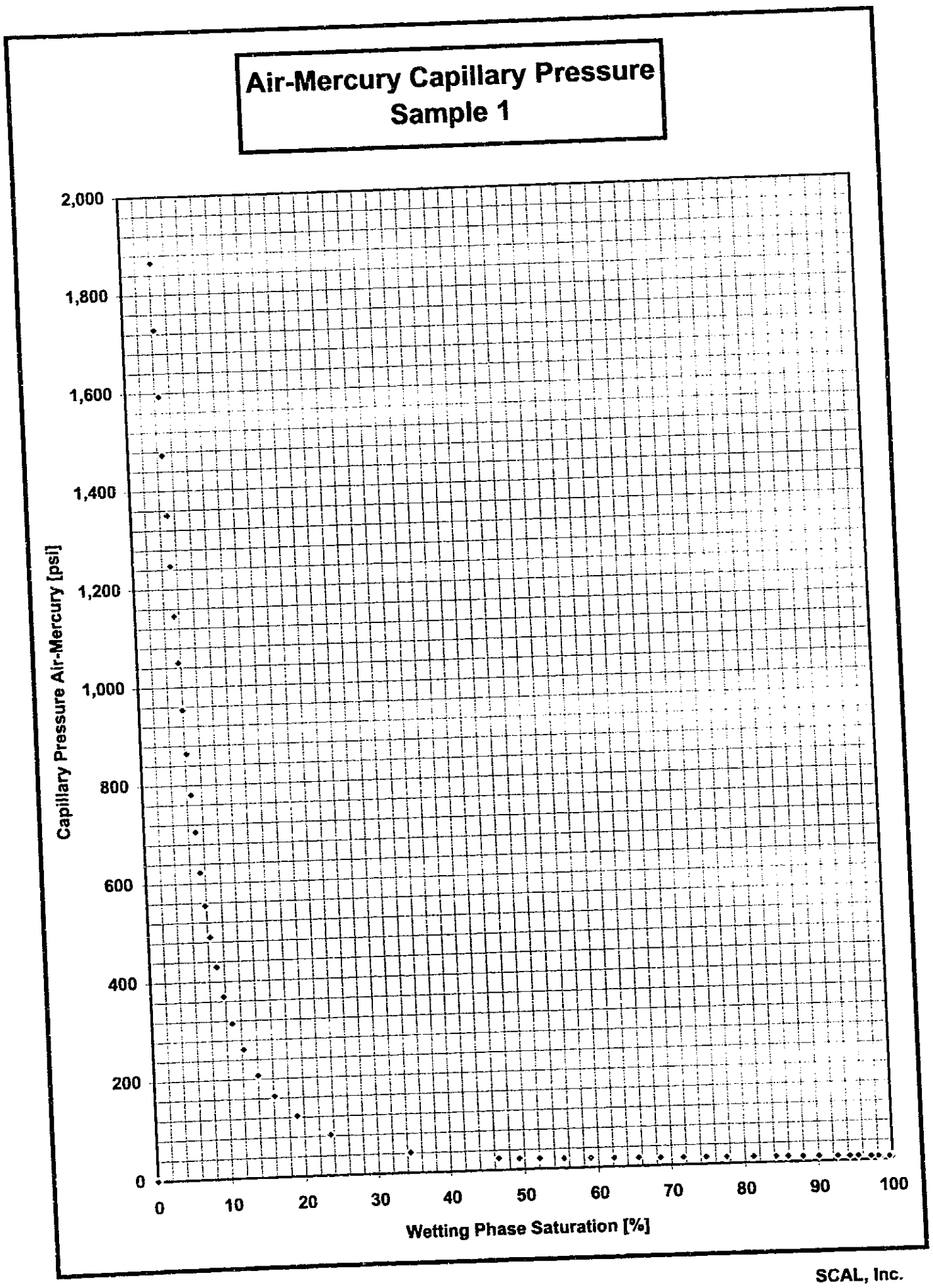
Well Name : *Lockhart #1 Babbit, Coconino County, Arizona*

Sample : 1
Depth : 3,404.0

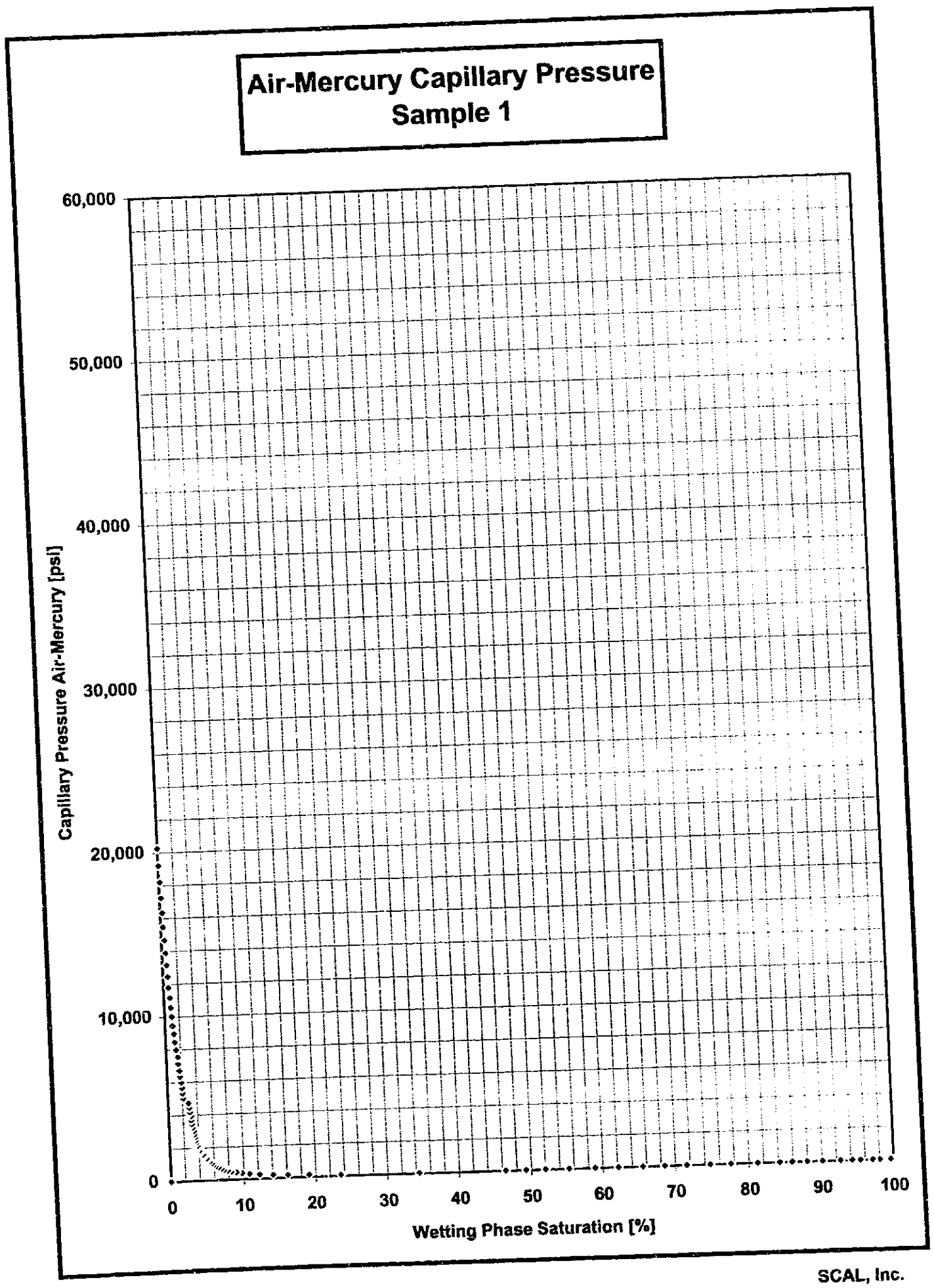
Porosity : 13.02 %
Permeability : 0.162 mD
Grain Density : 2.65 g/cc

No.	Capillary Pressure psia	Wetting Phase Saturation %	Pore Entry Radius microns	J Function
77	4,717	2.86	0.023	3.10
78	5,007	2.16	0.021	3.29
79	5,315	2.10	0.020	3.49
80	5,647	2.03	0.019	3.71
81	5,993	1.96	0.018	3.94
82	6,352	1.82	0.017	4.17
83	6,724	1.75	0.016	4.42
84	7,133	1.61	0.015	4.69
85	7,550	1.61	0.014	4.96
86	7,985	1.40	0.013	5.25
87	8,452	1.26	0.013	5.55
88	8,943	1.19	0.012	5.88
89	9,451	1.05	0.011	6.21
90	10,000	0.98	0.011	6.57
91	10,570	0.91	0.010	6.95
92	11,162	0.84	0.010	7.33
93	11,787	0.70	0.009	7.75
94	12,458	0.63	0.009	8.19
95	13,152	0.56	0.008	8.64
96	13,896	0.49	0.008	9.13
97	14,677	0.42	0.007	9.64
98	15,477	0.28	0.007	10.17
99	16,347	0.28	0.007	10.74
100	17,247	0.21	0.006	11.33
101	18,202	0.14	0.006	11.96
102	19,214	0.07	0.006	12.63
103	20,258	0.00	0.005	13.31

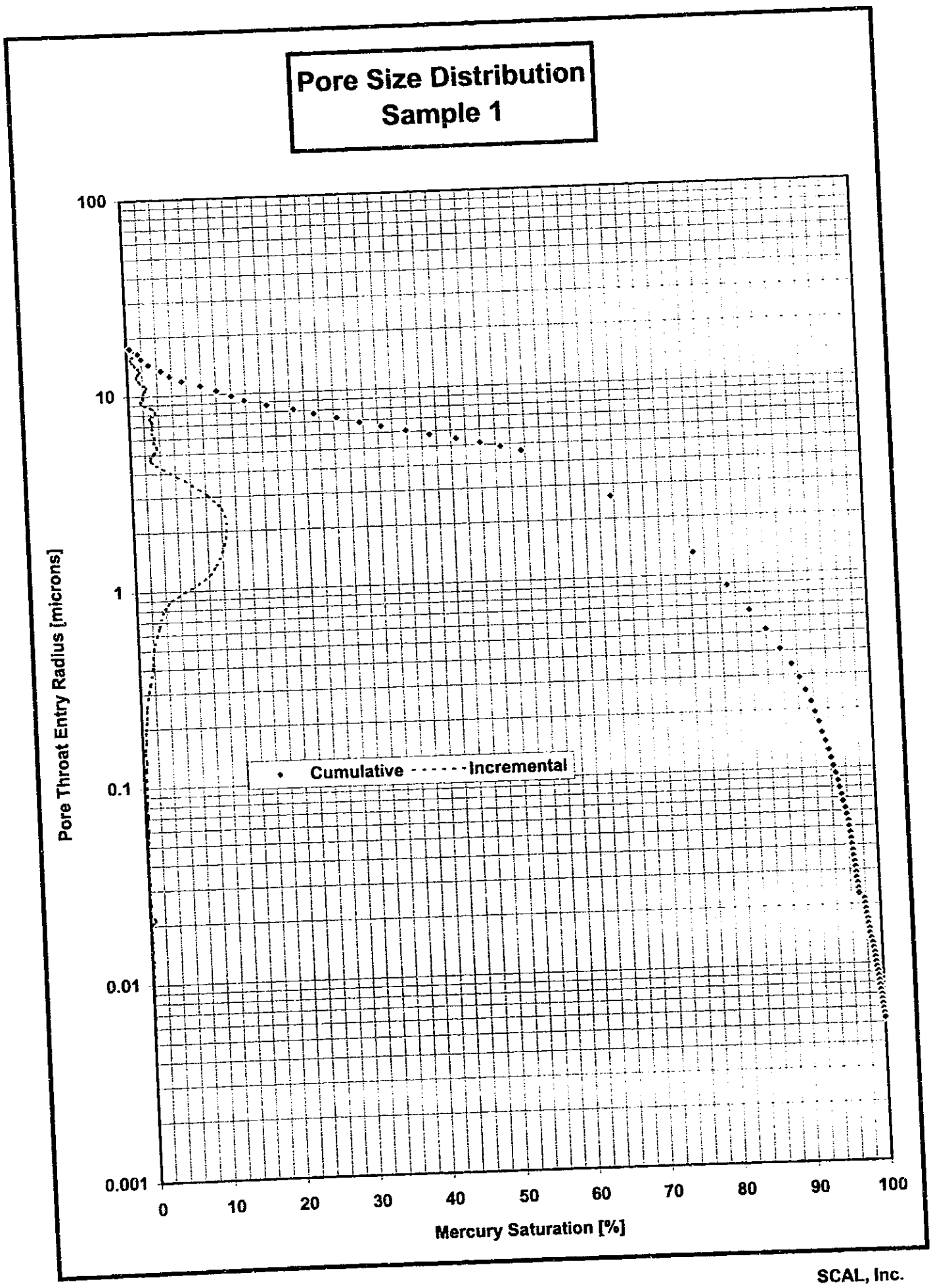
SCAL, Inc.


Air-Mercury Capillary Pressure
Sample 1
Capillary Pressure Air-Mercury [psi]
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
0
10
20
30
40
50
60
70
80
90
100
Wetting Phase Saturation [%]

SCAL, Inc.


Air-Mercury Capillary Pressure
Sample 1
60,000
50,000
40,000
30,000
20,000
10,000
0
Capillary Pressure Air-Mercury [psi]
0
10
20
30
40
50
60
70
80
90
100
Wetting Phase Saturation [%]

SCAL, Inc.


Pore Size Distribution
Sample 1
Pore Throat Entry Radius [microns]
100
10
1
0.1
0.01
0.001
Cumulative
Incremental
0
10
20
30
40
50
60
70
80
90
100
Mercury Saturation [%]

SCAL, Inc.

Note: Well plugged in February, 1949.

Capillary Pressure Air-Mercury

Company : *H.L. Brown*

Well Name : *Lockhart #1 Babbit, Coconino County, Arizona*

Sample : 2
Depth : 3,477.0

Porosity : 13.98 %
Permeability : 1.0169 mD
Grain Density : 2.65 g/cc

No.	Capillary Pressure psia	Wetting Phase Saturation %	Pore Entry Radius microns	J Function
-				
1	1.2	100.00		
2	1.4	100.00		
3	1.7	100.00		
4	1.9	100.00		
5	2.1	100.00		
6	2.4	100.00		
7	2.6	99.19	40.844	0.00
8	2.8	98.30	37.483	0.00
9	3.1	96.90	34.656	0.00
10	3.3	95.20	32.206	0.01
11	3.6	92.46	29.416	0.01
12	4.0	89.87	26.839	0.01
13	4.3	87.14	24.671	0.01
14	4.7	84.92	22.837	0.01
15	5.0	82.56	21.248	0.01
16	5.4	79.97	19.874	0.01
17	5.7	77.53	18.624	0.01
18	6.2	74.94	17.230	0.01
19	6.6	71.77	16.033	0.01
20	7.1	68.81	14.995	0.01
21	7.6	64.60	14.084	0.01
22	8.1	60.09	13.188	0.01
23	8.7	56.25	12.321	0.01
24	9.2	53.73	11.566	0.01
25	9.8	51.88	10.899	0.02
26	10.4	49.82	10.232	0.02
27	11.1	48.34	9.615	0.02
28	11.8	46.64	9.072	0.02
29	12.5	45.08	8.547	0.02
30	13.2	43.46	8.055	0.02
31	14.0	42.20	7.608	0.02
32	14.9	40.95	7.171	0.02
33	15.7	39.99	6.777	0.02
34	16.7	38.95	6.396	0.03
35	17.6	37.99	6.041	0.03
36	18.7	37.18	5.714	0.03
37	20	36.44	5.402	0.03
38	21	35.55	5.108	0.03

SCAL, Inc.

Note: Well plugged in February, 1949.

Capillary Pressure Air-Mercury

Company : *H.L. Brown*

Well Name : *Lockhart #1 Babbit, Coconino County, Arizona*

Sample : 2
Depth : 3,477.0

Porosity : 13.98 %
Permeability : 1.0169 mD
Grain Density : 2.65 g/cc

No.	Capillary Pressure psia	Wetting Phase Saturation %	Pore Entry Radius microns	J Function
39	22	34.66	4.834	0.04
40	23	33.85	4.578	0.04
41	41	28.09	2.600	0.07
42	81	19.73	1.316	0.13
43	123	14.71	0.867	0.20
44	169	11.53	0.631	0.27
45	219	9.31	0.487	0.35
46	274	7.61	0.389	0.44
47	328	6.36	0.325	0.52
48	387	5.40	0.275	0.61
49	454	4.80	0.235	0.72
50	520	4.21	0.205	0.83
51	590	3.77	0.181	0.94
52	664	3.47	0.161	1.05
53	739	3.10	0.144	1.17
54	824	2.88	0.129	1.31
55	920	2.59	0.116	1.46
56	1,016	2.37	0.105	1.61
57	1,125	2.22	0.095	1.79
58	1,237	2.07	0.086	1.97
59	1,355	1.92	0.079	2.15
60	1,475	1.77	0.072	2.34
61	1,602	1.55	0.067	2.55
62	1,730	1.48	0.062	2.75
63	1,864	1.33	0.057	2.96
64	1,994	1.26	0.053	3.17
65	2,150	1.18	0.050	3.42
66	2,319	1.11	0.046	3.68
67	2,496	1.03	0.043	3.97
68	2,681	0.96	0.040	4.26
69	2,864	0.89	0.037	4.55
70	3,061	0.81	0.035	4.86
71	3,273	0.67	0.033	5.20
72	3,502	0.67	0.030	5.56
73	3,739	0.59	0.029	5.94
74	3,981	0.59	0.027	6.32
75	4,230	0.59	0.025	6.72
76	4,507	0.59	0.024	7.16

SCAL, Inc.

Note: Well plugged in February, 1949.

Capillary Pressure Air-Mercury

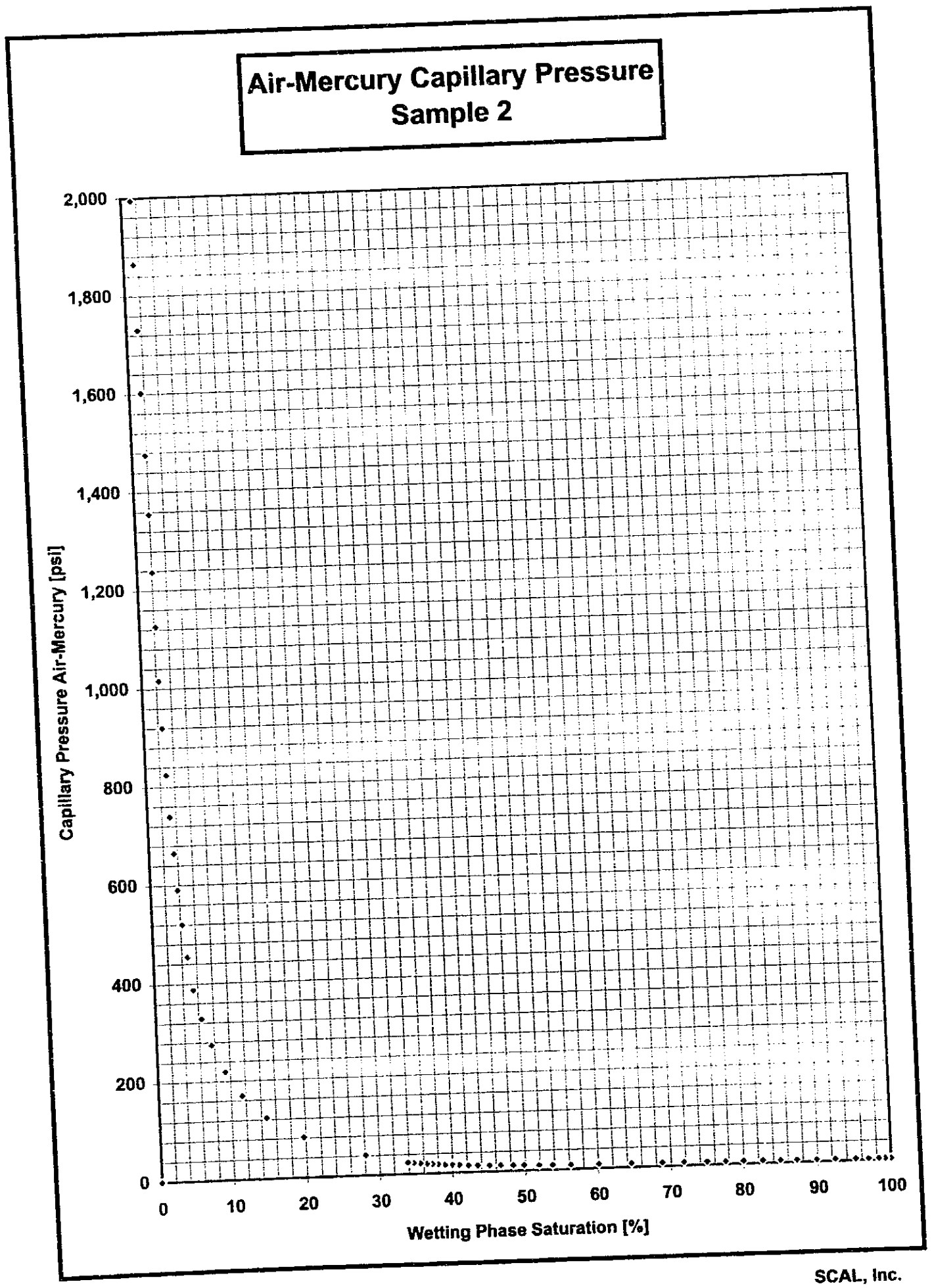
Company : *H.L. Brown*

Well Name : *Lockhart #1 Babbit, Coconino County, Arizona*

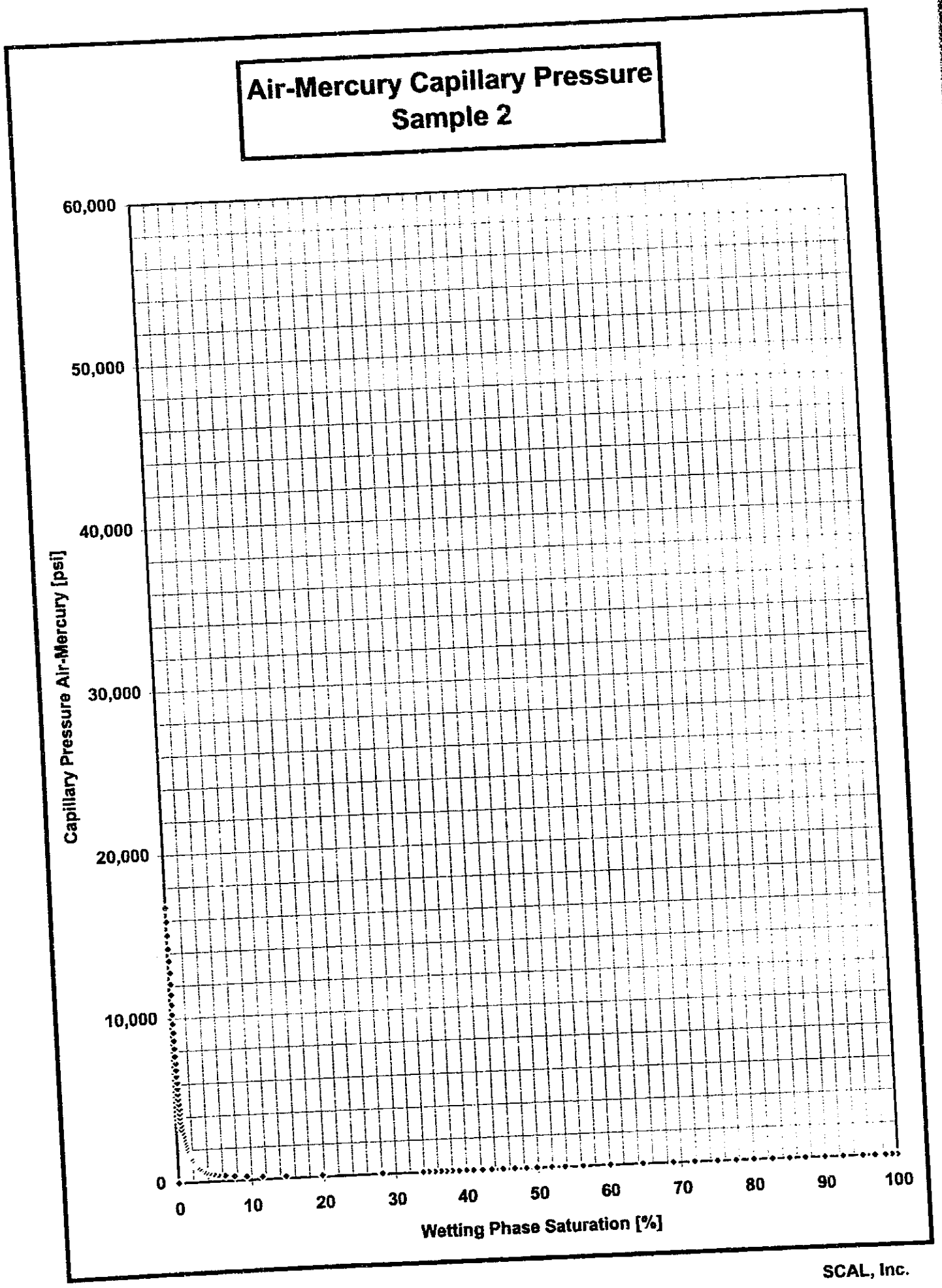
Sample : 2
Depth : 3,477.0

Porosity : 13.98 %
Permeability : 1.0169 mD
Grain Density : 2.65 g/cc

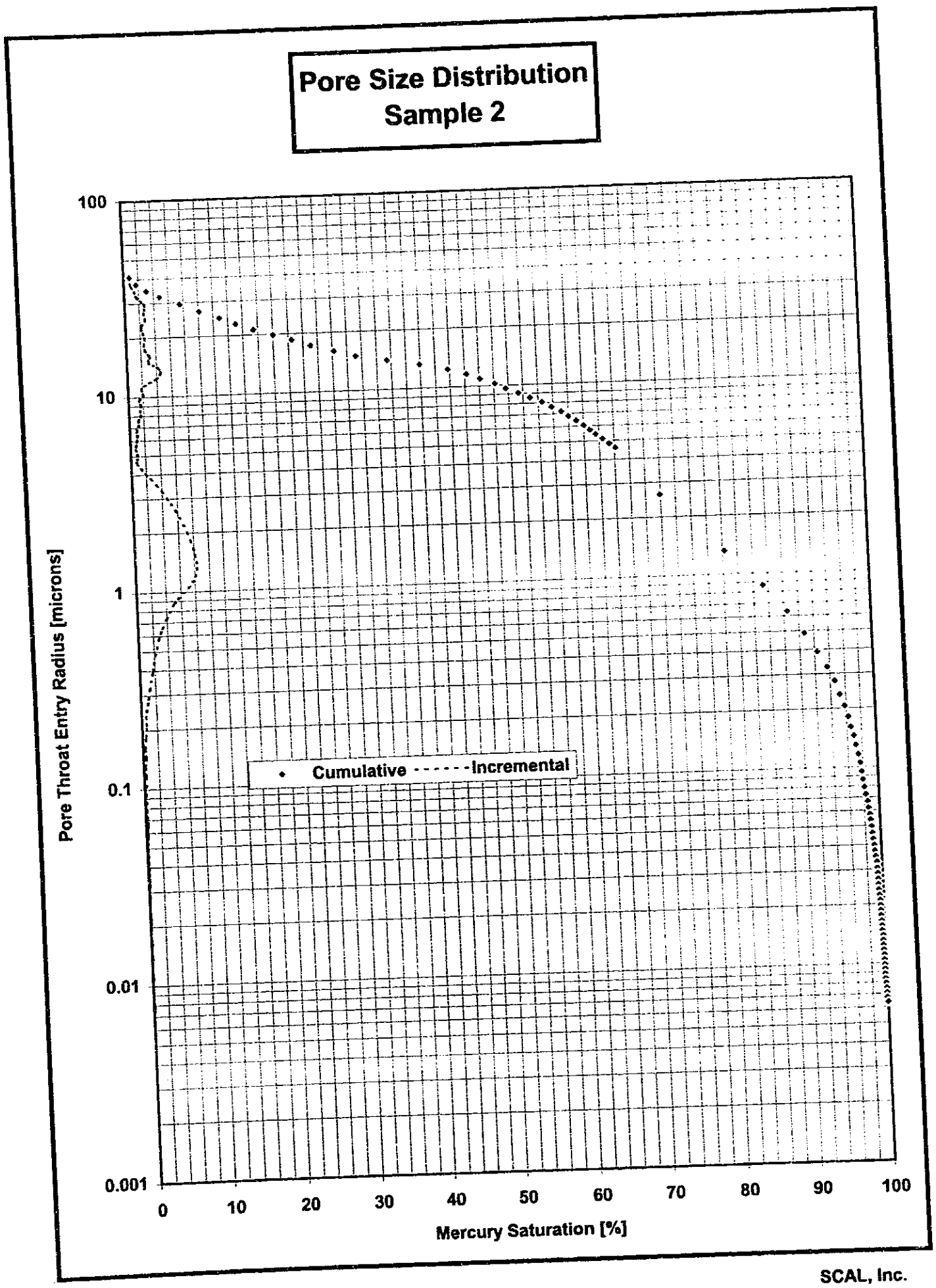
No.	Capillary Pressure psia	Wetting Phase Saturation %	Pore Entry Radius microns	J Function
77	4,807	0.52	0.022	7.64
78	5,112	0.44	0.021	8.12
79	5,421	0.44	0.020	8.61
80	5,750	0.44	0.019	9.14
81	6,102	0.44	0.017	9.69
82	6,482	0.37	0.016	10.30
83	6,866	0.37	0.016	10.91
84	7,275	0.37	0.015	11.56
85	7,699	0.30	0.014	12.23
86	8,169	0.30	0.013	12.98
87	8,645	0.30	0.012	13.73
88	9,144	0.30	0.012	14.53
89	9,681	0.22	0.011	15.38
90	10,254	0.22	0.010	16.29
91	10,843	0.22	0.010	17.23
92	11,458	0.22	0.009	18.20
93	12,109	0.22	0.009	19.24
94	12,802	0.22	0.008	20.34
95	13,510	0.15	0.008	21.46
96	14,265	0.07	0.007	22.66
97	15,076	0.07	0.007	23.95
98	15,918	0.07	0.007	25.29
99	16,787	0.00	0.006	26.67


Air-Mercury Capillary Pressure
Sample 2
Capillary Pressure Air-Mercury [psi]
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
0
10
20
30
40
50
60
70
80
90
100
Wetting Phase Saturation [%]

SCAL, Inc.


Air-Mercury Capillary Pressure
Sample 2
60,000
50,000
40,000
30,000
20,000
10,000
0
Capillary Pressure Air-Mercury [psi]
0
10
20
30
40
50
60
70
80
90
100
Wetting Phase Saturation [%]

SCAL, Inc.


Pore Size Distribution
Sample 2
Pore Throat Entry Radius [microns]
100
10
1
0.1
0.01
0.001
Cumulative
Incremental
0
10
20
30
40
50
60
70
80
90
100
Mercury Saturation [%]

SCAL, Inc.

Note: Well plugged in February, 1949.

Capillary Pressure Air-Mercury

Company : *H.L. Brown*

Well Name : *Lockhart #1 Babbit, Coconino County, Arizona*

Sample : 3
Depth : 3,488.0

Porosity : 5.8 %
Permeability : 0.0356 mD
Grain Density : 2.65 g/cc

No.	Capillary Pressure psia	Wetting Phase Saturation %	Pore Entry Radius microns	J Function
1	1.1	100.00		
2	1.2	100.00		
3	1.4	100.00		
4	1.6	100.00		
5	1.8	100.00		
6	1.9	100.00		
7	2.1	100.00		
8	2.3	100.00		
9	2.6	100.00		
10	2.8	100.00		
11	3.1	100.00		
12	3.4	100.00		
13	3.6	100.00		
14	3.9	100.00		
15	4.2	100.00		
16	4.6	100.00		
17	4.9	100.00		
18	5.3	100.00		
19	5.6	100.00		
20	6.0	100.00		
21	6.5	100.00		
22	6.9	100.00		
23	7.4	100.00		
24	7.8	100.00		
25	8.4	100.00		
26	8.9	100.00		
27	9.5	100.00		
28	10.1	100.00		
29	10.7	100.00		
30	11.3	100.00		
31	12.0	100.00		
32	12.8	100.00		
33	13.5	100.00		
34	14.3	100.00		
35	15.2	100.00		
36	16.1	100.00		
37	17	100.00		
38	18	100.00		

SCAL, Inc.

Note: Well plugged in February, 1949.

Capillary Pressure Air-Mercury

Company : *H.L. Brown*

Well Name : *Lockhart #1 Babbit, Coconino County, Arizona*

Sample : 3
Depth : 3,488.0

Porosity : 5.8 %
Permeability : 0.0356 mD
Grain Density : 2.65 g/cc

No.	Capillary Pressure psia	Wetting Phase Saturation %	Pore Entry Radius microns	J Function
39	19	100.00		
40	20	98.71	5.305	0.01
41	21	96.26	5.023	0.01
42	22	94.68	4.755	0.01
43	24	94.25	4.504	0.01
44	53	90.66	2.011	0.02
45	94	79.45	1.134	0.04
46	137	65.37	0.778	0.06
47	183	53.88	0.583	0.08
48	228	45.40	0.468	0.11
49	279	38.22	0.382	0.13
50	334	33.19	0.319	0.15
51	388	29.31	0.275	0.18
52	453	26.15	0.235	0.21
53	519	23.71	0.205	0.24
54	584	21.84	0.183	0.27
55	658	20.55	0.162	0.30
56	738	18.97	0.144	0.34
57	813	17.82	0.131	0.38
58	900	16.67	0.118	0.42
59	990	15.66	0.108	0.46
60	1,094	14.66	0.097	0.50
61	1,193	13.79	0.089	0.55
62	1,320	12.93	0.081	0.61
63	1,450	12.07	0.074	0.67
64	1,586	11.35	0.067	0.73
65	1,724	10.78	0.062	0.80
66	1,863	10.06	0.057	0.86
67	2,006	9.48	0.053	0.93
68	2,155	9.20	0.049	0.99
69	2,307	8.76	0.046	1.06
70	2,487	8.33	0.043	1.15
71	2,677	7.90	0.040	1.24
72	2,877	7.47	0.037	1.33
73	3,080	6.90	0.035	1.42
74	3,285	6.61	0.032	1.52
75	3,502	6.32	0.030	1.62
76	3,728	6.03	0.029	1.72

SCAL, Inc.

Note: Well plugged in February, 1949.

Capillary Pressure Air-Mercury

Company : *H.L. Brown*

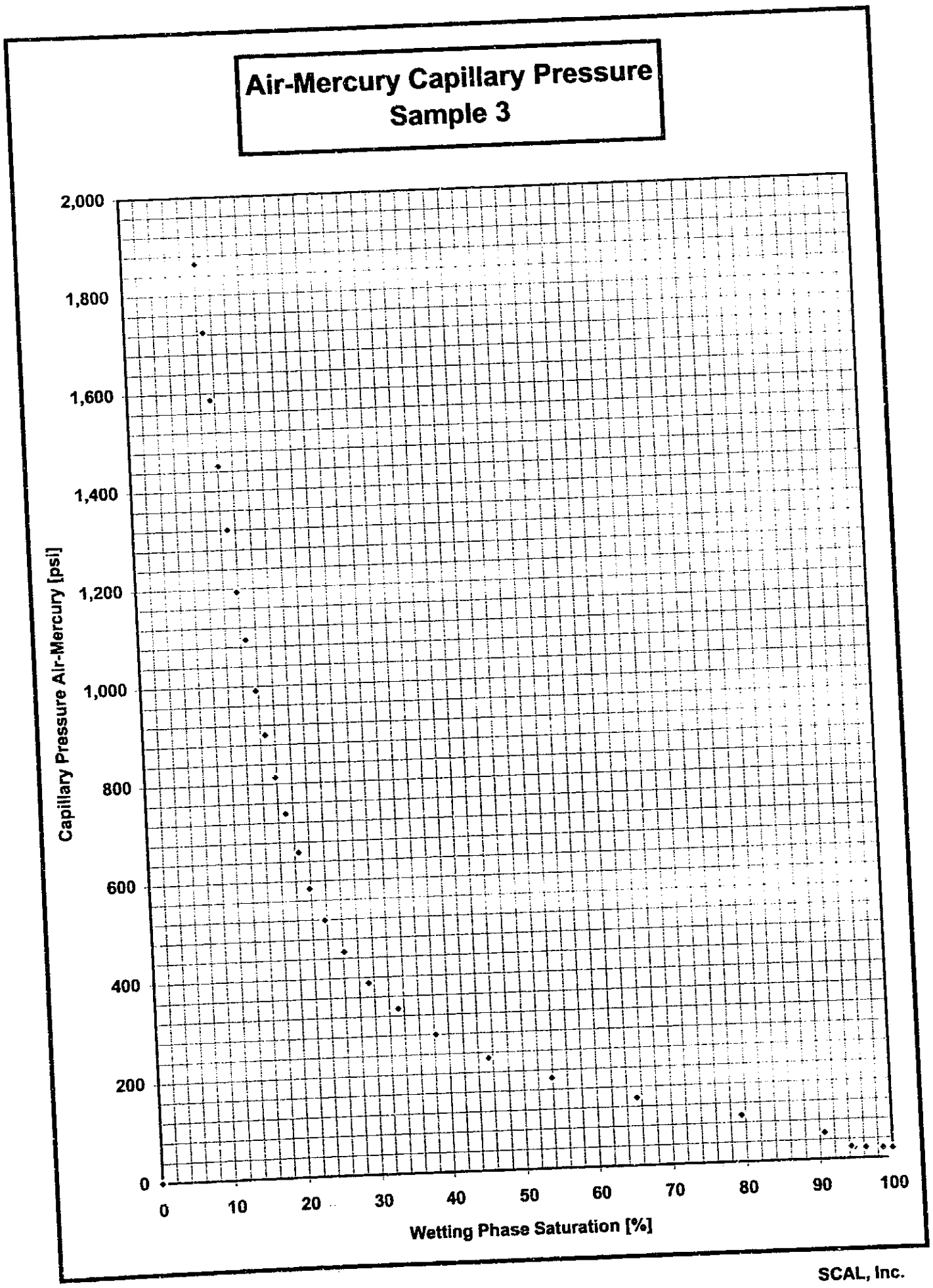
Well Name : *Lockhart #1 Babbit, Coconino County, Arizona*

Sample : 3
Depth : 3,488.0

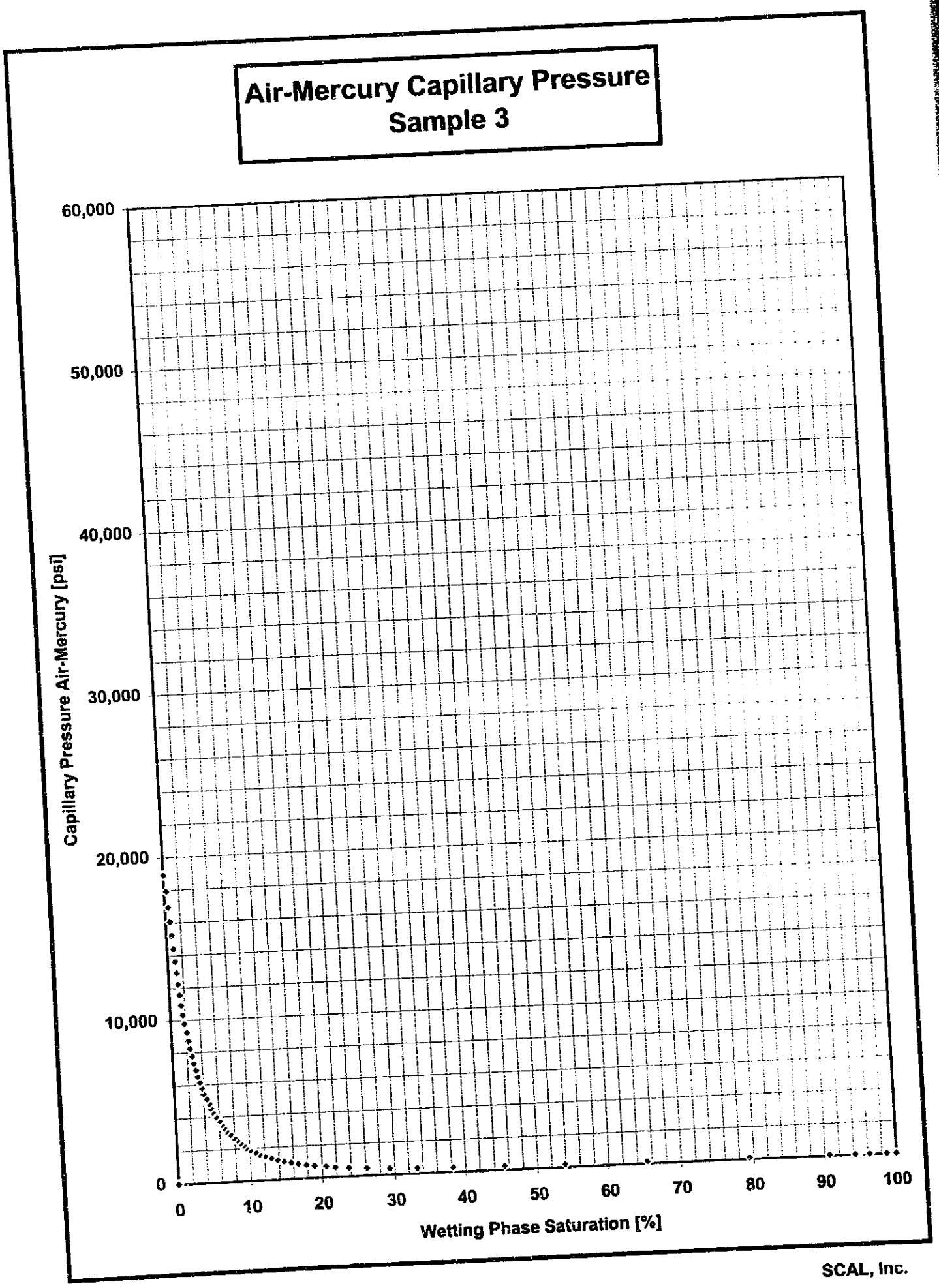
Porosity : 5.8 %
Permeability : 0.0356 mD
Grain Density : 2.65 g/cc

No.	Capillary Pressure psia	Wetting Phase Saturation %	Pore Entry Radius microns	J Function
77	3,993	5.60	0.027	1.84
78	4,264	5.17	0.025	1.97
79	4,537	4.89	0.023	2.09
80	4,813	4.74	0.022	2.22
81	5,111	4.45	0.021	2.36
82	5,446	4.02	0.020	2.51
83	5,795	3.88	0.018	2.67
84	6,150	3.59	0.017	2.84
85	6,512	3.30	0.016	3.01
86	6,901	3.16	0.015	3.18
87	7,333	2.87	0.015	3.38
88	7,776	2.73	0.014	3.59
89	8,234	2.44	0.013	3.80
90	8,702	2.30	0.012	4.02
91	9,228	2.16	0.012	4.26
92	9,779	1.87	0.011	4.51
93	10,342	1.72	0.010	4.77
94	10,915	1.58	0.010	5.04
95	11,543	1.44	0.009	5.33
96	12,219	1.29	0.009	5.64
97	12,908	1.15	0.008	5.96
98	13,615	1.01	0.008	6.28
99	14,396	0.86	0.007	6.64
100	15,222	0.72	0.007	7.03
101	16,067	0.57	0.007	7.42
102	16,950	0.43	0.006	7.82
103	17,921	0.29	0.006	8.27
104	18,918	0.00	0.006	8.73

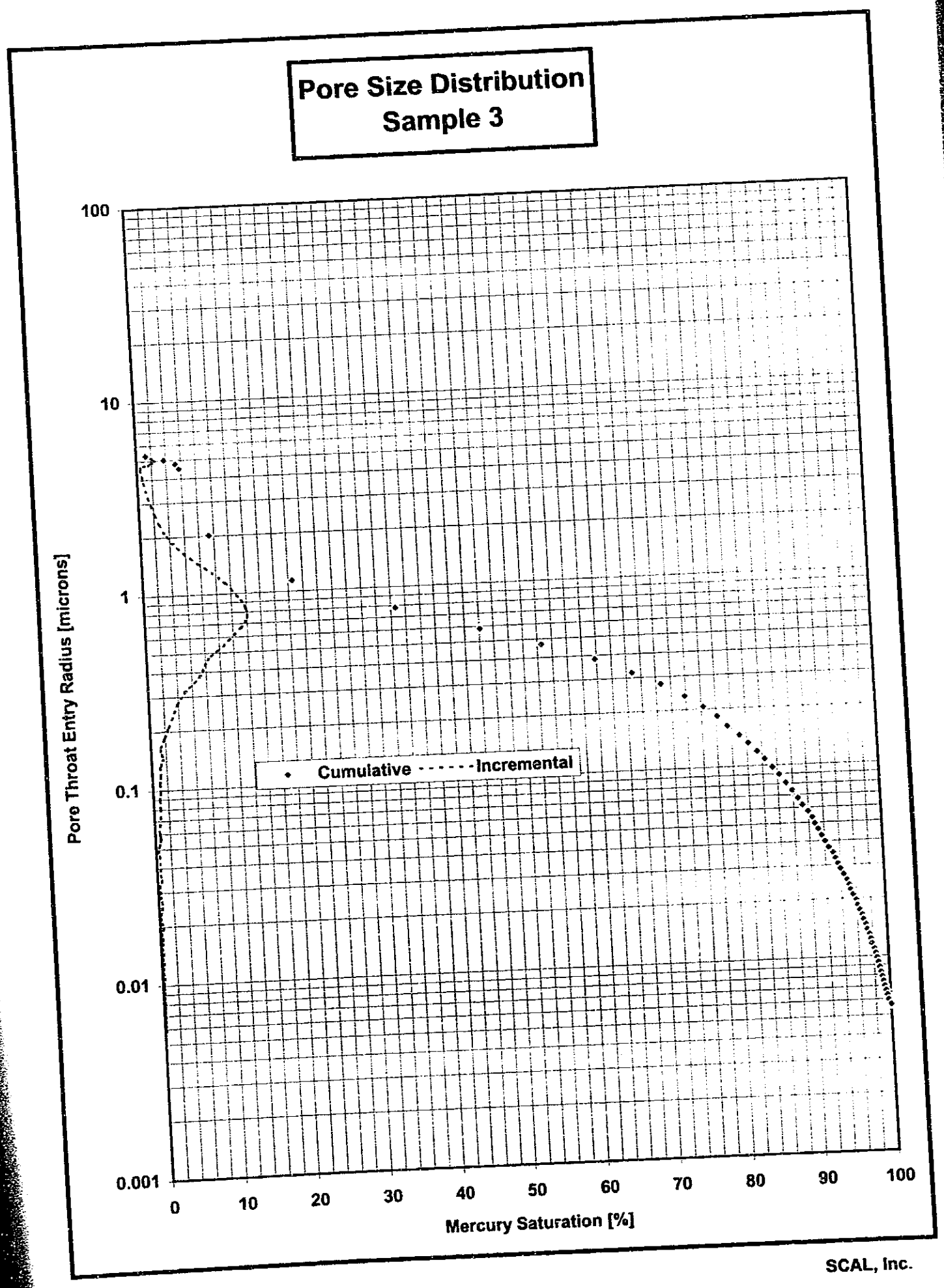
SCAL, Inc.


Air-Mercury Capillary Pressure
Sample 3
Capillary Pressure Air-Mercury [psi]
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
0
10
20
30
40
50
60
70
80
90
100
Wetting Phase Saturation [%]

SCAL, Inc.


Air-Mercury Capillary Pressure
Sample 3
60,000
50,000
40,000
30,000
20,000
10,000
0
Capillary Pressure Air-Mercury [psi]
0
10
20
30
40
50
60
70
80
90
100
Wetting Phase Saturation [%]

SCAL, Inc.


Pore Size Distribution
Sample 3
Pore Throat Entry Radius [microns]
100
10
1
0.1
0.01
0.001
Cumulative
Incremental
0
10
20
30
40
50
60
70
80
90
100
Mercury Saturation [%]
SCAL, Inc.

Note: Well plugged in February, 1949.

Capillary Pressure Air-Mercury

Company : *H.L. Brown*

Well Name : *Lockhart #1 Babbit, Coconino County, Arizona*

Sample :	4	Porosity :	6.03 %
Depth :	3,541.0	Permeability :	0.04877 mD
		Grain Density :	2.65 g/cc

No.	Capillary Pressure psia	Wetting Phase Saturation %	Pore Entry Radius microns	J Function
-				
1	1.2	100.00		
2	1.4	100.00		
3	1.6	100.00		
4	1.8	100.00		
5	2.0	100.00		
6	2.2	100.00		
7	2.3	100.00		
8	2.6	100.00		
9	3.0	100.00		
10	3.3	100.00		
11	3.7	100.00		
12	4.0	100.00		
13	4.4	100.00		
14	4.7	100.00		
15	5.1	100.00		
16	5.4	100.00		
17	5.8	99.13	18.345	0.00
18	6.3	98.56	16.854	0.00
19	6.8	97.11	15.587	0.00
20	7.4	96.54	14.500	0.00
21	7.9	95.96	13.559	0.00
22	8.4	95.09	12.732	0.00
23	8.9	94.52	12.002	0.00
24	9.5	93.94	11.172	0.01
25	10.2	93.22	10.436	0.01
26	10.9	92.50	9.792	0.01
27	11.6	91.49	9.226	0.01
28	12.3	91.05	8.696	0.01
29	13.1	90.04	8.149	0.01
30	13.9	89.32	7.670	0.01
31	14.7	88.60	7.247	0.01
32	15.7	87.01	6.809	0.01
33	16.6	86.29	6.420	0.01
34	17.6	85.71	6.067	0.01
35	18.6	84.27	5.718	0.01
36	19.7	83.41	5.409	0.01
37	21	82.68	5.105	0.01
38	22	81.24	4.827	0.01

SCAL, Inc.

Note: Well plugged in February, 1949.

Capillary Pressure Air-Mercury

Company : *H.L. Brown*

Well Name : *Lockhart #1 Babbit, Coconino County, Arizona*

Sample : 4
Depth : 3,541.0

Porosity : 6.03 %
Permeability : 0.04877 mD
Grain Density : 2.65 g/cc

No.	Capillary Pressure psia	Wetting Phase Saturation %	Pore Entry Radius microns	J Function
-				
39	23	80.23	4.569	0.01
40	45	71.28	2.369	0.02
41	89	53.25	1.198	0.05
42	134	41.27	0.796	0.07
43	178	34.63	0.599	0.09
44	222	30.16	0.480	0.12
45	275	25.83	0.388	0.15
46	331	22.51	0.322	0.18
47	387	20.06	0.275	0.21
48	448	18.04	0.238	0.24
49	515	16.31	0.207	0.27
50	582	14.86	0.183	0.31
51	659	13.56	0.162	0.35
52	735	12.84	0.145	0.39
53	817	11.98	0.130	0.43
54	911	10.97	0.117	0.48
55	1,000	10.10	0.107	0.53
56	1,097	9.24	0.097	0.58
57	1,195	8.66	0.089	0.63
58	1,302	7.94	0.082	0.69
59	1,407	7.22	0.076	0.75
60	1,520	6.93	0.070	0.81
61	1,640	6.35	0.065	0.87
62	1,765	5.92	0.060	0.94
63	1,904	5.63	0.056	1.01
64	2,045	5.20	0.052	1.08
65	2,197	4.91	0.049	1.16
66	2,351	4.62	0.045	1.25
67	2,519	4.33	0.042	1.33
68	2,698	3.75	0.040	1.43
69	2,880	3.61	0.037	1.53
70	3,072	3.61	0.035	1.63
71	3,277	3.32	0.033	1.74
72	3,493	3.03	0.031	1.85
73	3,718	2.89	0.029	1.97
74	3,955	2.60	0.027	2.10
75	4,208	2.60	0.025	2.23
76	4,469	2.31	0.024	2.37

SCAL, Inc.

Note: Well plugged in February, 1949.

Capillary Pressure Air-Mercury

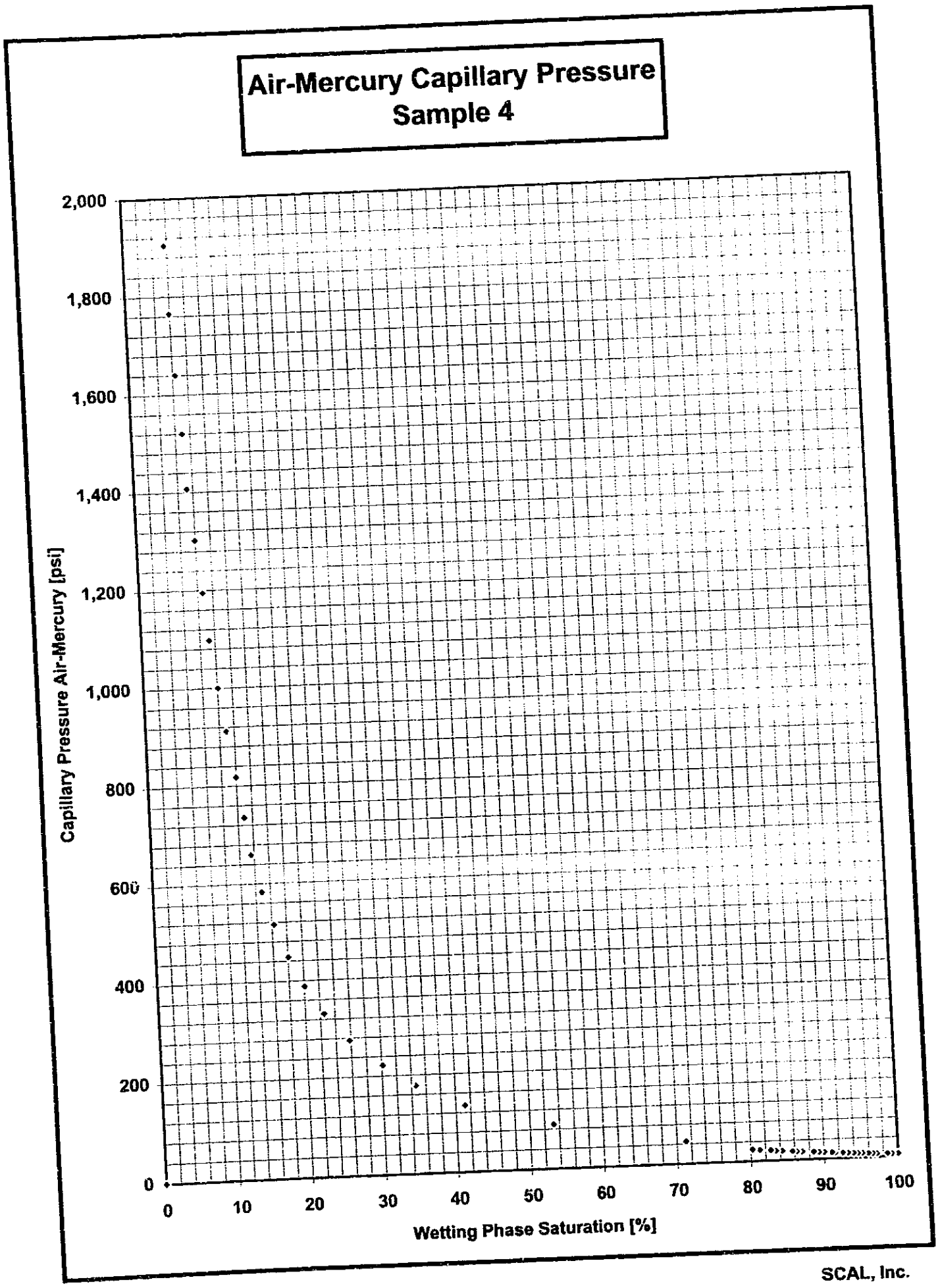
Company : *H.L. Brown*

Well Name : *Lockhart #1 Babbit, Coconino County, Arizona*

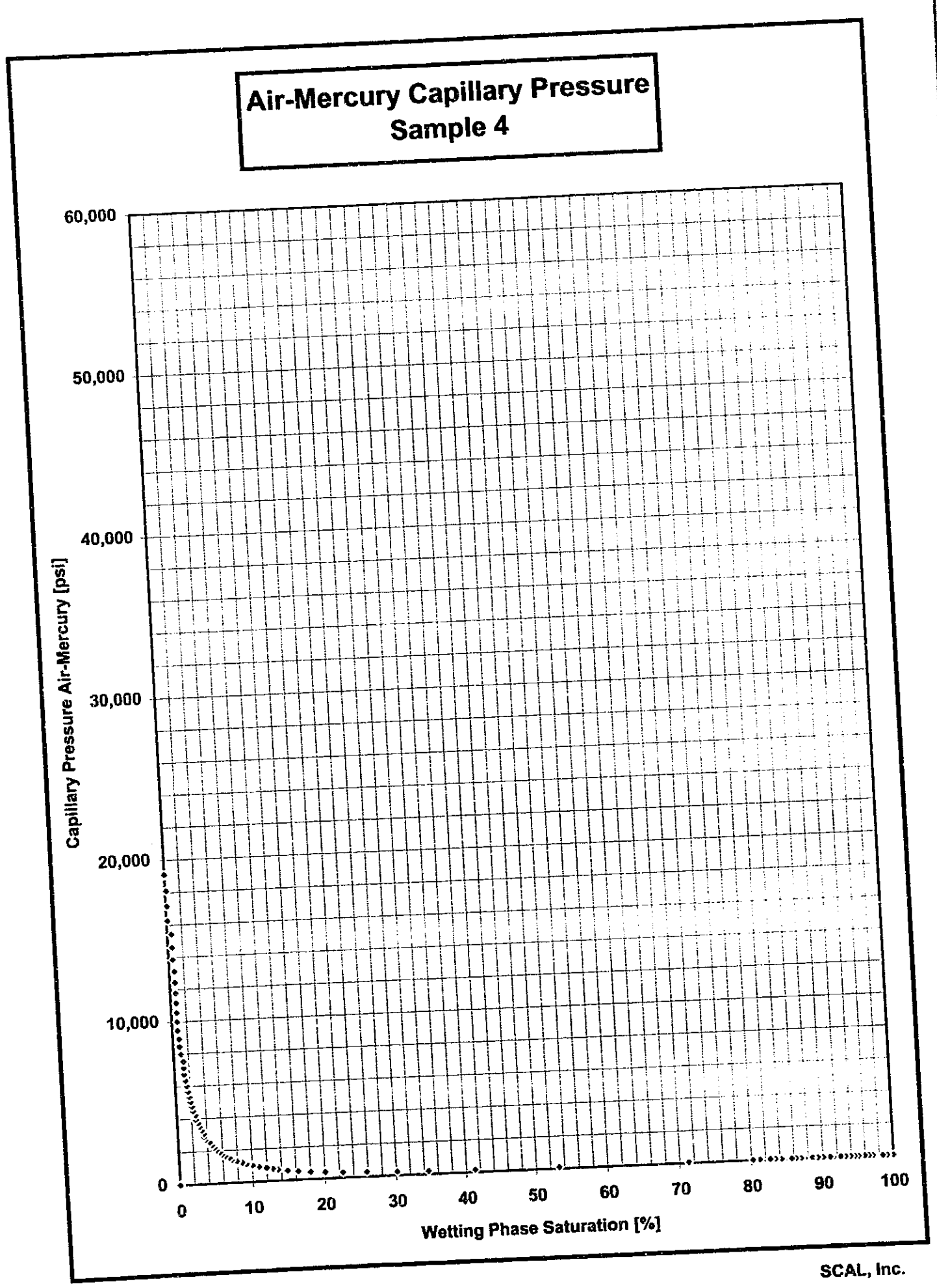
Sample : 4
Depth : 3,541.0

Porosity : 6.03 %
Permeability : 0.04877 mD
Grain Density : 2.65 g/cc

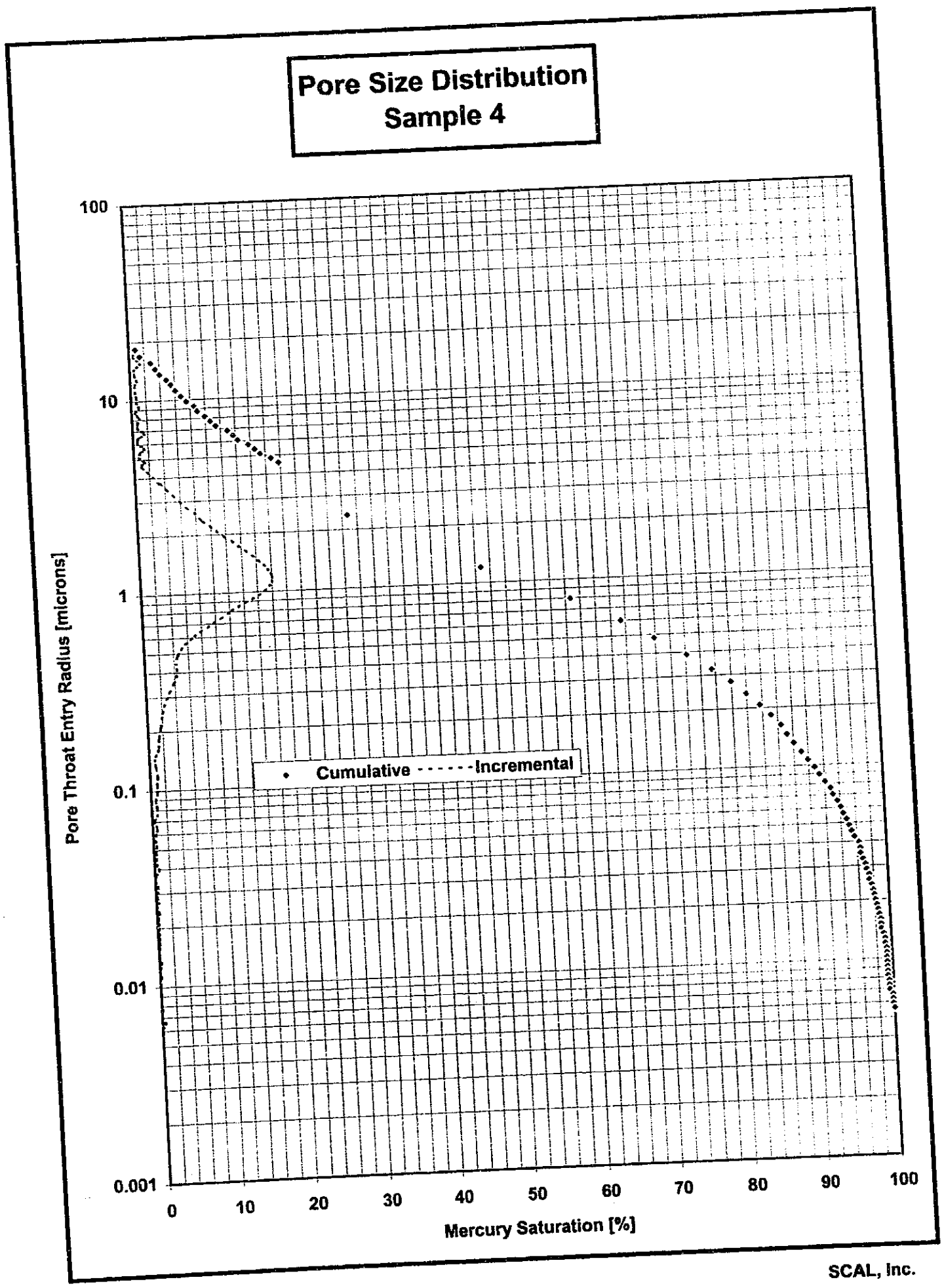
No.	Capillary Pressure psia	Wetting Phase Saturation %	Pore Entry Radius microns	J Function
-				
77	4,751	2.16	0.022	2.52
78	5,037	2.02	0.021	2.67
79	5,343	1.88	0.020	2.83
80	5,665	1.73	0.019	3.00
81	6,001	1.59	0.018	3.18
82	6,352	1.44	0.017	3.37
83	6,729	1.30	0.016	3.56
84	7,125	1.30	0.015	3.77
85	7,538	1.30	0.014	3.99
86	7,983	1.01	0.013	4.23
87	8,446	0.87	0.013	4.47
88	8,929	0.87	0.012	4.73
89	9,448	0.72	0.011	5.01
90	9,981	0.72	0.011	5.29
91	10,541	0.72	0.010	5.58
92	11,139	0.72	0.010	5.90
93	11,767	0.72	0.009	6.23
94	12,428	0.72	0.009	6.58
95	13,116	0.72	0.008	6.95
96	13,841	0.58	0.008	7.33
97	14,607	0.58	0.007	7.74
98	15,414	0.58	0.007	8.17
99	16,265	0.14	0.007	8.62
100	17,158	0.14	0.006	9.09
101	18,106	0.14	0.006	9.59
102	19,101	0.00	0.006	10.12


Air-Mercury Capillary Pressure
Sample 4
Capillary Pressure Air-Mercury [psi]
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
0
10
20
30
40
50
60
70
80
90
100
Wetting Phase Saturation [%]

SCAL, Inc.


Air-Mercury Capillary Pressure
Sample 4
60,000
50,000
40,000
30,000
20,000
10,000
0
Capillary Pressure Air-Mercury [psi]
0
10
20
30
40
50
60
70
80
90
100
Wetting Phase Saturation [%]

SCAL, Inc.


Pore Size Distribution
Sample 4
Pore Throat Entry Radius [microns]
100
10
1
0.1
0.01
0.001
Cumulative
Incremental
0
10
20
30
40
50
60
70
80
90
100
Mercury Saturation [%]

SCAL, Inc.

Note: Well plugged in February, 1949.

Capillary Pressure Air-Mercury

Company : *H.L. Brown*

Well Name : *Lockhart #1 Babbit, Coconino County, Arizona*

Sample :	5	Porosity :	9.45 %
Depth :	3,564.0	Permeability :	0.0844 mD
		Grain Density :	2.66 g/cc

No.	Capillary Pressure psia	Wetting Phase Saturation %	Pore Entry Radius microns	J Function
1	1.1	100.00		
2	1.3	100.00		
3	1.4	100.00		
4	1.6	100.00		
5	1.8	100.00		
6	2.0	100.00		
7	2.2	98.02	47.825	0.00
8	2.6	94.71	41.658	0.00
9	2.9	92.99	36.989	0.00
10	3.2	91.40	33.303	0.00
11	3.5	90.08	30.311	0.00
12	3.8	86.51	27.819	0.00
13	4.1	84.66	25.725	0.00
14	4.5	82.14	23.923	0.00
15	4.8	78.17	22.367	0.00
16	5.2	75.66	20.679	0.00
17	5.6	71.69	18.975	0.00
18	6.1	69.18	17.528	0.00
19	6.5	66.80	16.290	0.00
20	7.0	64.29	15.218	0.00
21	7.5	62.04	14.280	0.00
22	8.0	59.92	13.374	0.00
23	8.6	55.82	12.423	0.00
24	9.2	53.84	11.601	0.01
25	9.8	52.12	10.883	0.01
26	10.4	49.87	10.251	0.01
27	11.1	48.28	9.639	0.01
28	11.8	45.90	9.030	0.01
29	12.5	44.05	8.501	0.01
30	13.3	42.59	8.030	0.01
31	14.1	41.01	7.540	0.01
32	15.0	39.02	7.104	0.01
33	15.9	37.43	6.714	0.01
34	16.9	35.98	6.321	0.01
35	17.8	33.86	5.976	0.01
36	18.9	32.28	5.640	0.01
37	20	30.95	5.335	0.01
38	21	29.63	5.039	0.01

SCAL, Inc.

Note: Well plugged in February, 1949.

Capillary Pressure Air-Mercury

Company : H.L. Brown

Well Name : Lockhart #1 Babbit, Coconino County, Arizona

Sample : 5
Depth : 3,564.0

Porosity : 9.45 %
Permeability : 0.0844 mD
Grain Density : 2.66 g/cc

No.	Capillary Pressure psia	Wetting Phase Saturation %	Pore Entry Radius microns	J Function
39	22	28.44	4.765	0.01
40	24	27.51	4.507	0.01
41	53	21.96	2.011	0.03
42	92	18.12	1.159	0.05
43	133	15.48	0.802	0.07
44	179	13.36	0.596	0.10
45	227	11.77	0.470	0.13
46	282	10.71	0.378	0.16
47	335	9.92	0.318	0.19
48	390	9.26	0.273	0.22
49	453	8.47	0.235	0.25
50	523	7.80	0.204	0.29
51	594	7.41	0.179	0.33
52	673	7.28	0.158	0.37
53	757	6.88	0.141	0.42
54	842	6.75	0.127	0.47
55	935	6.48	0.114	0.52
56	1,035	6.22	0.103	0.58
57	1,133	5.95	0.094	0.63
58	1,238	5.56	0.086	0.69
59	1,347	5.29	0.079	0.75
60	1,460	5.29	0.073	0.81
61	1,584	5.16	0.067	0.88
62	1,719	4.89	0.062	0.96
63	1,859	4.63	0.057	1.03
64	2,010	4.37	0.053	1.12
65	2,168	4.23	0.049	1.21
66	2,329	4.10	0.046	1.30
67	2,491	3.84	0.043	1.39
68	2,669	3.70	0.040	1.49
69	2,860	3.70	0.037	1.59
70	3,059	3.70	0.035	1.70
71	3,273	3.31	0.033	1.82
72	3,489	3.17	0.031	1.94
73	3,711	2.91	0.029	2.07
74	3,953	2.91	0.027	2.20
75	4,217	2.51	0.025	2.35
76	4,487	2.51	0.024	2.50

SCAL, Inc.

Note: Well plugged in February, 1949.

Capillary Pressure Air-Mercury

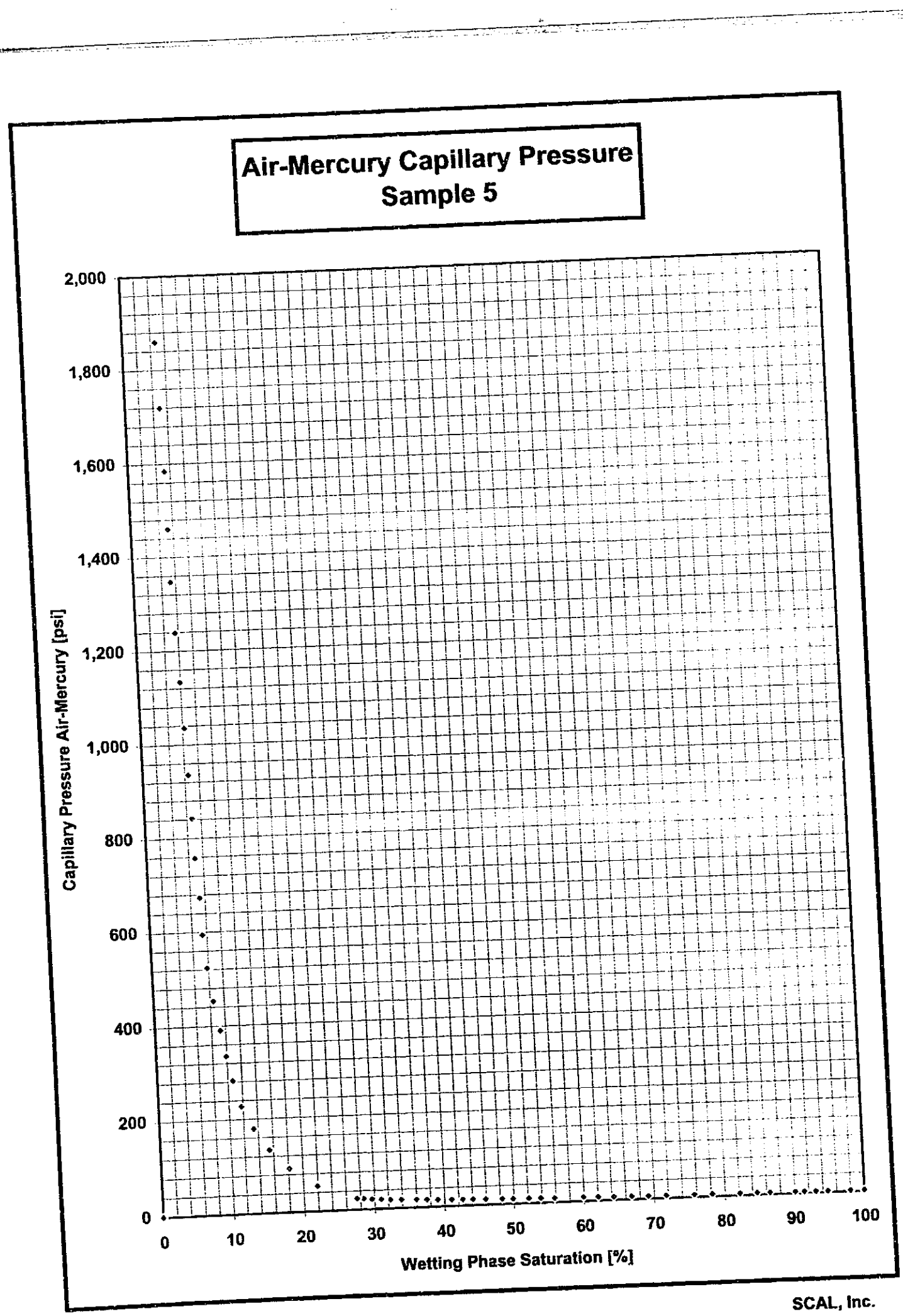
Company : H.L. Brown

Well Name : Lockhart #1 Babbit, Coconino County, Arizona

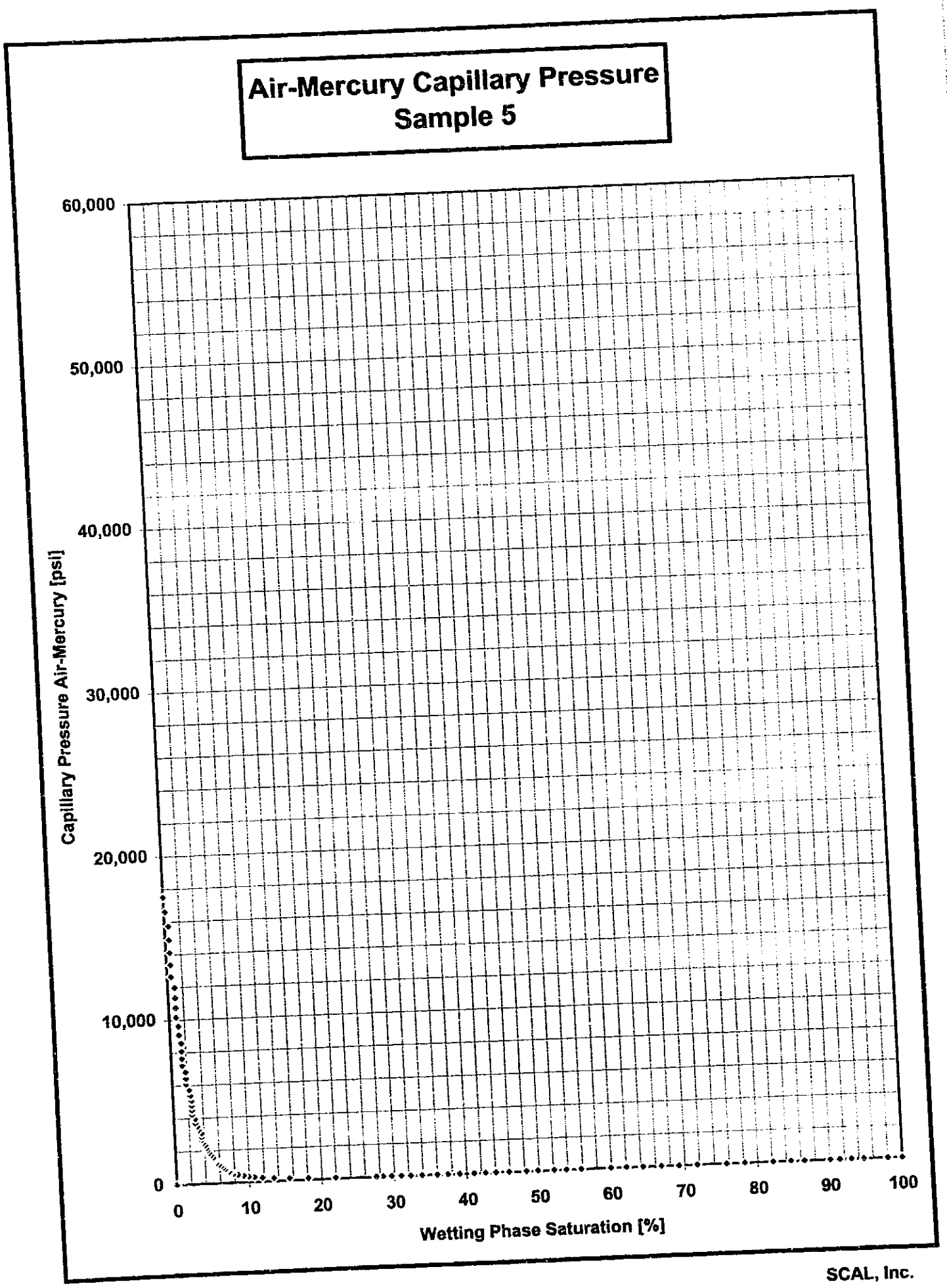
Sample : 5
Depth : 3,564.0

Porosity : 9.45 %
Permeability : 0.0844 mD
Grain Density : 2.66 g/cc

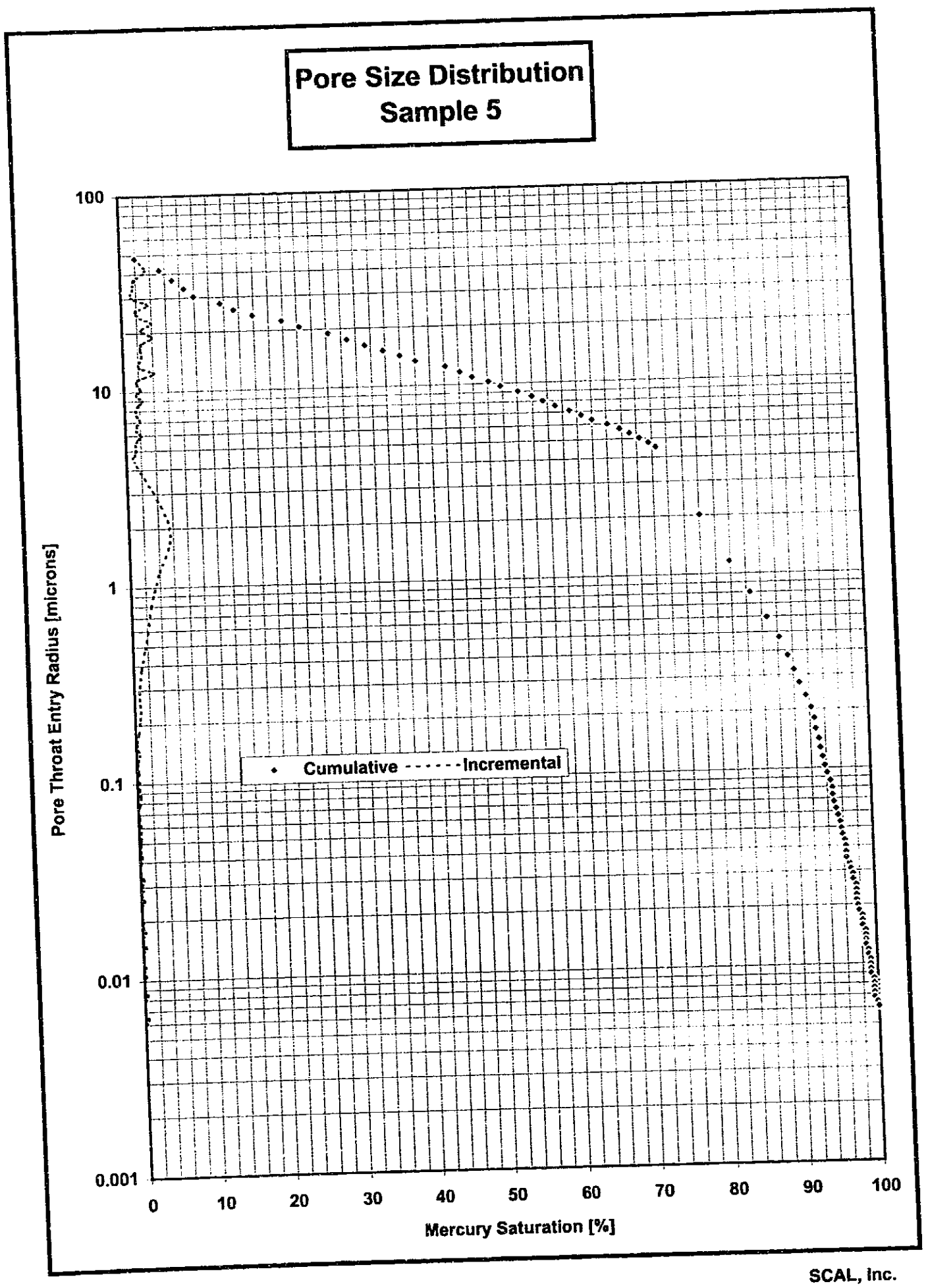
No.	Capillary Pressure psia	Wetting Phase Saturation %	Pore Entry Radius microns	J Function
77	4,763	2.51	0.022	2.65
78	5,057	2.51	0.021	2.82
79	5,384	2.38	0.020	3.00
80	5,721	2.25	0.019	3.18
81	6,064	1.85	0.018	3.38
82	6,429	1.85	0.017	3.58
83	6,820	1.85	0.016	3.80
84	7,232	1.46	0.015	4.03
85	7,655	1.46	0.014	4.26
86	8,092	1.46	0.013	4.50
87	8,574	1.46	0.012	4.77
88	9,077	1.19	0.012	5.05
89	9,596	1.19	0.011	5.34
90	10,144	0.93	0.011	5.65
91	10,734	0.93	0.010	5.98
92	11,340	0.93	0.009	6.31
93	11,966	0.93	0.009	6.66
94	12,649	0.53	0.008	7.04
95	13,366	0.53	0.008	7.44
96	14,108	0.53	0.008	7.85
97	14,890	0.53	0.007	8.29
98	15,730	0.53	0.007	8.76
99	16,592	0.13	0.006	9.24
100	17,503	0.00	0.006	9.74


Air-Mercury Capillary Pressure
Sample 5
Capillary Pressure Air-Mercury [psi]
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
0
10
20
30
40
50
60
70
80
90
100
Wetting Phase Saturation [%]

SCAL, Inc.


Air-Mercury Capillary Pressure
Sample 5
60,000
50,000
40,000
30,000
20,000
10,000
0
Capillary Pressure Air-Mercury [psi]
0
10
20
30
40
50
60
70
80
90
100
Wetting Phase Saturation [%]

SCAL, Inc.


Pore Size Distribution
Sample 5
100
10
1
0.1
0.01
0.001
Pore Throat Entry Radius [microns]
Cumulative
Incremental
0
10
20
30
40
50
60
70
80
90
100
Mercury Saturation [%]

SCAL, Inc.

State of Arizona
Arizona Geological Survey
416 W. Congress, Suite 100
Tucson, Arizona 85701
(520) 770-3500

Jane Dee Hull
Governor

Larry D. Fellows
Director and State Geologist

October 25, 2000

Mr. H.L. Brown Jr.
300 West Louisiana
Midland TX 79702

Dear Mr. Brown:

This will acknowledge receipt of the SCAL, Inc. report of the Commission's samples from the Lockhart #1 Babbitt well in Coconino County, Arizona.

The report shall be kept confidential for 6 months. The Commission may grant a 6-month extension. I will let them know of your request for an extension at their next meeting on January 19, 2001.

Sincerely,

Steve

Steven L. Rauzi
Oil & Gas Administrator

Enclosure

H. L. BROWN, JR.
POST OFFICE BOX 2237
MIDLAND, TEXAS 79702-2237

October 24, 2000

Stephen L. Rauzi
Oil &Gas Program Administrator
416 W Congress, Suite 100
Tucson, Arizona 85701

Dear Mr. Rauzi,

Enclosed please find a copy of a study of cuttings and core chips from the Lockhart #1 Babbit well in Coconino County, Arizona. Anish Kumar of Special Core Analysis Laboratories performed this study on October 11, 2000. It is our understanding that you will keep any information that we send to you confidential for the period of one year.

I also wanted to thank you for your cooperation on our visits to your office. If there is anything else that we can do for you please let us know. Thank you again.

Sincerely,

H.L. Brown, Jr

TELEPHONE (915) 683-5216 300 WEST LOUISIANA FAX (915) 688-3737

State of Arizona
Arizona Geological Survey
416 W. Congress, Suite 100
Tucson, Arizona 85701
(520) 770-3500

Jane Dee Hull
Governor

Larry D. Fellows
Director and State Geologist

October 16, 2000

Mr. H.L. Brown Jr.
300 West Louisiana
Midland TX 79702

Dear Mr. Brown:

This will acknowledge the return of remnant core chips 3404', 3477', 3488', 3541', and 3564' from the Lockhart #1 Babbitt well.

We look forward to receipt of the results of the study of these samples.

Sincerely,

Steven L. Rauzi
Oil & Gas Administrator

Enclosures

STATE OF ARIZONA
OIL & GAS CONSERVATION COMMISSION

SAMPLE POLICY

The Oil and Gas Conservation Commission hereby adopts the following as its policy regarding samples and cores. In the declaration policy "samples" is meant to include rotary and cable tool cuttings, chips, cores, core slabs, and core chips.

1. Samples received by the Commission under A.A.C. R12-7-121 shall be preserved and maintained in good order.

2. A record or file shall be kept indicating the location of samples from each well.

3. Samples are to be maintained for use as a public library.

4. Samples may be examined on the premises by any person requesting to do so. Reasonable notice for retrieval of the samples may be required.

5. Samples may be loaned for use off-premises to any responsible person at the discretion of the Commission.

6. Users of samples shall take reasonable and customary measures to maintain the integrity and volume of each individual sample and shall not mix samples together.

   a. Users may use ordinary tests for mineralogical determination. Acid shall not be placed in the bulk sample, rather, one or two individual grains may be removed to a separate container for acid tests.

   b. Solvents shall not be placed in the bulk sample, rather, one or two individual grains may be removed to a separate container for solvent tests.

   c. In no case shall bulk solvent extraction, pyrolysis, or other destructive tests be run on any samples without prior permission of the Commission.

7. Users shall return all individual samples to their original containers. If the container is damaged beyond use, a new container shall be provided.

8. Users shall replace all samples in order from top of the hole down in the original sample box.

9. Users shall provide the Commission, within 30 days of their completion, copies of all logs, paleontological and other reports, maturation studies, source rock analysis, and any other study or analysis made possible by use of samples from the Commission's library. The Commission shall grant a six-month confidentiality period if so requested by the owner of the report and may grant one six-month extension of the period of confidentiality if so requested.

ADOPTED AS REVISED BY THE OIL AND GAS CONSERVATION COMMISSION ON 11/21/86

Lockhart well P/N 3-4
core chips
3404'
3477'
3488'
3541'
3564'

Signed [signature] Date 10/4/00

H.L. Brown Jr
Midland Texas

Report of Received 10/25/00 — SCR

Samples Returned 10-13-00/SCR

1/16/91 – Tim Hanson (Chevron in Houston)

Called looking for whole core on Lockhart #1 Babbitt.
Desired to take 1" plugs for permeability + porosity tests.
Unfortunately, all we have are chips. (They are doing a study – mapping porosity + permeability avenues in the Cambrian Tapeats.)

Core box # 580, cuttings box # 48

Referred him to Tom McGarvin (AGS) to see if AGS has whole core. Checked w/ Tom 2/1/91 + they don't have whole core either. SLR

Sent him copies of core description + LA Heindl notes of 2/9 and 2/10/49

SLR - 1/16/91

cuttings box 48) 74 to 3623

core box 580) 2050-2105:

2050
2055
2058
2062
2066
2070
2076
2078
2085
2090
2094
2095
2097
2099
2103
2105

core box 580) 2108-3598:

2108
2117
2121
2126
2133
2413-16
2933
2942
3254
3404
3410
3412
3418
3421
3422
3428
3430
3435
3445
3446
3454
3464
3464
3477
3488
3541
3564
3592/98

* Called Museum of Northern Arizona and all the samples they had were sent to Geological survey years ago. They no longer have sample storage at MNA.

File in permit #20

Amoco Production Company
Security Life Building
Denver, Colorado 80202

September 13, 1972

Mr. E. A. Koester
Oil and Gas Conservation Commission
4515 N. 7th Avenue
Phoenix, Arizona 85013

Dear Ed:

Attached is our scout ticket on the Eisele well. This data was assembled in the "old days" of detailed scout checks so it should be pretty good. As you can see, there is no report of flowing gas and the TD is 4231 by the ticket. However, sample TD is 4260. The Schlumberger log gives a depth of 4190.

Our tops (from various workers): Permit #20 1-16N-16E - Navajo Co.

T/Naco Penn 2285' (E Log)
T/Miss 3400' (E Log & Sample Log)
T/Dev Martin 3730' (E Log)
or
T/Carbonate 3470' (Sample Log)

One of our geologists ran the samples in 1957 and felt Granite Wash was drilled from 3770' to about 4200' and that granite was penetrated to sample TD 4260. Geo Log gives 3730' as top pre-Cambrian granite. I am enclosing an extra Geo Log copy that you can have if you need it.

We believe there is a relatively normal section in 34N-8E the Sinclair Cow Springs 28-37N-14E well, based on regional correlations. The Collins well does indeed have a very thin Pennsylvanian section (78'?), while wells to the south (Sinclair #1 Santa Fe 28N-1W and Lockhart #1 Babbitt, 27N-9E) appear to be lacking in Penn sediments. This area of thinning extends north into southern Utah. Frankly, Ed, I have not done enough work on a regional scale to say whether this is an isolated uplift as Turner implies or whether it is just a regional thinning out of the Paleozoic geosyncline to the west. This is part of an area I have been trying to get some studies started in, but have not been able to procure the personnel.

file 3-4

RECEIVED
SEP 15 1972
O & G CONS. COMM.

Apparently Humble is having velocity problems--witness their #2 well. I was surprised to hear they are moving southeast. Getting into the Sonoran embayment it looks like to me.

Hope the info will be of some help.

Sincerely,

Glenn

H. G. Richards

HGR/cdm

Enclosures: Scout Ticket
Geo Log

RECEIVED
SEP 18 1972
O & G CONS. COMM.

STATE of ARIZONA
OIL and GAS CONSERVATION COMMISSION
CAPITOL ANNEX
ROOM 202
1624 WEST ADAMS STREET
PHOENIX, ARIZONA

COMPANY L.M. Lockhart DATE August 24, 1964

RE: WELL NAME & NUMBER: ~~Lockhart Babbitt #1 and Lockhart Aztec #1~~

LOCATION: SECTION ~~21~~ 33 TWP. ~~27N~~ 14N R. ~~9E~~ 20E COUNTY ~~Coconino~~ Navajo

FILE NUMBER None

Gentlemen:

We have reviewed our files and find that we need the below checked item (s) in order to complete same. Will you please fill in the enclosed form (s), at your earliest convenience, and return them to this office. May we remind you that your bond (# ~~Not Applicable~~, issued by Not Applicable) can be forfeited for failure to comply.

In addition we request a copy of any log run on this (these) well (s).

Your cooperation is appreciated. If we may be of service to you please advise.

Yours very truly,

Bill Cooper

Bill Cooper
Records Section

Completion Record X

Plugging Record X

Well Log

Application to plug and abandon

cc/Bonding Company

June 9, 1959

Mr. Tom R. Carter
Honolulu Oil Corporation
P. O. Box 1417
Farmington, New Mexico

Dear Mr. Carter:

We wish to acknowledge receipt of the samples for the Lockhart Babbitt #1 well, located in Section 21, Township 27 N., Range 9 East, Coconino County, Arizona.

We wish to thank you for your cooperation in the matter, and if we can be of additional service, please call on us.

Very truly yours,

STATE LAND COMMISSIONER

By: Frederick C. Ryan,
Supervisor,
Oil & Gas Conservation

mb

No permit

NAVAJO FREIGHT LINES, Inc.
NATIONAL HEADQUARTERS DENVER 23, COLORADO

CONSIGNEE'S MEMO

6

No. 315897

STATE LAND DEPT
422 ARIZ. STATE OFF. BLDG.
PHOENIX, ARIZ.
CONSIGNEE

SHIPPER
HUMBLE OIL CORP.
FARMINGTON, N. MEX.

DATE	EQUIP. NO.	O. C.	D. C.	SHIPPER OR GEL NUMBER	ORIG. CARRIER & ADV.	NAVAJO REVENUE	DELIV. CARRIER	NAVAJO RECEIVE
6-2-59 P	628	1	54		1 85	2 15		2 15

ROUTING POINTS OF TRANSFER, FREIGHT BILL DATES AND NUMBERS

X CARRETT 460-14600 6-2

NO. PKGS.	DESCRIPTION AND MARKS	WEIGHT	RATE	FREIGHT
1	SOIL EARTH SAMPLE	15	M	4 35
				PREPAID

I. C. C. REGULATIONS REQUIRE THAT ALL FREIGHT BILLS BE PAID WITHIN SEVEN DAYS

No permit

RAILWAY EXPRESS AGENCY

INCORPORATED

UNIFORM EXPRESS RECEIPT—NON-NEGOTIABLE—TERMS AND CONDITIONS

1. The provisions of this receipt shall inure to the benefit of and be binding upon the consignor, the consignee and all carriers handling this shipment and shall apply to any reconsignment, or return thereof.

2. In consideration of the rate charged for carrying said property, which is dependent upon the value thereof and is based upon an agreed valuation of not exceeding fifty dollars for any shipment of 100 pounds or less and not exceeding fifty cents per pound, actual weight, for any shipment in excess of 100 pounds, unless a greater value is declared at the time of shipment, the shipper agrees that the company shall not be liable in any event for more than fifty dollars for any shipment of 100 pounds or less, or for more than fifty cents per pound, actual weight, for any shipment weighing more than 100 pounds, unless a greater value is stated herein. Unless a greater value is declared and stated herein the shipper agrees that the value of the shipment is as just above set out and that the liability of the company shall in no event exceed such value.

3. Unless caused by its own negligence or that of its agents, the company shall not be liable for—

a Difference in weight or quality caused by shrinkage, leakage, or evaporation.
b The death, injury, or escape of live freight.
c Loss of money, bullion, bonds, coupons, jewelry, precious stones, valuable papers, or other matter of extraordinary value, unless such articles are enumerated in the receipt.

4. Unless caused in whole or in part by its own negligence or that of its agents, the company shall not be liable for loss, damage or delay caused by—

a The act or default of the shipper or owner.
b The nature of the property, or defect or inherent vice therein.
c Improper or insufficient packing, securing, or addressing.
d The Act of God, public enemies, authority of law, quarantine, riots, strikes, perils of navigation, the hazards or dangers incident to a state of war, or occurrence in customs warehouse.
e The examination by, or partial delivery to the consignee of C. O. D. shipments.
f Delivery under instructions of consignor or consignee at stations where there is no agent of the company after such shipments have been left at such stations.

5. Packages containing fragile articles or articles consisting wholly or in part of glass must be so marked and be packed so as to insure safe transportation by express with ordinary care.

6. When consigned to a place at which the express company has no office, shipments must be marked with the name of the express station at which delivery will be accepted or be marked with forwarding directions if to go beyond the express company's line by a carrier other than an express company. If not so marked shipments will be refused.

7. As conditions precedent to recovery claims must be made in writing to the originating or delivering carrier within nine months after delivery of the property or, in case of failure to make delivery, then within nine months and fifteen days after date of shipment; and suits shall be instituted only within two years and one day after the date when notice in writing is given by the carrier to the claimant that the carrier has disallowed the claim or any part or parts thereof.

8. If any C. O. D. is not paid within thirty days after notice of non-delivery has been mailed to the shipper the company may at its option return the property to the consignor.

9. Free delivery will not be made at points where the company maintains no delivery service; at points where delivery service is maintained free delivery will not be made at addresses beyond the established and published delivery limits.

Special Additional Provisions as to Shipments Forwarded by Vessel from the United States to Places in Foreign Countries.

10. If the destination specified in this receipt is in a foreign country, the property covered hereby shall, as to transit over ocean routes and by their foreign connections to such destination, be subject to all the terms and conditions of the receipts or bills of lading of ocean carriers as accepted by the company for the shipment, and of foreign carriers participating in the transportation, and as to such transit is accepted for transportation and delivery subject to the acts, tariffs, laws, regulations, and customs of overseas and foreign carriers, custodians, and governments, their employees and agents.

11. The company shall not be liable for any loss, damage, or delay to said shipment over ocean routes and their foreign connections, the destination of which is in a foreign country, occurring outside the boundaries of the United States, which may be occasioned by any such acts, tariffs, laws, regulations, or customs. Claims for loss, damage or delay must be made in writing to the carrier at the port of export or to the carrier issuing this receipt, within nine months after delivery of the property at said port or in case of failure to make such delivery then within nine months and fifteen days after date of shipment; and claims so made against said delivering or issuing carrier shall be deemed to have been made against any carrier which may be liable hereunder. Suits shall be instituted only within two years and one day after the date when notice in writing is given by the carrier to the claimant that the carrier has disallowed the claim or any part or parts thereof. Where claims are not so made, and/or suits are not instituted thereon in accordance with the foregoing provisions, the carrier shall not be liable.

12. It is hereby agreed that the property destined to such foreign countries, and assessable with foreign governmental or customs duties, taxes or charges, may be stopped in transit at foreign ports, frontiers or depositories, and there held pending examination, assessments and payments, and such duties and charges, when advanced by the company shall become a lien on the property.

To Destination Office: Farmington, N. Mex.

Consignee: Mr Tom R. Carter

Street Address or Non-Agency Destination: P. O. Box 1417

Name of Forwarding Office: (1613-M) Phoenix, Ariz. (M) (50-45)

Date Shipped: 5-15-195

Receipt Number: 02209

Declared Value: 100 00

Pieces | Article | Description: 1 Gas Sampler

Weight:

Shipper: State Land Dept

Shipper's Street Address: 402 Air Traffic Way

Class | Paid in Part | COLLECT | Rate or Rate | Priced by

Advances

Value Charges: X X | X X

Express Charges: DO

Refrigeration Charges: NOT

Tax: USE

Storage: THESE

Total: SPACES

C. O. D.

C. O. D. Service Charge Write in YES or NO: X

(Form 5082)

SHIPPER'S COLLECT RECEIPT

NOTE—The Company will not pay over $50, in case of loss, or 50 cents per pound, actual weight, for any shipment in excess of 100 pounds, unless a greater value is declared and charges for such greater value paid.

RAILWAY EXPRESS AGENCY

INCORPORATED

Received shipment described hereon, subject to the Classifications and Tariffs in effect on the date hereof, value herein declared by Shipper to be that entered in space hereon reading "Declared Value," which the Company agrees to carry upon the terms and conditions printed hereon, to which the Shipper agrees and as evidence thereof accepts this receipt.

		Number Pieces	Date	Hour
1	[illegible]	1	5/15/195	[illegible] P.M.

For the Company

Mc Kennex

To the State Land Commissioner:

I, Tom R. Carter (Name of Individual), representing Honolulu Oil Corporation (Name of Company), do hereby agree to accept the following samples for the Lockhart #1 Babbitt (Name of Well), located in Section 21, Township 27-N Range 9-E, Coconino (County), Arizona, consisting of _____

I further agree not to cut, contaminate or damages these samples in any way, and to return them within a 30-day period. All freight charges will be prepaid by Honolulu Oil Corporation (Name of Company).

Tom R. Carter
(Signature)

Honolulu Oil Corporation
(Company)

P. O. Box 1417
(Street)

Farmington, New Mexico
(City) (State)

(For Office Use Only)

Date Samples Shipped ~~5~~ MAY 5-15-59

Date Samples Returned 6-2-59

~~(This form to be filed in duplicate.)~~

No permit

May 11, 1959

Honolulu Oil Corporation
Box 1417
Farmington, New Mexico

Attention: Tom R. Carter, Geologist

Dear Mr. Carter:

I am inclosing several sample responsibility forms, one of which please execute for the Lockhart-Babbitt #1 well. Upon receipt in this office of the executed copy, we will ship to you via railway express collect two boxes containing the samples from the Lockhart-Babbitt #1 well.

If we may be of additional service, please let us know.

Very truly yours,

STATE LAND COMMISSIONER

By: Frederick C. Ryan,
Supervisor,
Oil and Gas Conservation

FCR:mb
Encl.
AIR MAIL

Tel. Request

No permit

April 21, 1959

Honolulu Oil Corporation
Box 1417
Farmington, New Mexico

Attention: Tom Carter

Dear Mr. Carter:

In accordance with your recent telephone request, we are transmitting to you today under separate cover, copies of logs available for public distribution.

We trust they will be of benefit to you and if we can be of additional service, please let us know.

Very truly yours,

STATE LAND COMMISSIONER

By: Frederick C. Ryan,
Supervisor,
Oil and Gas Conservation

mb

No permit

May 12, 1949

Mr. Glenn M. Earl
824 Wilshire Blvd.
Los Angeles, California

Dear Mr. Earl:

Thank you very much for the formal application for abandonment of the Lockhart-Babbitt No. 1 well in Coconino County. I am herewith returning two copies for your files.

We are still very anxious to have the complete well history, the drilling and core descriptions, electric logs and other pertinent data regarding this well. It is now almost 90 days since the well was abandoned and we feel that we have every reason to expect the required information here at a very early date.

Very truly yours,

L. A. Heindl
Geologist

LAH:kb
encls.

Approved

L. M. LOCKHART
824 Wilshire Boulevard
Los Angeles 14

May 4, 1949

Office of State Land Department
Phoenix, Arizona

Attention: Mr. L. A. Heindl

Dear Mr. Heindl:

Enclosed find formal application for abandonment of the L. M. Lockhart "Babbitt" No. 1 Well, Coconino County, Arizona, as of February 14, 1949, for your records. The well was abandoned February 17, 1949.

We will follow with a complete well history, drilling core description and other pertinent data on Oil and Gas Form No. 2 as soon as compiled.

I will appreciate your mailing me additional copies of Oil and Gas Forms Nos. 1 and 2.

Yours very truly,

L. M. LOCKHART

BY: Glenn M. Earl
GLENN M. EARL

GML:bwm

Enclosure.

No permit

March 8, 1949

Mr. L. M. Lockhart
301-303 Subway Terminal Bldg.
417 South Hill Street
Los Angeles, California

Attn: Glenn M. Earl

Dear Sir:

Enclosed please find copies of State Oil and Gas forms Nos. 1,2,3,4, and 5. These comprise all of the forms required by the State Oil and Gas Statutes.

Nos. 1 and 3 concern us during the process of drilling. No. 2 is submitted following the completion of the well and No. 4 and 5 are production reports.

Form No. 1 is submitted any time there is a change in drilling operations or a well test is made. It is submitted in triplicate as required according to the items listed in the upper left hand corner of the form.

No. 3, the monthly report, is submitted in duplicate and need not contain any more information than the total depth of the hole and what in general are your current operations, i.e., whether your well is drilling or whether you are shut down waiting on pipe or any other such general remark. The purpose of this form is to keep us generally informed of your progress. We would appreciate having this form in the office by the 6th of each month.

Form No. 2 is submitted in duplicate upon the completion of the well and it is very important that this form be filled out in detail as it summarizes the history of the well.

A sufficient number for both your files and ours is enclosed.

We have not as yet received the formal application for abandonment of the Babbitt No. 1 well on our Oil and Gas form No. 1. Your early attention to this matter would be greatly appreciated. We are waiting with interest the complete casing record, drilling log, electric log and all other pertinent data on the well as soon as you are able to forward it.

With best wishes for your success in the new well in Section 33, T. 14 N., R. 20 E., I remain,

Very truly yours,

L. A. Heindl
Geologist

Enc.
LAH:ld

No permit

L. M. LOCKHART
OIL AND GAS PRODUCER - GASOLINE MANUFACTURER
301-303 SUBWAY TERMINAL BUILDING
417 SOUTH HILL STREET
LOS ANGELES 13, CALIFORNIA

2/21/49 -
6/15/49 -
NE¼ - 21 - 27N - 9E
SE¼ - 33 - 14N - 20E

February 21, 1949

FEB 23 1949
STATE LAND DEPT.
OF ARIZONA

Office of State Land Dept.
State of Arizona
Phoenix, Arizona

Attn. Mr. O. C. Williams
State Land Commissioner

Dear Sir:

Enclosed please find "Notice of Intention to Drill", your form O.& G. No. 1, in triplicate for L. M. Lockhart -"Aztec Land & Cattle Company, Ltd." No. 1 Well. Drilling equipment is now being moved from the Babbitt Well to this location.

Regarding the abandonment of the L. M. Lockhart Babbitt No. 1 Well, near Cameron, we are following the procedure outlined by Mr. L. A. Heindl in his letter of 2-11-49.

We called Mr. Harry Failing, Superintendent for Dunlap & Graham, our drilling contractor on the Babbitt Well, on 2-16-49. Mr. Failing notified us he telephoned you in Phoenix on that day regarding the abandonment procedure. As you requested he called Mr. Paul Babbitt in Flagstaff, who agreed to the pulling of as much of the 7" casing as could be salvaged and the abandonment procedure as outlined to him by Mr. Failing.

I will follow this letter immediately with a formal application for abandonment on your oil and gas form number 1.

The details of the abandonment with complete casing record, drilling log and all other pertinent data on the well will be submitted to you on Oil and Gas Form No. 2 as soon as such data is received by us from the field.

Very truly yours

L. M. LOCKHART

Glenn M. Earl

By: Glenn Earl

E:1

duplicate copy returned - BG 2/23/49

No permit

Post Office Department
OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVOID PAYMENT OF POSTAGE, $300
(OPO)

LOS ANGELES
FEB 14
11 30 PM
1949
CALIF

OFFICE
METROPOLITAN
STATION

Return to STATE LAND DEPT.
(NAME OF SENDER)
Street and Number, or Post Office Box, STATE OF ARIZONA
REGISTERED ARTICLE
No. 22246 Post Office PHOENIX,
INSURED PARCEL
No. State ARIZONA

Form 3811
Rev. 1-4-40

RETURN RECEIPT

Received from the Postmaster the Registered or Insured Article, the original number of which appears on the face of this Card.

1 L. M. Lockhart
(Signature or name of addressee)

2 M. M. Lorech
(Signature of addressee's agent—Agent should enter addressee's name on line ONE above)

Date of delivery FEB 14 1949, 194

U. S. GOVERNMENT PRINTING OFFICE 16—71111

February 11, 1949

Mr. L. M. Lockhart
301-303 Subway Terminal Building
417 South Hill Street
Los Angeles 13, California

Dear Sir:

Authorized by Mr. O. C. Williams, State Land Commissioner, I visited the Babbitt #1 well being drilled by your company in section 21, T 29 N, R 9 E, on March 10, 1949 and found it apparently prepared to be abandoned. This was confirmed by persons residing in the vicinity of the well. I regret that this test turned out to be a dry hole.

In that we have not as yet received any notice from you regarding your intended abandonment of this well, I should like to outline the accepted procedure under the Operation Regulations to Govern the Production of Oil and Gas Under Articles 13-14, Arizona Code 1939, Section 3 (q). This section states "Before abandoning a well the Permittee or Lessee shall submit to the Commissioner a statement of reasons for abandonment and his detailed plans for carrying on the work, together with duplicate copies of the log, in case it has not already been submitted, and shall proceed with the abandonment only on receiving the written approval of the Commissioner in the manner prescribed by him."

To expedite the abandonment, telephonic approval from Mr. Williams may be obtained by calling Phoenix 3-6128, but the written forms are requested for confirmation and the completion of the record. Before approving an intention to abandon, Mr. Williams would like to be assured that Mr. Paul Babbitt or Mr. John Babbitt of Flagstaff are contacted for the arrangement of any plans that may be made for the conversion of the hole into a water well.

Good water was obtained in the Barron-Steele well, drilled a quarter of a mile northeast, at their 1335-1385' level and the same condition probably prevails in the Babbitt #1 well. Consequently the Babbitt well will probably have to be plugged at some point in the neighborhood of 1400'. The exact depth will depend in some measure on the casing record, which I do not have at hand, and on the arrangement that your company will make with the Messers Babbitt of Flagstaff.

Plugging will have to be witnessed by personnel approved by Mr. Williams and we would appreciate sufficient notice to allow someone to reach the well from Phoenix in time to witness the setting of the plug.

Notice of intention to abandon the well should be submitted in triplicate on Form O&G #1. Following abandonment, a detailed account of the manner of abandonment and a report of all work done, including drilling log, casing record, records of any tests, etc., will be submitted on O&G Form #2 in duplicate. All necessary forms are enclosed.

Mr. Bennett

Word to this effect was left at Cameron, Arizona, for Mr. Harry Failing, pusher on the well for Dunlap and Graham. I had hoped to go over the details of abandonment personally with Mr. Glenn M. Earl or Mr. Failing but was unable to contact either in the vicinity of the well.

Your cooperation in this matter will be greatly appreciated.

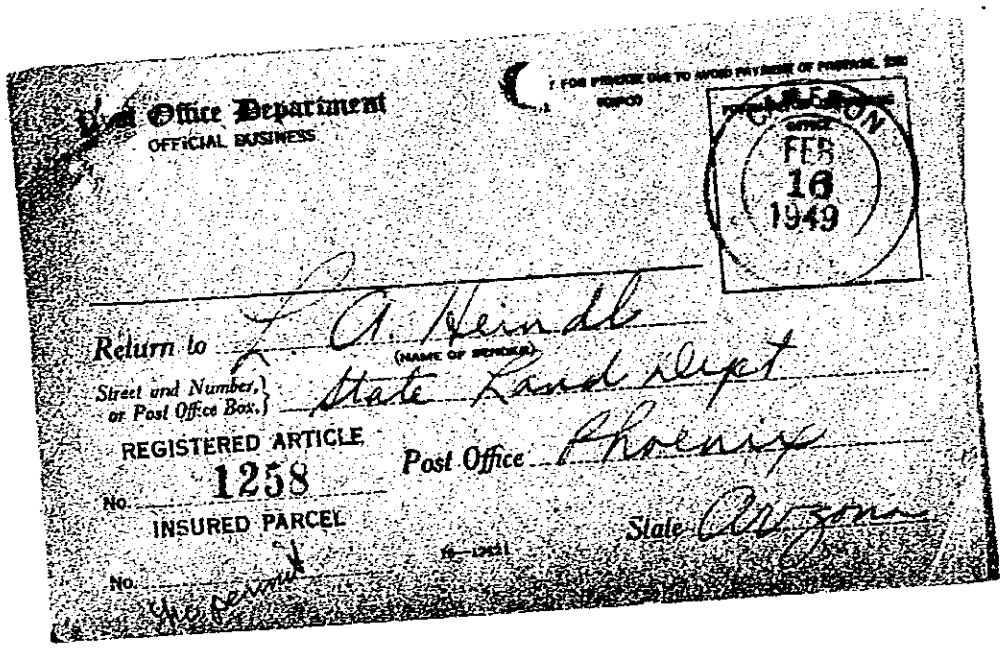
With best wishes,

Very truly yours,

L. A. Heindl
Geologist

cc Mr. Harry Failing

No permit


Post Office Department
OFFICIAL BUSINESS
FEB
16
1949
Return to F. A. Heindl
(NAME OF SENDER)
Street and Number, or Post Office Box, State Land Dept
REGISTERED ARTICLE
No. 1258
Post Office Phoenix
INSURED PARCEL
State Arizona
No.

Form 3811
Rev. 1-4-40

RETURN RECEIPT

Received from the Postmaster the Registered or Insured Article, the original number of which appears on the face of this Card.

1 Mary Fuchs
(Signature or name of addressee)

2 _____
(Signature of addressee's agent—Agent should enter addressee's name on line ONE above)

Date of delivery 4 1 194 9

Comments

11 February 1949

Mr. Williams:-

The attached letter I believe will be self-explanatory. All the pipe, or so it seemed to me, has been pulled from the hole and Mr. Reed at Gray Mountain Station and Mr. O'Bannon of the Humble Oil Company both told me that it was Mr. Failing's plan to simply pull off his equipment and move to their Snowflake location as he knew of no state regulations which held him to do otherwise. For Mr. Failing I left a registered letter at Cameron (he and the whole crew had all left for a week off to go back to work Monday, 14 February) in which I ~~instructed~~ advised him to contact both yourself and either of the Babbitt brothers. I didn't write Mr. Lockhart immidiately as I had hoped to see you in Phoenix today.

However, in view of the fact that tomorrow is a holiday and you ~~weren't~~ were in Nogales anyway, I called Mr. Ran Bone and explained the situation to him and with his approval ~~next~~ wrote the attached letter and will send it off Special Delivery Air Mail Registered tomorrow morning.

I shall be in Tucson until Wednesday morning and can be contacted through Mr. S. F. Turner if it is necessary for me to go north again. Wednesday and Thursday I believe it will be easiest to reach me through Mr. LLoyd Duncan at Willcox, and Friday I expect to be in Phoenix again.

Mr. Hager expects to go to California for a few days and then will return to Phoenix for about a month he said. They were going to pull down the GP rig today if the wind allowed them to. Early this afternoon it began to blow a young storm up around Holbrook. Bob Smart told me he had shipped all the G.P. samples to me at Phoenix and I spend a day and a half at the Babbitt well cutting their samples and cores. This will give us a complete sample record on these two wells.

Leo Heindl

February 11, 1949

Mr. L. M. Lockhart
301-303 Subway Terminal Building
417 South Hill Street
Los Angeles 13, California

Dear Sir:

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Your cooperation in this matter will be greatly appreciated.

With best wishes,

Very truly yours,

L. A. Heindl
Geologist

cc Mr. Harry Failing

Lockhart-Babbitt #1 well.

Notes taken while cutting samples on the Lockhard-Babbitt #1 well at Grey Mt. on February 9 and 10, 1949 Notes by L.C. Weindl.

1060-1180' No cutting samples. Lost circulation

1220-1290' No returns. Lost circulation

2030-2140' No cuttings

3305-3491' No cuttings

Cutting 3592'. Appears contaminated with oil. Strong smell of oil and the paper container glazed with oil soaking through.

CORES

Core #1-2042-2045' 3' cored, 3' recovered, white ls bottom, red sh top

Core #2?- 2045?-2050?, untagged but lying between 2042-2045 and 2050-2058' core trays. Sequence looks good. 3 trays.

Core #3- 2050-2058' Only trays #2 and #3 marked. The third of the unmarked trays assumed for Core #2 may be tray #1 of core #3. This would fit better with the depths cores, making the first two trays of Core #2 the whole of the 5' cored.

Core #4- 2058-2066 3 trays 8' cored, 8' recovered

Core #5- 2066-2074 3 trays 8' cored, 8' recovered

Core #6- 2074-2080 3 trays 6' cored, 6' recovered

Core #7- 2080-2090 4 trays 10' cored, 10' recovered

Core #8- 2090-2099 3 trays 9' cored, 9' recovered

Core #9- 2099-2108 4 trays, 9' cored, 9' recovered

Core #10- 2108-2117 4 trays, 9' cored, 9' recovered

Core #11- 2117-2126 4 trays, 9' cored, 9' recovered

Core #12- 2126-2133 3 trays 7' cored, 7' recovered

Core #13-Unnumbered. Untagged. Assumed to be Core #13 from position among trays. No tag. 1 tray.

Core #14- 2413-2416 1 tray, ~~3x~~ 3' cored, complete recovery

The Document

Holbrook, Arizona
January 11, 1949

Mr. Harry Failing
C/o Dunlap and Graham, Drilling Contractors
Cameron Trading Post
Cameron, Arizona

Dear Mr. Failing:-

Yesterday I visitedthe Babbitt well location and learned that it was planned to abandon the well. As of Monday morning, when last I was in the Phoenix office, there had been no word from L. M. Lockhard or Mr. Glenn Earl regarding an intention to abandon the well. According to State Regulations the State Land Department must be informed before proceeding to abandon.

It is also advisable to contact Mr. Paul Babbitt or Mr. John Babbitt at Flagstaff regarding any arrangements that might be made for leaving the well in proper condition to be made into a water well at some future date.

To prevent the contamination of fresh water strata the well will have to be plugged in such a manner as to keep the salt water out of good water strata. The exact depth of the plug will be determined by your depth of casing and information available from the log of the well. As I have neither it is impossible for me to tell you at thistime the exact depth at which the well will have to be plugged.

Mr. Glenn Earl is beingwritten regarding this matter and I advise that no further steps to abandon the well be taken until you have contacted Mr. O. C. Williams, State Land Commissioner, at Phoenix, or either Mr. Paul Babbitt or Mr. John Babbitt in Flagstaff. Mr. Williams' phone number in Phoenix is 3-6128.

Very truly yours,

L. A. Heindl
Geologist

Fro Bernick

[illegible], Arizona
[illegible] 1948

Mr. Glen [illegible]rl
Gray Mountain Trading Post
[F]lagstaff, [A]rizona

Dear Mr. [illegible]:

[S]orry to have missed you at the [illegible] well [illegible].

[W]ould appreciate your cooperation [illegible]. [illegible] the fact that the [illegible] only [illegible] well in Arizona, [illegible], it [illegible] impossible for me to keep up with the [illegible] well [illegible] visits. Consequently I run about [illegible] weeks behind in information [illegible] pick up a lot of misinformation which I [illegible] lately.

There is a form from our office (O & G 3) [illegible] to this [illegible] it could be arranged to have duplicate copies sent in at the first of each month covering the preceeding month's operation it would simplify my job considerably. I've been told that all these forms have been passed around but if you are short, let me know and we'll shoot [illegible] right out.

Before leaving Phoenix on this trip I was told that the Bobbitt well had been abandoned, that you were moving the rig [illegible] structure and that you were [illegible] to spud in by Dec. 15. [illegible] assured me that was not the case [illegible] I saw him out at the well. You're [illegible] more than your share of trouble out there.

Your cooperation in this ma[tter] will be greatly appreciated.

Thanks . ...

Very truly yours,

L. [illegible] Heindl

Forwarded copies of all forms 8 Dec 48 -

No permit

L. M. LOCKHART
OIL AND GAS PRODUCER - GASOLINE MANUFACTURER
301-303 SUBWAY TERMINAL BUILDING
417 SOUTH HILL STREET
LOS ANGELES 13, CALIFORNIA

December 22, 1948

Mr. L. A. Heindl
Office of State Land Dept.
State of Arizona
Phoenix, Arizona

Dear Mr. Heindl:

In reply to your letter of December 8, 1948 from Flagstaff, Arizona, enclosing one blank copy each of your Forms O. & G. 1, O. & G. 2, O. & G. 3, and O. & G. 4:

We received a few copies of Forms 1 and 2 from Mr. O. C. Williams in September, 1948 but none of Forms 3 and 4. As I see it, the only form which applies during the drilling is No. 3 of which we have only one copy sent by you. Will you please send us several more copies of each of the forms?

Such being the case I will bring you up to date on Operations on the "Babbitt" No. 1 well, and henceforth send you monthly reports on Form No. 3.

The depth now is 3482 feet. We have had loss of circulation trouble for the past month, consequently very little hole was made. However, the formations softened up at 3364 and we were able to make fair time in drilling without circulation to the present bottom at 3482. This dry drilling could not continue further, however, without serious threat of sticking the drill-pipe and a chance of losing the hole, partly due to the accumulation of cuttings above the bit. For this reason we have shut down over Christmas and Mr. Failing has returned to Los Angeles to discuss the problem with us and arrange for running pipe in the hole so that we may regain circulation and continue drilling.

The formation is softening up, as mentioned above, and cores and cuttings show a change in sedimentation from very hard and tough dolomitic lime stone to micaceous shale, with interbedded sand ranging from fine to coarse-grain and pebbly in places. No oil or gas showings have been encountered to present bottom.

I did not receive your sample bags before I left but all samples are being saved so that a complete set will be available to you. I will be down there again after operations start and will contact you at that time.

Very truly yours

Glenn M. Earl

GLENN M. EARL

Post-it™ brand fax transmittal memo 7671	# of pages ▸ 1
To Ben Donegan	From Steve Ruzzi
Co.	Co.
Dept.	Phone # 775-7500
Fax # 505-888-2621	Fax #

1-17-97

Approved as

December 29, 1948

Mr. Glenn M. Earl
301-303 Subway Terminal Bldg.
417 S. Hill Street
Los Angeles 13, California

Dear Mr. Earl:

Thank you very kindly for bringing us up to date on the operations at the Babbitt No. 1. I hope that your troubles there are over.

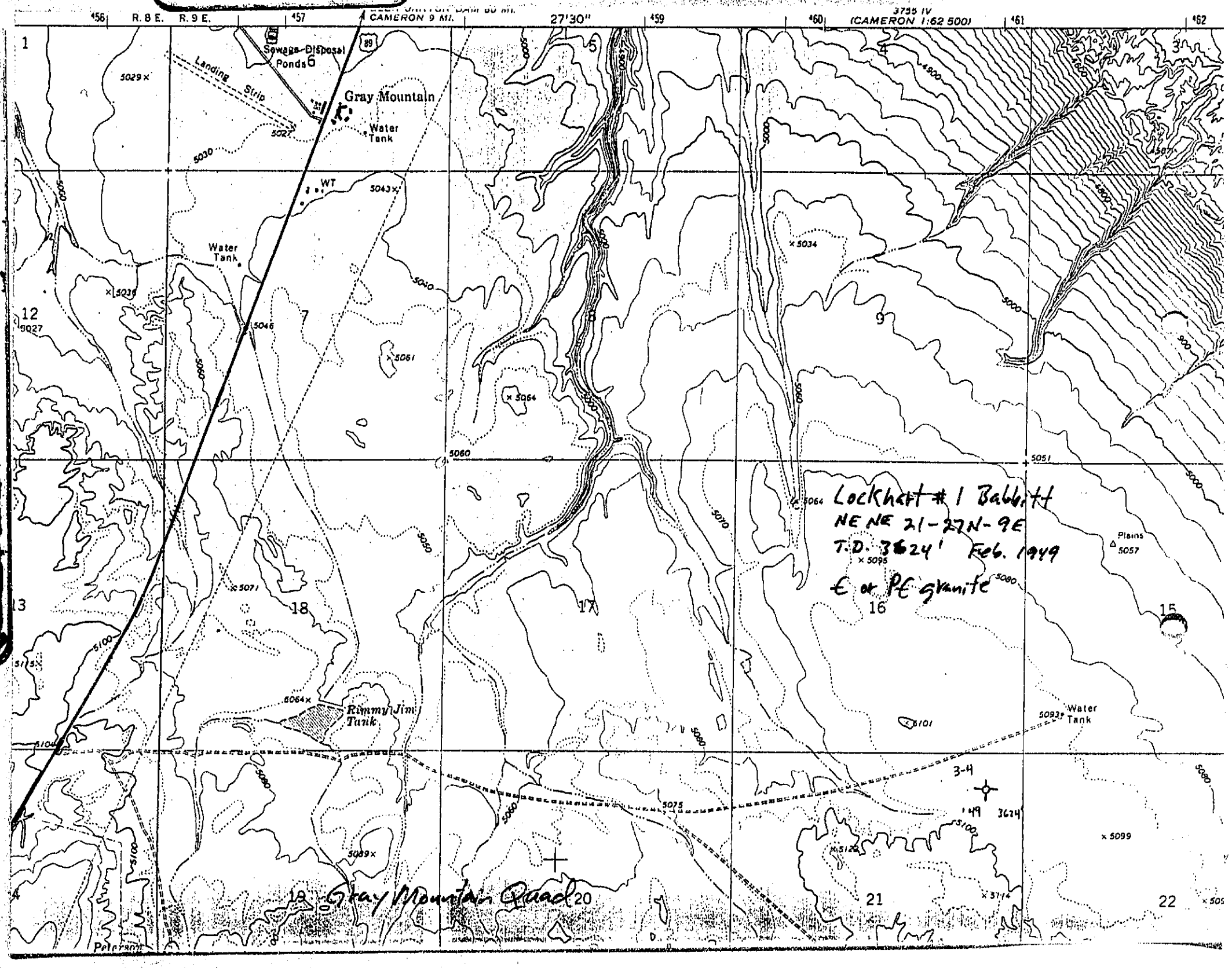
I am enclosing a number of copies of Form No. 3 and will certainly appreciate your keeping us up to date in the future.

Very truly yours,

L. A. HEINDL
Geologist

LAH:kb
encls.

1/20 permit


R. 8 E.
R. 9 E.
CAMERON 9 MI.
27'30"
3755 IV
(CAMERON 1:62 500)
Sewage Disposal Ponds
Landing Strip
Gray Mountain
Water Tank
WT
Water Tank
Rimmy Jim Tank
Water Tank
Plains
Lockhart #1 Babbitt
NE NE 21-27N-9E
T.D. 3624' Feb. 1949
Є or PЄ granite
Gray Mountain Quad