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T1N, R1E, Sec 11
AVB60-01
A(1,1) 11 ABC

GEOLOGIC LOG	ADEQ	West Van Buren Area

Well ID:	AVB60-01	Location:	SRP West Valley Maintenance parking lot
Northing (ft):	890626.7957	Drilling Co:	Layne Environmental Services
Easting (ft):	404912.2565	Drilling Method:	Air percussion
Total Depth (ft):	500	Drilling Fluid:	Air
Top of Casing Elev (ft):	1028.50	Date Started:	20 Jun 94
Ground Surface Elev (ft):	1028.80	Date Finished:	23 Jun 94
		Logged by:	Jan Curtis and Rich Petrus

Comments: Southern portion of the paved parking lot at 79th Avenue and W. Van Buren.

INTERVAL (FT)	USCS	VISUAL DESCRIPTION
0-15	ML	Light brown silt (75%) and clay (25%). Low plasticity, dry, loose.
15-30	ML	Light brown silt (95%) and clay (5%), non-plastic, dry, loose, moist.
30-40	SM	Light brown coarse to fine gravel. 20% gravel, 50% sand, and silt (30%). Poorly sorted, non plastic, damp.
40-50	MH	Dark brown silt (80%) and clay (20%), damp, soft.
50-60	SM	Dark brown sand (70%), silt (20%) and clay (10%). Poorly sorted, low plasticity, wet at 55 feet.
60-70	SM	Sand and silt mixture to 65 feet. Fining to silts and clays from 65-70 feet, wet at 60-62 feet.
70-80	MH	Dark brown silt (70%) and clay (30%). Low plasticity, saturated.
80-90	SM	Dark brown sand (40%), silt (40%) and clay wet. Poorly sorted, low plasticity. Coarse sand at 89.5 - 90 feet.
90-100	SM	Same as above.
100-110	CH	Dark brown clay (70%) and silt (30%), high plasticity, stiff, wet.
110-120	CH-CL	Dark brown silt (50%) and clay (50%), stiff, high plasticity.
120-140	CH	Dark brown clay (80)%) and silt (20%), high plasticity, stiff, wet.
140-210	CH	Dark brown clay (90%), silt (10%), wet.
210-220	CH	Same as above with few large cobbles.

220-230	CH	Same as 140-120 feet, with (5%) gravel, no cobble.
230-250	CL	Silty clay, caliche.
250-260	GW	Cobbles with sand and gravel, hard, slow drilling.
260-270	CL	Brown clay and caliche.
270-278 8	CL	As above with cemented sand.
278-280 2	SP	Coarse sand.
280-295	CL/SP	Brown clay and caliche, some cemented sand.
295-302 7	SP	Sandstone, tan to medium brown, soft to medium hard, weathered, fine to medium grained, trace gravel.
302-310 8	SW	Brown sand, some gravel, trace silt, well graded, fine to medium grain, gravel up to 0.25.
310-320	CL	Brown clay (90%), silt 10%, plastic, trace sand.
320-338	CL	Brown clay, trace silt, dry, lithified in places. Siltier with depth.
338-350	SP	Poorly graded, medium sand and gravel, reddish brown, cobbles to 3 inches. Wet, lots of water.
350-360	SW GW	Well graded gravel (70%) and sand (25%), wet, lots of water, 5% fines.
360-370	CL/SP	Interbedded medium brown clay and tan cemented v. fine-grained sand.
370-380	SW GW	Well graded gravel (70%) and sand (25%), wet, lots of water, 5% fines.
380-390	SP	Sand (70%) medium grained, some gravel, reddish brown. Gravel up to 2" in diameter, wet, lots of water.
390-402	SW	Well graded fine to medium grained sand, some silt, trace gravel and clay, lithified in places, subround to round.
402-410 5	CL/SM	Interbedded silty clay and very fine grained silty sandstone, friable, wet to moist.
410-420	SW	Reddish brown medium sand with gravel and cobbles, 10% silt. Lots of water.
420-430	SM	Upper 5 feet is weakly cemented brown slightly silty sandstone. Lower 5 feet is poorly graded sand.
430-440	SW	Sand, fine to medium grain, slightly silty, micaceous, subangular to subround. Trace gravel.
440-450	SW	Sandstone, very fine to medium grained, tan to medium brown, soft.
450-457 7	SW	Sandstone, fine grained, silty, soft to medium hard, slightly micaceous, trace gravel.

457-470	SC	Sand, fine grained, poorly graded, round, wet, micaceous, with interbedded medium brown silty clay (dry).
470-495	SC/SP	Interbedded silty clay and fine grained quartzitic sandstone.
495-500	SP	Fine sand and gravel. Poorly graded. Granitic and micaceous. Saturated and flowing. Producing water. Total depth 500 ft.

welenco

GAMMA NEUTRON LOG

FILING NO.	
COMPANY	ROY F. WESTON, INC.
WELL	AVB60-01
FIELD	WEST PHOENIX
COUNTY	MARICOPA STATE ARIZONA
LOCATION:	SRP MAINTENANCE FACILITY 79 AVE AND VAN BUREN
OTHER SERV:	NONE
JOB NO.	20094
SEC	TWP RGE

PERMANENT DATUM: G.L. ELEV:

LOG MEASURED FROM G.L., 0 FT ABOVE PERM DATUM

DRILLING MEASURED FROM G.L.

ELEVATION:
KB.
DF.
GL.

DATE	6/24/94		
TYPE OF LOG	GAMMA NEUTRON		
RUN NO.	ONE		
DEPTH - DRILLER	490'		
DEPTH - LOGGER	488'		
BOTTOM LOGGED INT	488'		
TOP LOGGED INT	0'		
TYPE FLUID IN HOLE	WATER		
FLUID LEVEL	87'		
MAX TEMP DEG F	N/A		
OPERATING RIG TIME	N/A		
EQUIP. LOCATION	L05 AZ		
OPERATOR	D. JACOVITCH		
WITNESSED BY	R. PETRUS		

RUN	BORE HOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	TYPE	FROM	TO
1				9.75"	STEEL	0'	T.D.
				6"	STEEL	0'	T.D.

LOG TYPE	GAMMA-RAY	NEUTRON
RUN NO.	ONE	ONE
TOOL MODEL NO.	GCN27XL5A	GCN27XL5A
TOOL SERIAL NO.	274	274
DIAMETER	1 11/16"	1 11/16"
DETECTOR TYPE	SCINT.	He3
DETECTOR LENGTH	4"	6"
UNITS/DIV.	30	20, 40
SENSITIVITY	100/494	100/276,
TIME CONSTANT	3	4
ZERO DIV L OR R	4L	6L, 20L
SPEED-FPM	20	20
DATA SAMPLES/FT	2	2
FORMATION FACTOR	N/A	N/A
PUMP RATE-GPM	STATIC	STATIC
PUMP RATE-GPM		
PUMP RATE-GPM		

SOURCE TYPE	STRENGTH	SPACING	MODEL NO
AmBe 241	3 Ci	13"	71-1

PERFORATIONS:

REMARKS: NEUTRON ATTENUATED ABOVE FLUID PIPE INTER-CONNECTIONS, BUT NOT LEVEL.

NOTICE:
All interpretations are opinions based on in electrical or other measurements and we cann not guarantee the accuracy or correctness of pretations, and we shall not, except in the or willful negligence on our part, be liable ible for any loss, costs, damages or expense or sustained by anyone resulting from any in made by one of our officers, agents or emplo interpretations are also subject to our Gene Conditions as set out in our current Price S

EQUIPMENT DATA

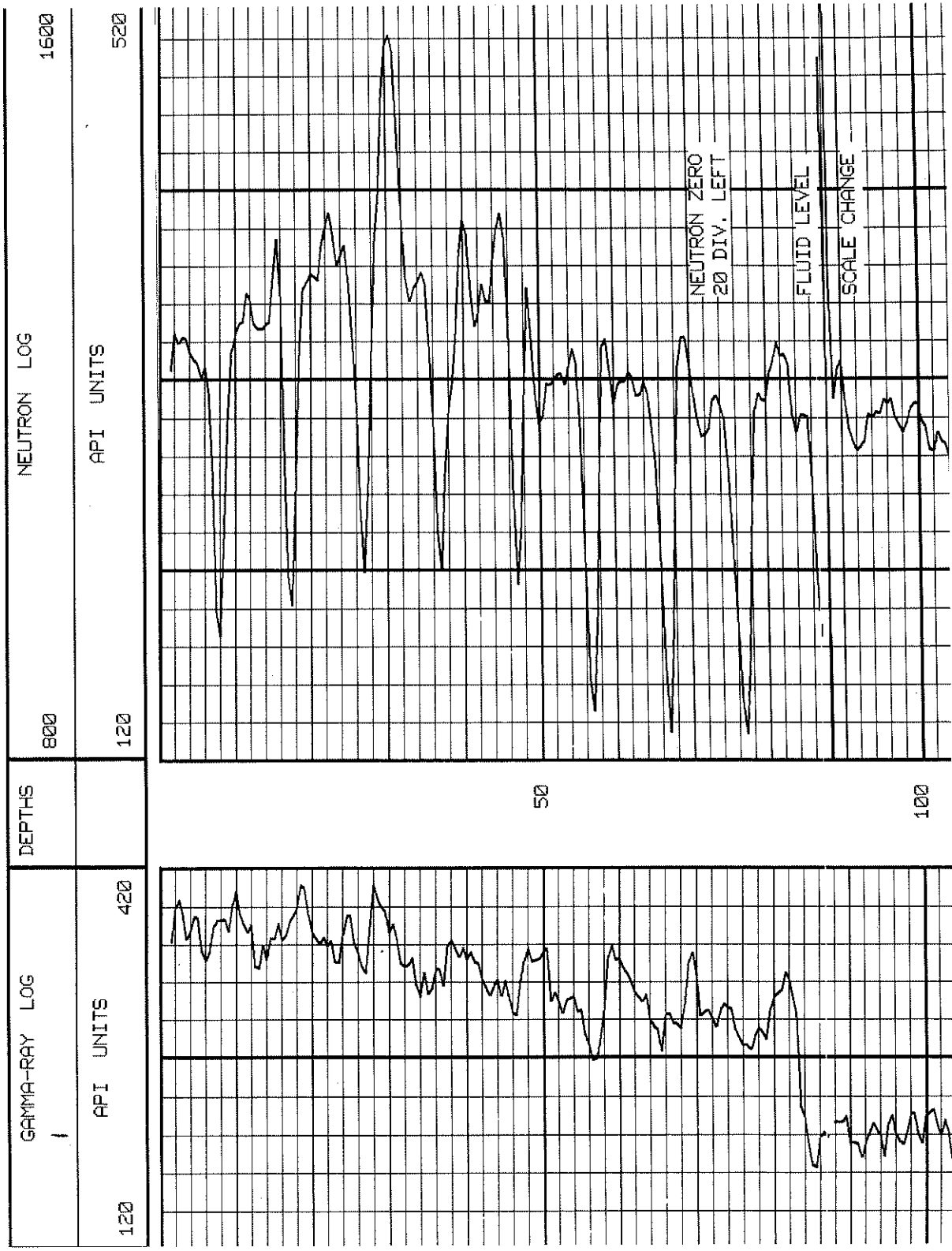
	GAMMA-RAY	NEUTRON	
	ONE	ONE	
NO.	GCN27XL5A	GCN27XL5A	
NO.	274	274	
	1 11/16"	1 11/16"	
PE	SCINT.	He3	
NGTH	4"	6"	
	30	20, 40	
	100/494	100/276,	500/692
NT	3	4	
OR R	4L	6L, 20L	
	20	20	
S/FT	2	2	
ACTOR	N/A	N/A	
PM	STATIC	STATIC	
PM			
PM			

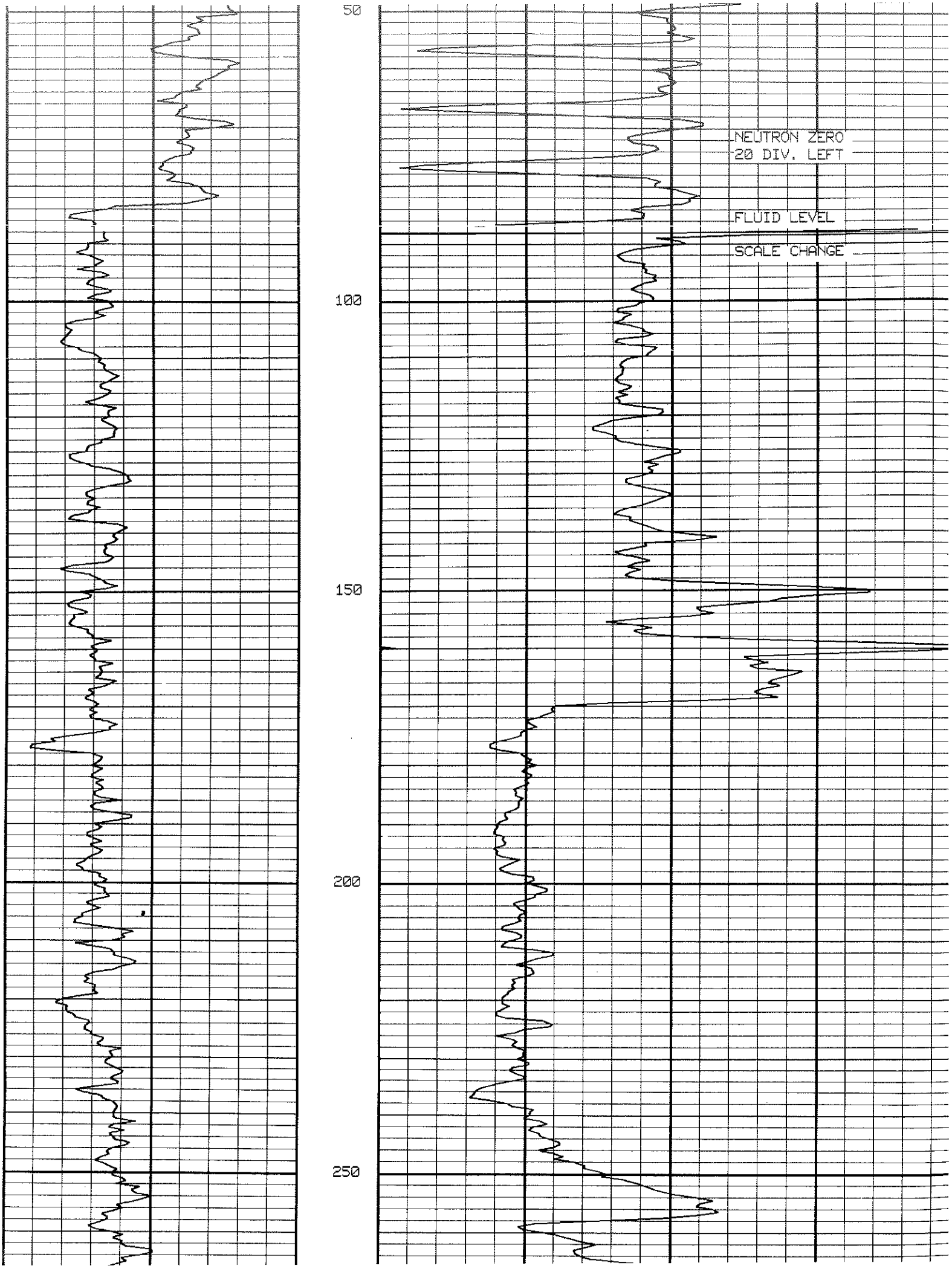
	STRENGTH	SPACING	MODEL NO	SERIAL NO.
	3 Ci	13"	71-1	119

S:

NEUTRON ATTENUATED ABOVE FLUID LEVEL BY PIPE INTER-CONNECTIONS, BUT NOT BELOW FLUID LEVEL.

etations are opinions based on inferences from or other measurements and we cannot, and do ee the accuracy or correctness of any inter- and we shall not, except in the case of gross negligence on our part, be liable or respons- y loss, costs, damages or expenses incurred d by anyone resulting from any interpretation of our officers, agents or employees. These ions are also subject to our General Terms and as set out in our current Price Schedule.

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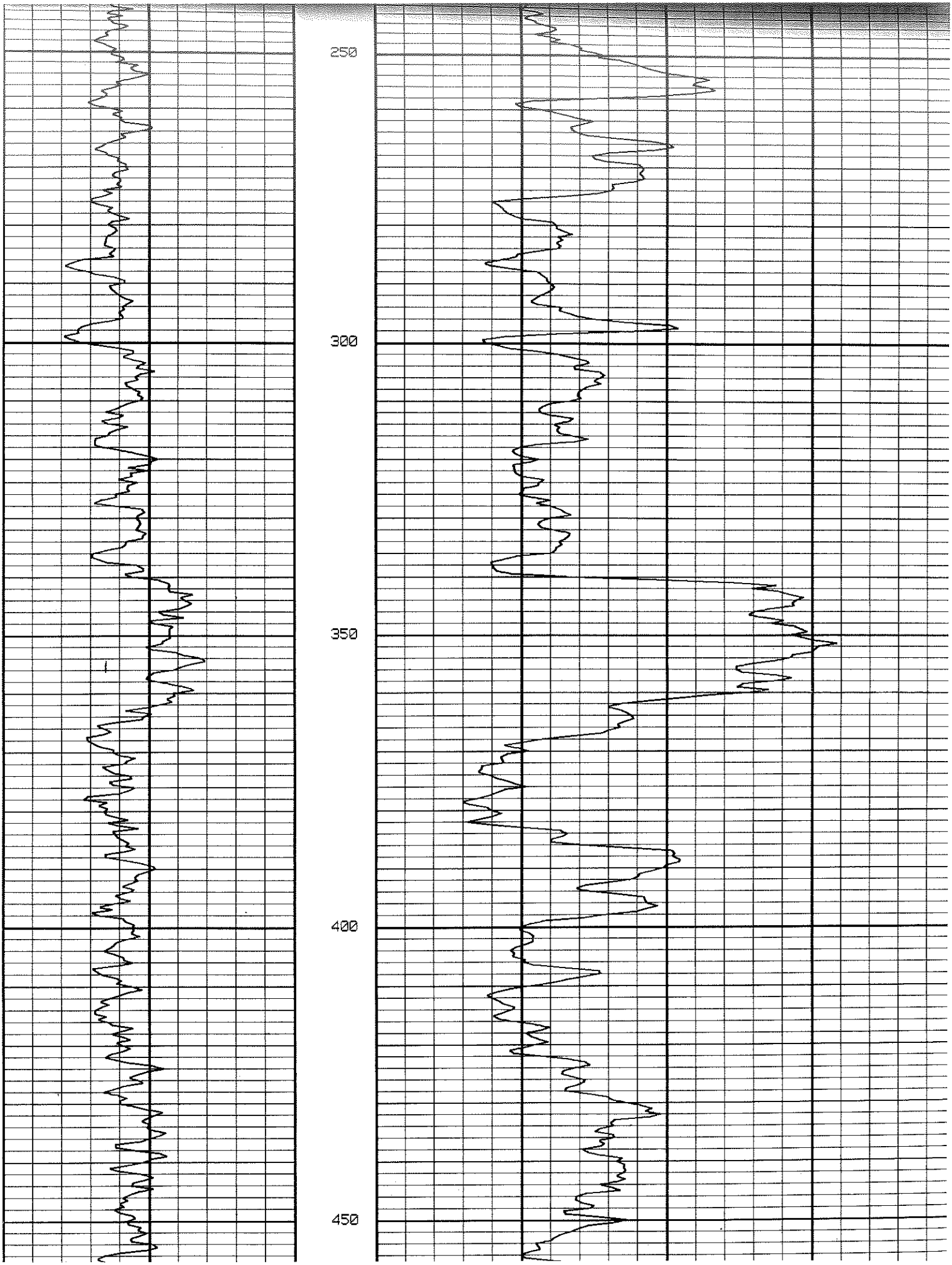
20 DIV. LEFT
FLUID LEVEL
SCALE CHANGE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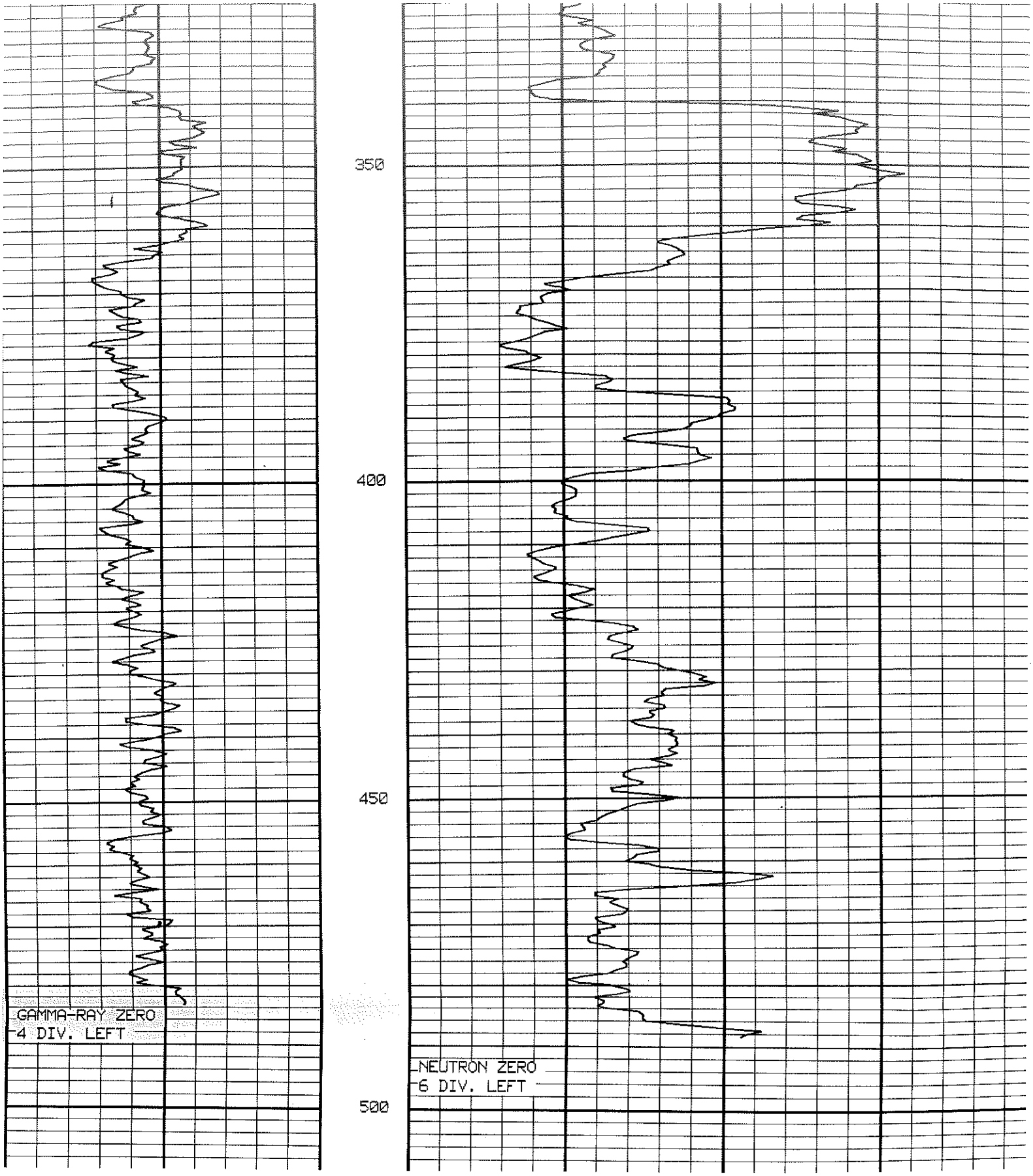


120 API UNITS 420	DEPTHS	120 API UNITS 520
GAMMA-RAY LOG		800 NEUTRON LOG 1600

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
5		SP	GRAVELLY COARSE SAND, TRACE PLASTIC FINES, DARK BRN.		SOME FILL MATERIAL
10		ML	SILTY FINE SAND, MED. BROWN, TRACE CLAY SLIGHTLY PLASTIC		
15		ML	SILTY FINE SAND, MED. BROWN, TRACE CLAY SLIGHTLY PLASTIC		
20		ML	SILTY FINE SAND, MED. BROWN, TRACE CLAY SLIGHTLY PLASTIC		
25		ML	SILTY FINE SAND (TRACE PEBBLES <5%) MED. BRN	0.0	
30		SM	POORLY GRADED SILTY SAND (GRAVELLY <10-15%)		
35		SM	SILTY SAND MED. BRN.		
40		SM	SILTY SAND MED. BROWN (PEBBLES <10%)		
45		SM	MICACEOUS, SILTY SAND, DK. BRN. (MINOR PEBBLES <5%)	0.0	
50		SW	COARSE SAND, MED. BRN. (MINOR FINES <20%)		
55		SW	COARSE SAND, MED. BRN. (MINOR FINES <20%)		
60		SW	COARSE SAND, MED. BRN. (MINOR FINES / PLASTIC CLAY)		
65		SC	CLAYEY, FINE TO MED. SAND MICACEOUS (MINOR PEBBLES <10%)		
70		SC	CLAYEY FINE TO MED. SAND MICACEOUS, MED. BRN.		
75		SC	CLAYEY FINE T0 MED. SAND MICACEOUS, MED. BRN.		

PROJ.#:E03103102-25 DRILL DATE:12/06/01
LOGGED BY: JMN
PROJECT MANAGER: A. GORDON
NOTES:
DEPTH TO WATER: 98.6'
RIG TYPE: GD15W DIAMETER: 10"
DRILLER: STEWART TOTAL DEPTH: 380'
DRILLING METHOD: MUD ROTARY

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB 98-01
75TH AVE / MADISON
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
80		CL	F. SANDY CLAY,MED. BRN. PLASTIC MICACEOUS		
85		CL	MICACEOUS F. SANDY CLAY, MED. BRN. PLASTIC		
90		CL	MICACEOUS F. SANDY CLAY, MED BRN, PLASTIC		
95		CL	MICACEOUS F. SANDY CLAY, MED BRN, PLASTIC	0.0	
100		SC	MICACEOUS CLAYEY SAND		
105		SP	CLAYEY, GRAVEL F. SAND		
110		CL	MICACEOUS FINE SANDY CLAY		
115		CL	MICACEOUS FINE SANDY CLAY		
120		CL	MICACEOUS FINE SANDY CLAY		
125		CL	MICACEOUS FINE SANDY CLAY (MINOR GRAVEL <5%)		
130		CL	MICACEOUS FINE SANDY CLAY (MINOR GRAVEL <10%)		
135		CL	GRAVELLY CLAY, F. SAND PLASTIC (GRAVEL <1" DIA. 10-20%)	0.0	
140		CL	GRAVELLY CLAY, F. SAND PLASTIC (GRAVEL <1" DIA. 10-20%)		
145		CL	GRAVELLY CLAY, FINE SAND, MED. BROWN PLASTIC		DRIVE CASING 148.5 BGS SWITCH TO MUD ROTARY
150		CL	SANDY CLAY, MD. BRN.		

PROJ.#:E03103102-25	DRILL DATE: 2/06/01
LOGGED BY: JMN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 98.6'	
RIG TYPE: GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH: 380'
DRILLING METHOD: MUD ROTARY	

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB 98-01
75TH AVE/ MADISON
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
155		GW	COARSE SANDY GRAVEL, ANGULAR <0.5"	0.0	
160		GW	COARSE SANDY GRAVEL, ANGULAR <0.5"		
165		GW	COARSE SANDY GRAVEL, ANGULAR <0.5"		
170		SW	COARSE ANGULAR SAND	0.0	
175		GW	COARSE SANDY GRAVEL <.05"	0.0	
180		GW	COARSE SANDY GRAVEL		
185		GW	COARSE SANDY GRAVEL		
190		GW	COARSE SANDY GRAVEL	0.0	
195		GW	COARSE SANDY GRAVEL		
200		GW	COARSE SANDY GRAVEL		
205		GW	COARSE SANDY GRAVEL		
210		GW	COARSE SANDY GRAVEL		
215		GW	COARSE SANDY GRAVEL	0.0	
220		GW	COARSE SANDY GRAVEL		
225		GC	CLAYEY, COARSE SANDY GRAVEL		

PROJ.#:E03103102-25	DRILL DATE: 02/06/01
LOGGED BY: JMN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 98.6'	
RIG TYPE: GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH: 380'
DRILLING METHOD: MUD ROTARY	

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB98-01
75TH AVE/MADISON
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
230		CL	SANDY GRAVELLY CLAY		
235		CL	SANDY, GRAVELLY LT BRN CLAY, PLASTIC		
240		CL	CLAY		
245		CL	CLAY		
250		GC	CLAYEY SANDY GRAVEL		
255		GC	CLAYEY SANDY GRAVEL		
260		GC	CLAYEY COARSE SANDY GRAVEL		
265		GC	CLAYEY COARSE SANDY GRAVEL		
270		GC	CLAYEY GRAVEL		
275		GC	CLAYEY COARSE SANDY GRAVEL, PLASTIC		
280		GC	CLAYEY COARSE SANDY GRAVEL		
285		GC	CLAYEY COARSE SANDY GRAVEL		
290		SC	CLAYEY COARSE SAND, MINOR GRAVEL		
295		CL	COARSE SANDY CLAY		
300		CL	SANDY CLAY		

PROJ.#:E03103102-25	DRILL DATE:12/06/01
LOGGED BY: JMN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 98.6'	
RIG TYPE: GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH: 380'
DRILLING METHOD: MUD ROTARY	

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB 98-01
75TH AVENUE / MADISON
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
305		CL	SANDY CLAY		
310		SC	CLAYEY SAND		
315		SC	CLAYEY SAND, MINOR GRAVEL		
320		SC	CLAYEY COARSE SAND		
325		CL	COARSE SANDY CLAY		
330		CL	COARSE SANDY CLAY		
335		CL	COARSE SANDY CLAY	0.0	
340		CL	SANDY CLAY		
345		CL	SANDY CLAY		
350		CL	SANDY CLAY		
355		CL	COARSE SANDY CLAY		
360		CL	COARSE SANDY CLAY	0.0	
365		CL	COARSE SANDY CLAY		
370		CL	COARSE SANDY CLAY		
375		CL	SANDY CLAY		

PROJ.#:E03103102-25	DRILL DATE: 12/06/01
LOGGED BY: JMN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 98.6'	
RIG TYPE: GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH: 380'
DRILLING METHOD: MUD ROTARY	

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB 98-01
75TH AVENUE / MADISON
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
380		CL	SANDY CLAY		
385					
390					
395					
400					
405					
410					
415					
420					
425					
430					
435					
440					
445					
450					

PROJ.#:E03103102-25	DRILL DATE: 12/06/01
LOGGED BY: JMN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 98.6'	
RIG TYPE: GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH: 380'
DRILLING METHOD: MUD ROTARY	

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB 98-01
75TH AVE / MADISON
PHOENIX, ARIZONA

ROBERTSON GEOLOGGING TECHNOLOGY

welenco

5201 Woodmere Drive
Bakersfield,California 93313
(800) 445-9914
www.welenco.com

ELECTRIC - GAMMA RAY - TEMPERATURE LOG

AVB 98-01

COMPANY	BE & K TERRANEXT
WELL	AVB 98-01
FIELD	TOLLESON
COUNTRY	U.S.
STATE	AZ
COUNTY	MARICOPA
LAT..	33 26.80N
LONG..	112 13.32W

OTHER SERVICES
XY CALIPER
NEUTRON

Perm. Datum	G.L.	Elev	1177	KB	0.00
Log. Datum	G L.			DF	0.00
Drill Datum	G.L.			GL	1177.00

DATE	12/12/2001	0	0
RUN#	1	2	1
TYPE OF LOG	ELOG		
DEPTH DRILLER	381.00	0.00	0.00
DEPTH LOGGER	381.00	0.00	0 00
LOG DEEPEST	380 00	0 00	0 00
LOG SHALLOW	120.00	0.00	0.00
FLUID IN HOLE	BENTONITE		
SALINITY		0	
DENSITY		0	
LEVEL	FULL	0	
MAX TEMP °C	71.00	0.00	0.00
RIG TIME	.5 HR.	0	
RECORDED BY	William Smith		
WITNESSED BY	J. NAMLICK		

RUN#	BIT RECORD BIT	BIT RECORD FROM	BIT RECORD TO	CASING RECORD SIZE	CASING RECORD WEIGHT	CASING RECORD FROM	CASING RECORD TO
1	9.88	148 00	381 00	12.75	0.00	0 00	148.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	.0.00	0.00	0.00	0.00	0.00	0.00	0.00

REMARKS (C \BILL\34983e hed)

JTN 34983

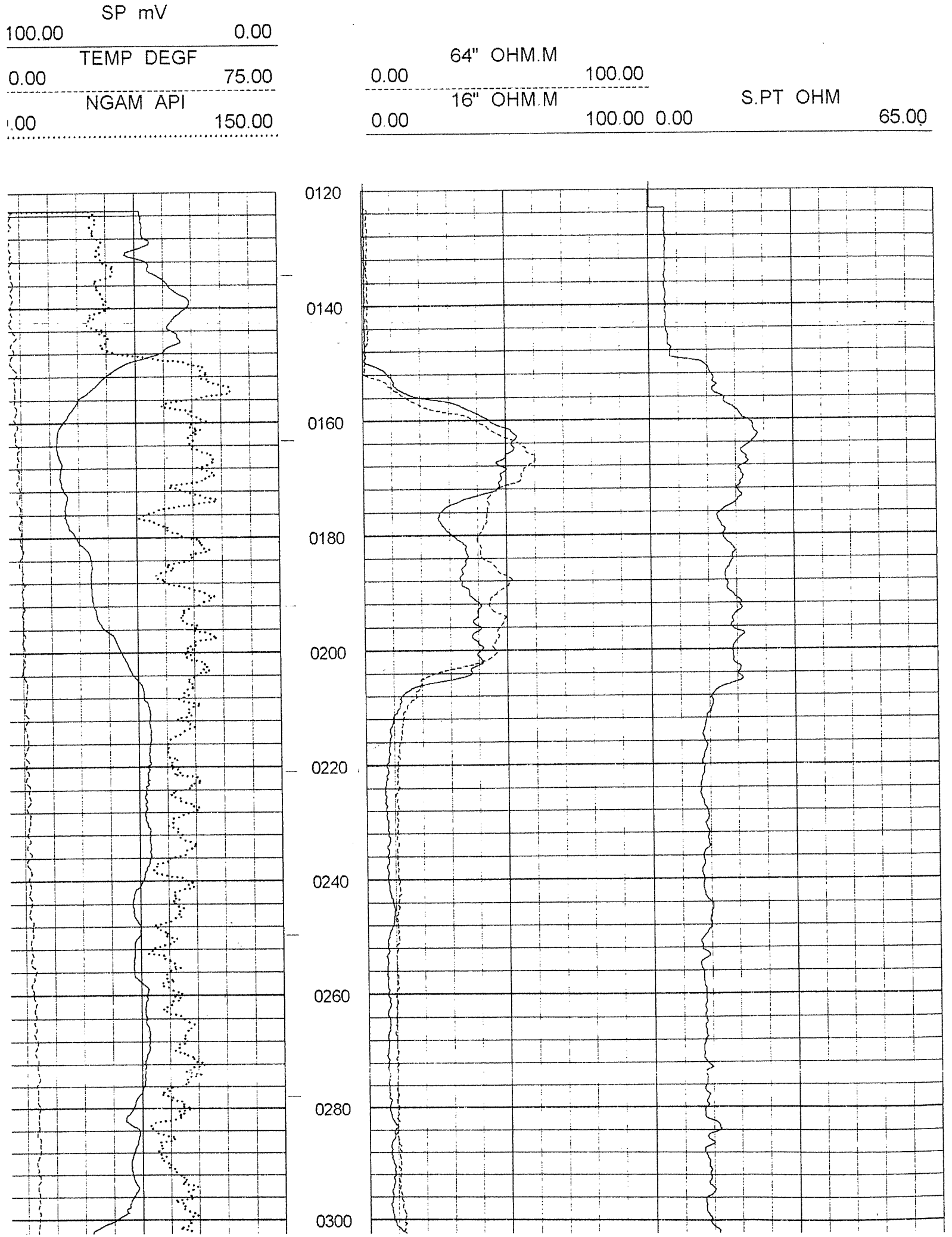
Sec
Twp
Rge

Rm 5 0 @ 75F
Rmf 3 8 @ 75F

Location Corner of 75th street and Madison in Tolleson, AZ
Lat and Lon and Elev determined using a recreational GPS
Driller Stewart Brothers Drilling

Depth = 124 4
00 ft Time = 12 December 2001 10:24 17 Filename = "C \WINLOGGER\DATA\34983e LOG"

-100.00 SP mV 0.00 64" OHM.M
TEMP DEGF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100.00
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0.00
100.00
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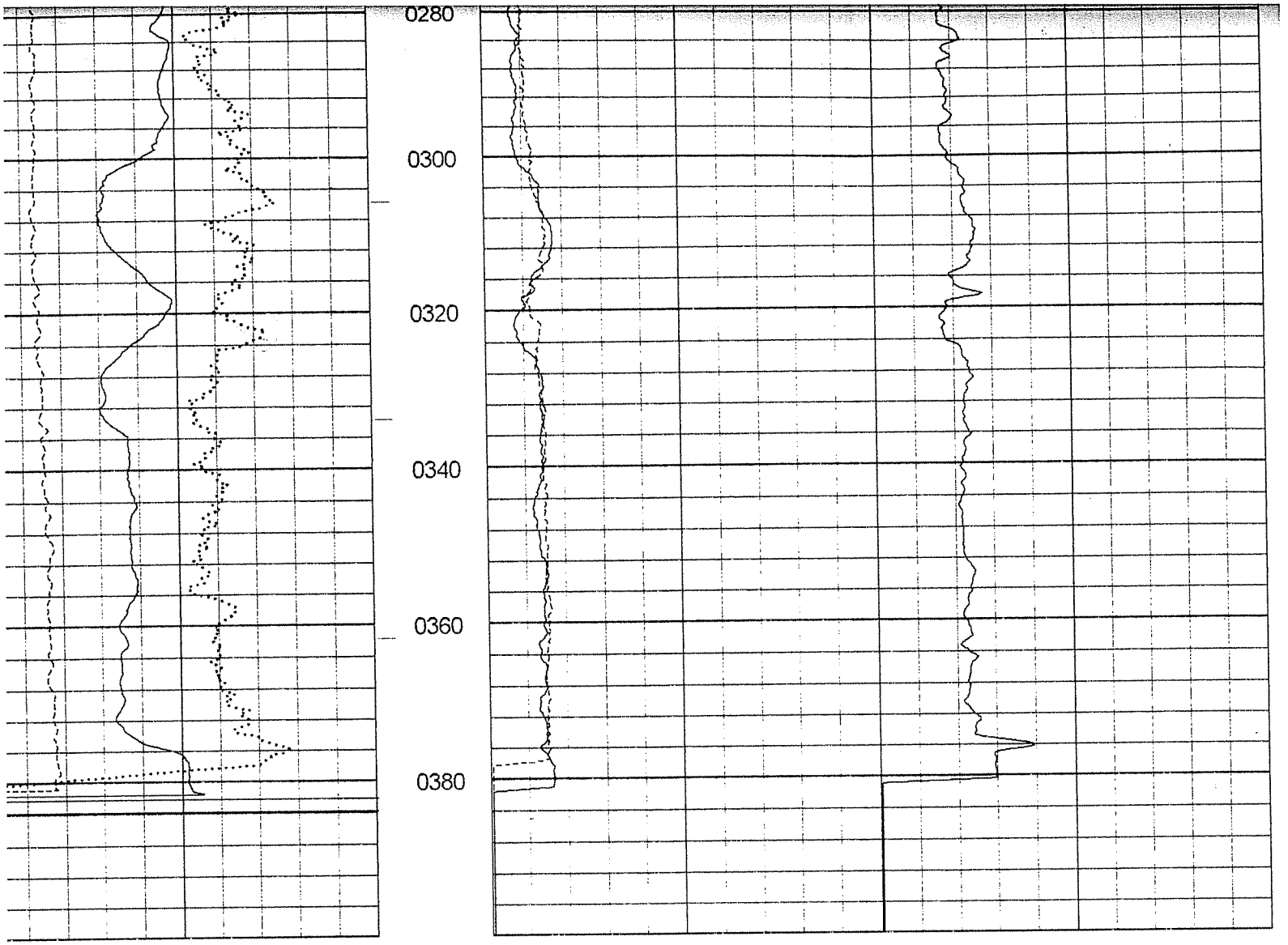
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0.00
150.00
64" OHM.M
0.00
100.00
16" OHM.M
0.00
100.00
S.PT OHM
0.00
65.00

ROBERTSON GEOLOGGING TECHNOLOGY

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Bakersfield,California 93313
(800) 445-9914
www.welenco.com

NEUTRON LOG

AVB 98-01

COMPANY	BE & K TERRANEXT
WELL	AVB 98-01
FIELD	TOLLESON
COUNTRY	U.S.
STATE	AZ
COUNTY	MARICOPA
LAT	33 26.80N
LONG	112 13.32W

OTHER SERVICES
X Y CALIPER
ELOG

Perm. Datum	G.L.	Elev	1177	KB	0.00
Log. Datum	G.L.			DF	0.00
Drill Datum	G.L			GL	1177.00

DATE	12/12/2001		0
RUN#	1	2	1
TYPE OF LOG	NEUTRON		
DEPTH DRILLER	381.00	0.00	0.00
DEPTH LOGGER	379.00	0.00	0.00
LOG DEEPEST	378.00	0.00	0.00
LOG SHALLOW	0.00	0.00	0.00
FLUID IN HOLE	BENTONITE		
SALINITY		0	
DENSITY		0	
LEVEL	FULL	0	
MAX.TEMP °C	71.00	0.00	0.00
RIG TIME	1 HR.	0	
RECORDED BY	William Smith		
WITNESSED BY	J. NAMLICK		

RUN#	BIT RECORD BIT	FROM	TO	CASING RECORD SIZE	WEIGHT	FROM	TO
1	9.88	148.00	381.00	12.75	0.00	0.00	148.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00

REMARKS (C \BILL\34983N hed)

JTN 34983

Sec
Twp
Rge

Rm 5 0 @ 75F
Rmf 3 8 @ 75F

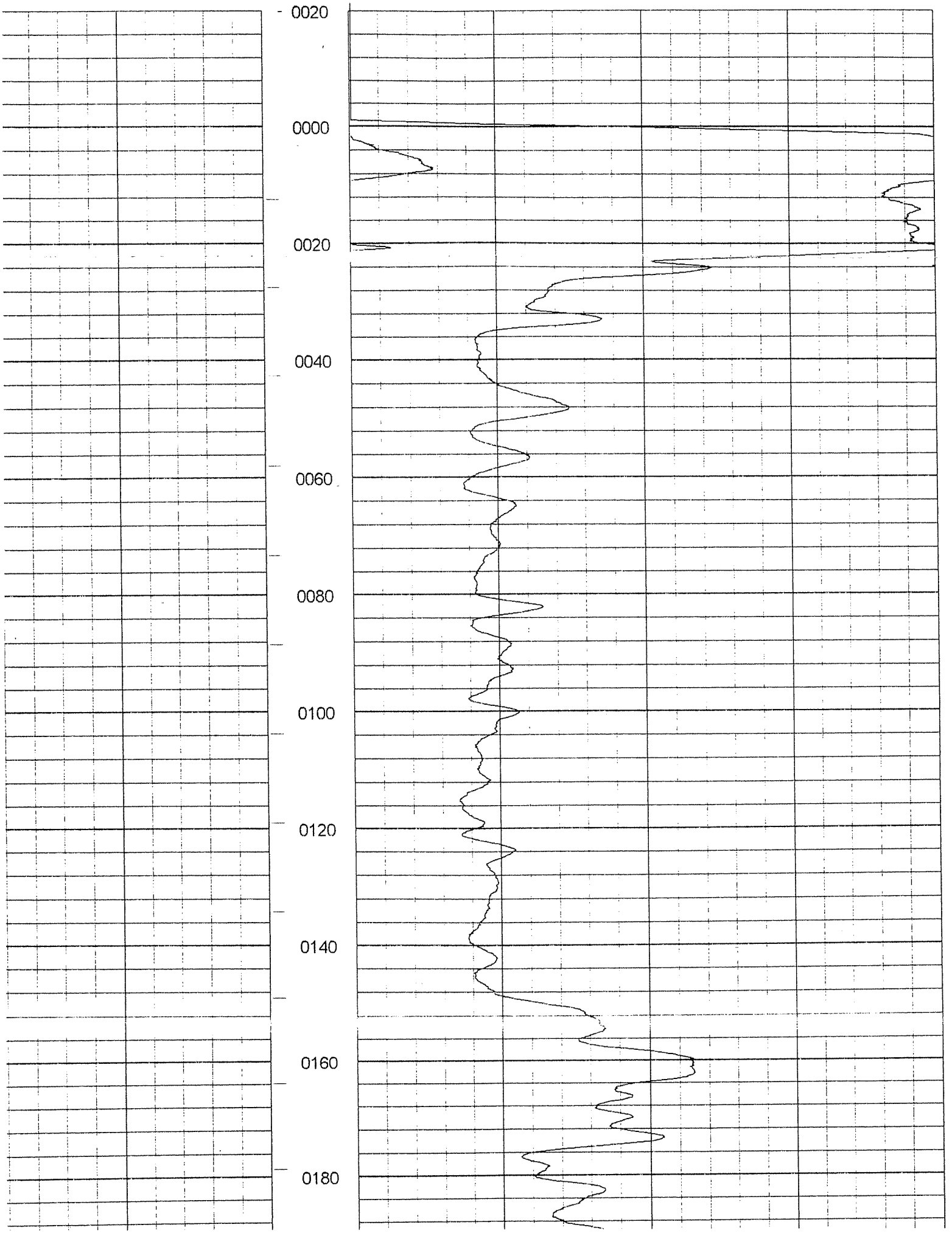
Location Corner of 75th street and Madison in Tolleson, AZ
Lat and Lon and Elev determined using a recreational GPS
Driller Stewart Brothers Drilling

Depth = - 1500 ft Time = 12 December 2001 12 23 46 Filename = "C WINLOGGER\DATA\34983N LOG"

neut api

0.00 2000.00

- 0020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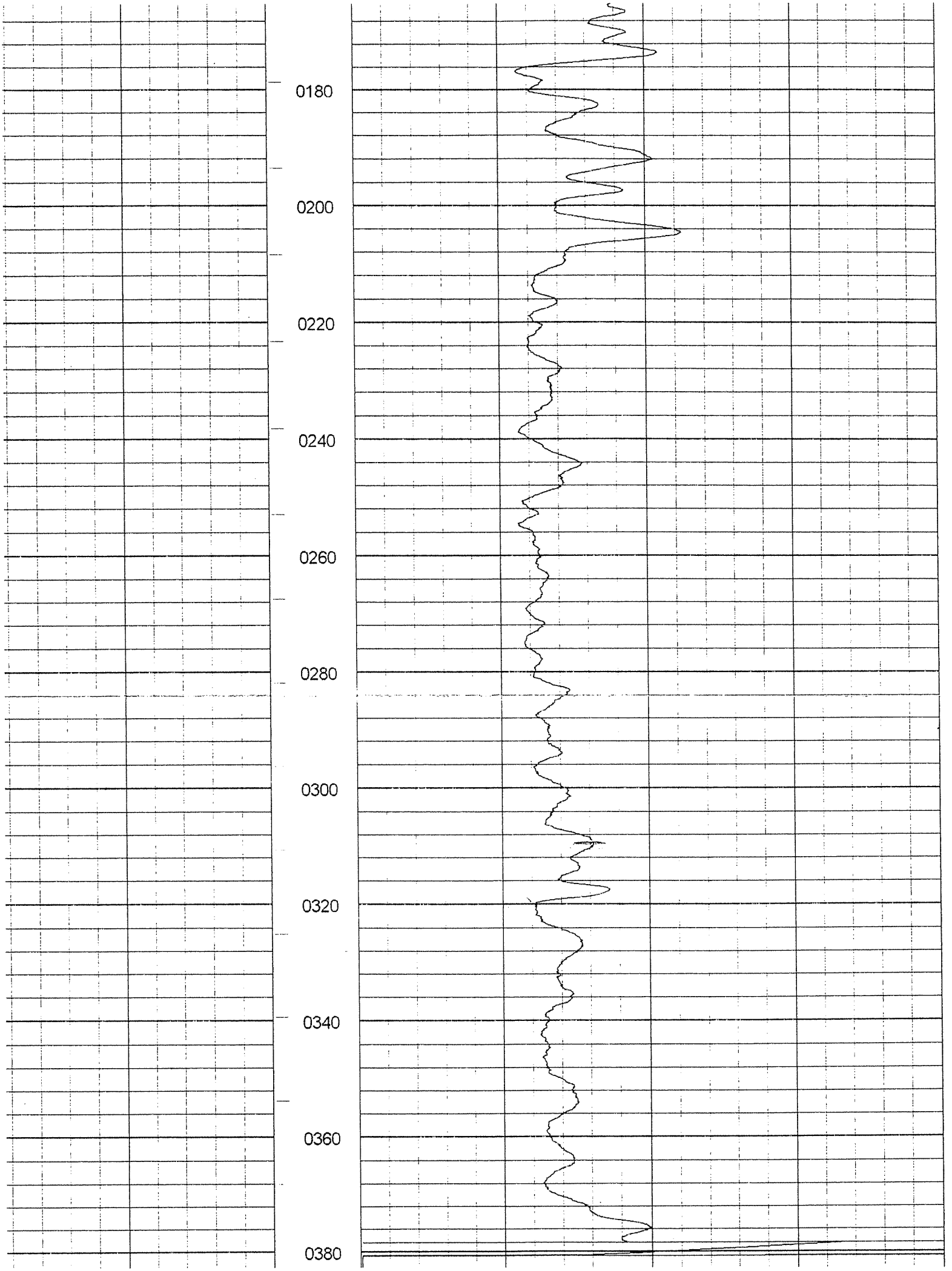
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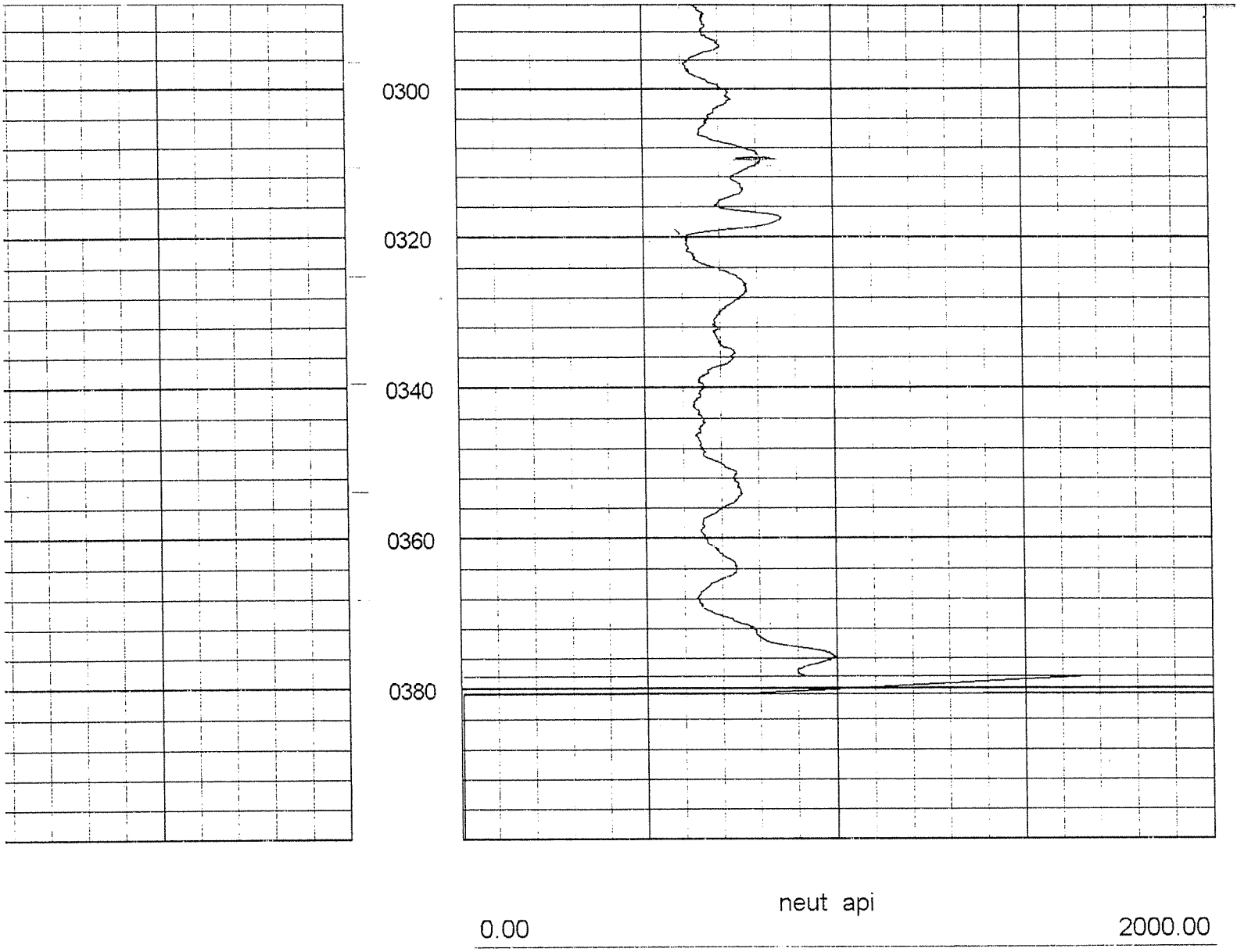
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0320
0340
0360
0380
neut api
0.00
2000.00

welenco
5201 Woodmere Drive
Bakersfield,California 93313
(800) 445-9914
www.welenco.com

ROBERTSON GEOLOGGING TECHNOLOGY

X - Y CALIPER LOG

AVB 98-01

COMPANY	BE & K TERRANEXT
WELL	AVB 98-01
FIELD	TOLLESON
COUNTRY	U.S.
STATE	AZ
COUNTY	MARICOPA
LAT.	33 26.80N
LONG.	112 13.32W

OTHER SERVICES
NEUTRON
ELOG

Perm. Datum	G.L.	Elev	1177	KB	0.00
Log. Datum	G.L.			DF	0.00
Drill Datum	G.L.			GL	1177 00

DATE	12/12/2001	0	0
RUN#	1	2	1
TYPE OF LOG	X -Y CALIPER		
DEPTH DRILLER	381.00	0.00	0.00
DEPTH LOGGER	377.00	0.00	0.00
LOG DEEPEST	376.00	0.00	0.00
LOG SHALLOW	0.00	0.00	0.00
FLUID IN HOLE	BENTONITE	0	
SALINITY			
DENSITY			
LEVEL	FULL		
MAX TEMP °C	71.00	0.00	0.00
RIG TIME	75 HR.	0	
RECORDED BY	William Smith	0	
WITNESSED BY	J. NAMLICK		

RUN#	BIT RECORD BIT	FROM	TO	CASING RECORD SIZE	WEIGHT	FROM	TO
1	9.88	148.00	381.00	12.75	0.00	0.00	148.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00

REMARKS (C \BILL\34983CAL2 hed)

JTN 34983

Sec
Twp
Rge

Rm 5 0 @ 75F
Rmf 3 8 @ 75F

Location Corner of 75th street and Madison in Tolleson, AZ
Lat and Lon and Elev determined using a recreational GPS
Driller Stewart Brothers Drilling

Depth = 0 35
00 ft Time = 12 December 2001 13 18 43 Filename = "C \WINLOGGER\DATA\34983CAL2 LOG"

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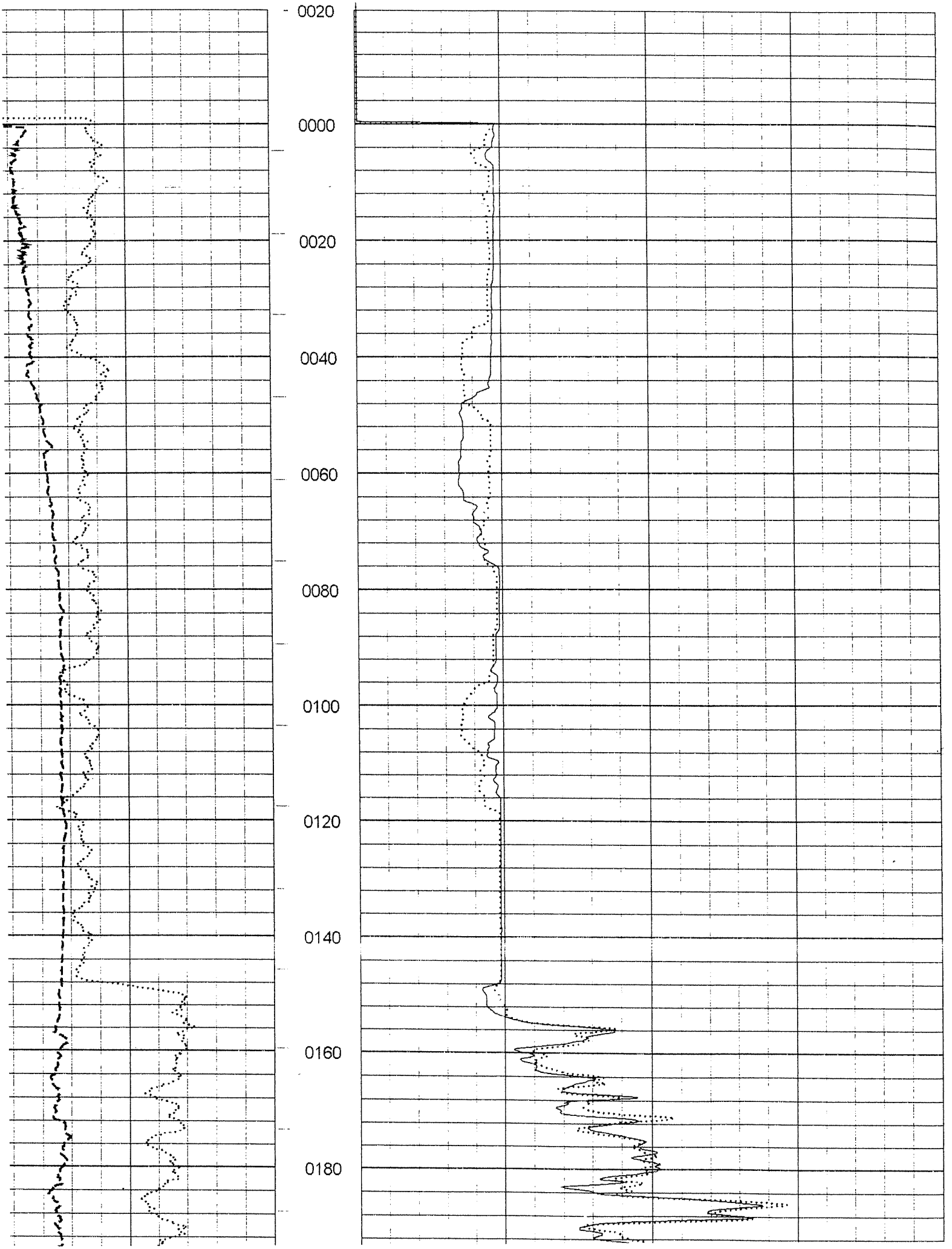
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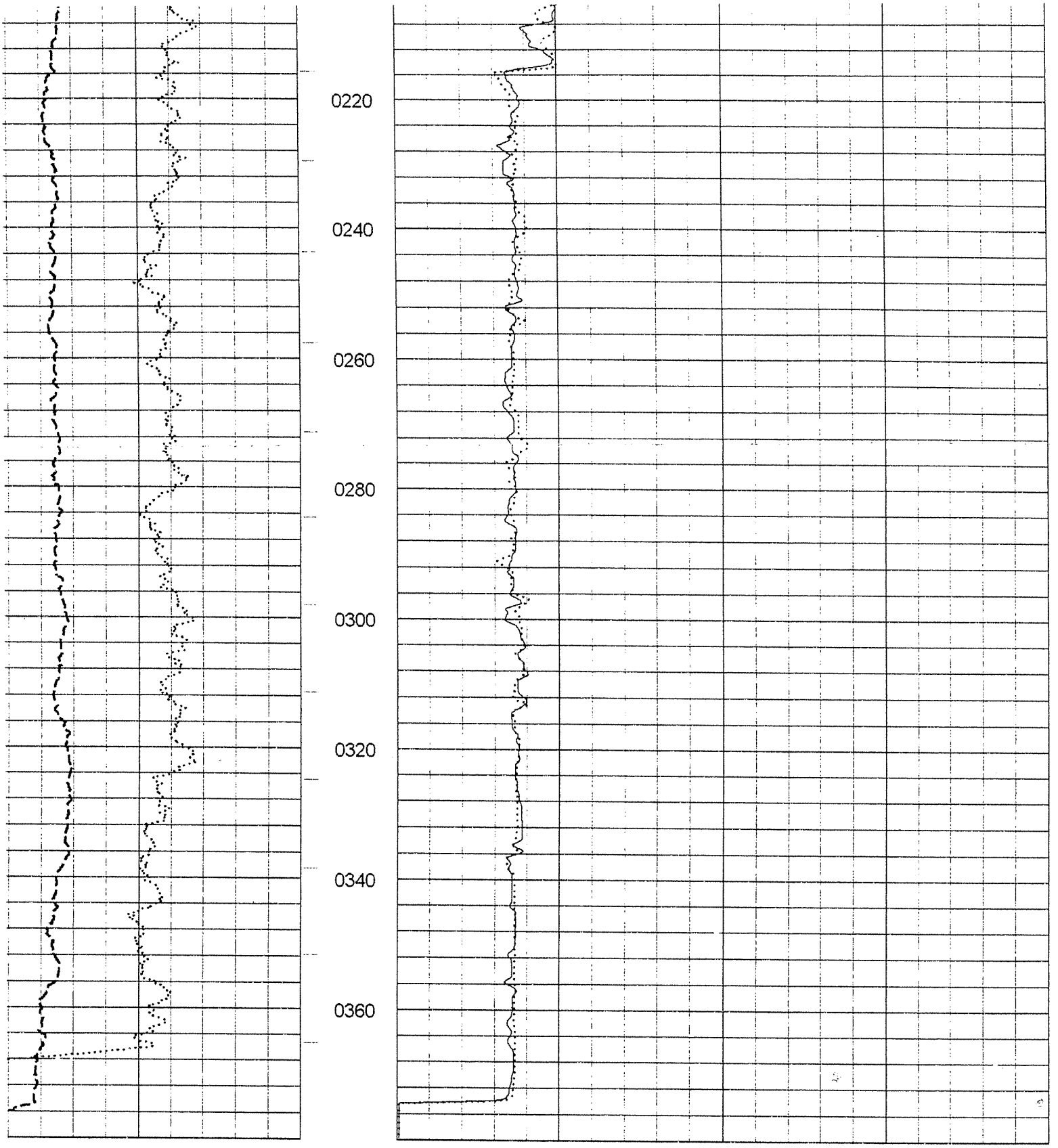


ngam api

00 150.00

incl deg

00 10.00

caly inch

6.00 26.00

calx inch

6.00 26.00

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION
2		SW	Well-graded sand, brown to reddish-brown.
4			
6			
8		SP	Poorly-graded, medium-grained sand, brown to reddish-brown.
10			
12			
14		SW	Well-graded sand, brown to reddish-brown, with fine gravel.
16			
18		SW	Well-graded sand, brown to reddish-brown, with fine gravel.
20			
22			
24		SW	Well-graded sand, brown to reddish-brown, with fine gravel.
26			
28		SC	Clayey sand, light-brown to brown, medium plasticity clay.
30			
32			
34		SC	Clayey sand, light-brown to brown, medium plasticity clay.
36			
38			
40		SC	Clayey sand, light-brown to brown, medium plasticity clay.
42			
44		SW	Gravelly sand, reddish-brown to brown.
46			
48		SW	Gravelly sand, brown to reddish-brown.
50			
52			
54		SW	Gravelly sand, brown to reddish-brown.
56			
58			

PROJ.#: WVBA	DRILL DATE: 1/29-2/7/01
LOGGED BY: Chris Robertson	
PROJECT MANAGER: Rich Petrus	
NOTES: N/A	
DEPTH TO WATER: 87.56'	
RIG TYPE: Rotary	DIAMETER: 9 7/8"
DRILLER: Stewart Bros.	TOTAL DEPTH: 380'
DRILLING METHOD: Mud Rotary	

BE&K TerraNext

FIELD BOREHOLE LOG
AVB81-01
7200 West Sherman Street
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION
60		SW	Sand with minor clay, gray-brown, well-graded, moist.
62			
64		GW	Sandy gravel, brown to dark-brown.
66			
68		GW	Sandy gravel, dark-red to dark-brown.
70			
72			
74			
76			
78			
80		SW	Gravelly sand, brown to reddish-brown.
82		GW	Sandy gravel, brown to reddish brown.
84			
86		GW	Gravel/cobbles with sand, brown to reddish brown.
88			
90			
92			
94		GW	Gravel/cobbles with sand, brown to reddish brown.
96			
98		GP	Gravel with coarse-grained sand, reddish-brown, gravel angular.
100			
102			
104		GP	Gravel with coarse-grained sand, reddish-brown, gravel angular.
106			
108			
110		GP	Gravel with coarse-grained sand, reddish-brown, gravel angular.
112			
114		GP	Gravel with coarse-grained sand, reddish-brown, gravel angular.
116			

PROJ.#: WVBA	DRILL DATE: 1/29-2/7/01
LOGGED BY: Chris Robertson	
PROJECT MANAGER: Rich Petrus	
NOTES: N/A	
DEPTH TO WATER: 87.56'	
RIG TYPE: Rotary	DIAMETER: 9 7/8"
DRILLER: Stewart Bros.	TOTAL DEPTH: 380'
DRILLING METHOD: Mud Rotary	

BE&K TerraNext

FIELD BOREHOLE LOG
AVB81-01
7200 West Sherman Street
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION
118			
		GP	Gravel with coarse-grained sand, reddish-brown, gravel angular.
120			
122			
124			
		GP	Gravel with coarse-grained sand, reddish-brown, gravel angular.
126			
128			
130			
		GP	Gravel, angular.
132			
134			
		GP	Gravel with clayey sand, brown to reddish-brown.
136			
138			
140			
		SC	Clayey sand, well-sorted, brown.
142			
144			
		SC	Clayey sand, well-sorted, brown.
146			
148			
150			
		SC	Clayey sand, well-sorted, brown.
152			
154			
		SC	Clayey sand with gravel, well-sorted, brown.
156			
158			
160			
		SC	Clayey sand with gravel, brown to reddish-brown.
162			
164			
166			
		SW	Poorly-sorted clayey sand with gravel, brown to reddish-brown.
168			
170			
		GW	Gravel with clayey sand, brown to reddish-brown.
172			
174			
		GW	Gravel with clayey sand, brown to reddish-brown.

PROJ.#: WVBA	DRILL DATE: 1/29-2/7/01
LOGGED BY: Chris Robertson	
PROJECT MANAGER: Rich Petrus	
NOTES: N/A	
DEPTH TO WATER: 87.56'	
RIG TYPE: Rotary	DIAMETER: 9 7/8"
DRILLER: Stewart Bros.	TOTAL DEPTH: 380'
DRILLING METHOD: Mud Rotary	

BEAK/TerraNext

FIELD BOREHOLE LOG
AVB81-01
7200 West Sherman Street
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION
176		GP	Gravel with coarse sand, brown to reddish-brown.
178			
180			
182			
184		SC	Clayey sand, brown to reddish-brown.
186			
188			
190		SC	Clayey sand, brown.
192			
194		SC	Clayey sand, brown.
196			
198			
200		SC	Clayey sand, brown.
202			
204		CL	Sandy clay, brown to reddish-brown, medium plasticity, ~35% fine to medium-grained sand.
206			
208			
210		CL	Sandy clay, brown to reddish-brown, medium plasticity, ~30% medium-grained sand.
212			
214		CL	Sandy clay, brown to reddish-brown, medium plasticity, ~30% fine to medium-grained sand.
216			
218			
220		CL	Sandy clay, brown to reddish-brown, medium plasticity.
222			
224		CL	Sandy clay, brown to reddish-brown, medium to low-plasticity, ~40% fine to medium-grained sand.
226			
228			
230		CL	Clay with sand, brown to reddish-brown, low plasticity, ~20% fine to medium-grained sand.
232			

PROJ.#: WVBA	DRILL DATE: 1/29-2/7/01
LOGGED BY: Chris Robertson	
PROJECT MANAGER: Rich Petrus	
NOTES: N/A	
DEPTH TO WATER: 87.56'	
RIG TYPE: Rotary	DIAMETER: 9 7/8"
DRILLER: Stewart Bros.	TOTAL DEPTH: 380'
DRILLING METHOD: Mud Rotary	

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB81-01
7200 West Sherman Street
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION
232			
234		CL	Clay with sand, brown to reddish-brown, medium to low-plasticity, ~20% fine to medium-grained sand.
236			
238			
240		CL	Clay with sand, brown to reddish-brown, low to medium-plasticity, ~20% fine to medium-grained sand.
242			
244		CL	Clay with sand/sandy clay, brown to reddish-brown, medium plasticity, ~30% medium-grained sand.
246			
248			
250			
252			
254			
256			
258			
260		SC	Clayey sand, brown to reddish-brown, ~80% fine to medium-grained sand.
262			
264			
266		SP	Sand with <5% gravel and trace fines, brown to reddish-brown, well-graded, ~30% medium-grained sand.
268			
270		CL	Sandy clay, brown to reddish-brown, medium plasticity.
272			
274			
276			
278			
280		CL	Sandy clay, medium brown, medium plasticity, ~15% fine to medium-grained sand.
282			
284		CL	Sandy clay, medium brown, medium plasticity, ~10-20% fine to medium-grained sand.
286			
288			

PROJ.#: WVBA	DRILL DATE: 1/29-2/7/01
LOGGED BY: Chris Robertson	
PROJECT MANAGER: Rich Petrus	
NOTES: N/A	
DEPTH TO WATER: 87.56'	
RIG TYPE: Rotary	DIAMETER: 9 7/8"
DRILLER: Stewart Bros.	TOTAL DEPTH: 380'
DRILLING METHOD: Mud Rotary	

BE&K TerraNext

FIELD BOREHOLE LOG
AVB81-01
7200 West Sherman Street
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION
290		CL	Clay with sand, medium brown, medium to low-plasticity, ~10-20% medium-grained sand.
292			
294			
296			
298			
300		CL	Clay with sand, medium brown, ~20% fine to medium-grained sand.
302			
304		CL	Clay with sand, medium brown.
306			
308			
310		SC	Clayey sand, brown to reddish-brown, ~60% medium-grained sand.
312			
314		SC	Clayey sand, brown to reddish-brown, ~80% medium-grained sand.
316			
318			
320			
322			
324		CL	Sandy clay, medium brown, medium to low-plasticity.
326			
328			
330			
332			
334		CL	Sandy clay, medium brown, medium plasticity, ~10-20% fine to medium-grained sand.
336			
338			
340		CL	Sandy clay, medium brown, medium plasticity, ~15% fine to medium-grained sand.
342			
344		CL	Sandy clay, medium brown, medium plasticity, ~5-10% fine to medium-grained sand.
346			

PROJ.#: WVBA	DRILL DATE: 1/29-2/7/01
LOGGED BY: Chris Robertson	
PROJECT MANAGER: Rich Petrus	
NOTES: N/A	
DEPTH TO WATER: 87.56'	
RIG TYPE: Rotary	DIAMETER: 9 7/8"
DRILLER: Stewart Bros.	TOTAL DEPTH: 380'
DRILLING METHOD: Mud Rotary	

BE&K/TerraNext

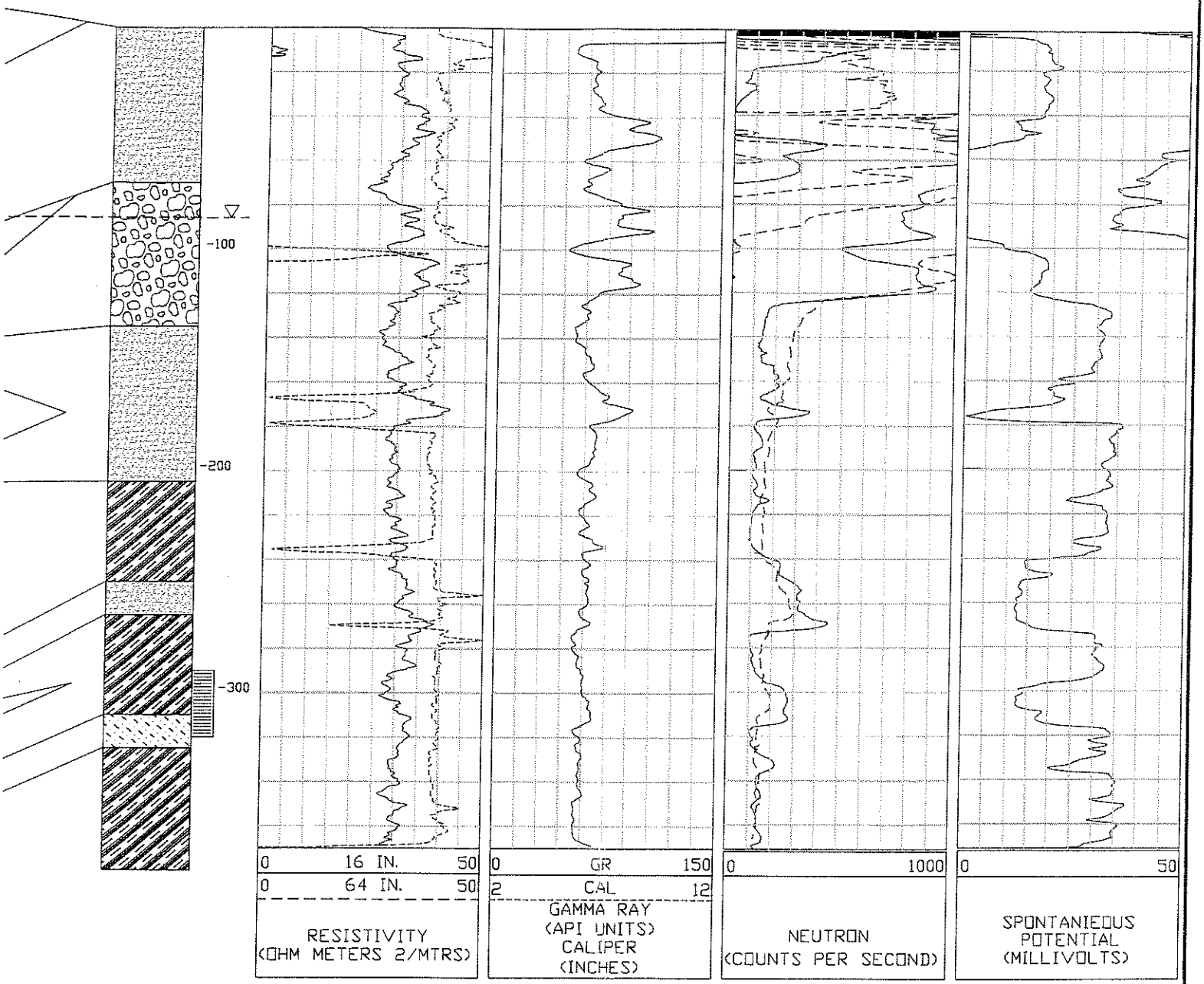
FIELD BOREHOLE LOG
AVB81-01
7200 West Sherman Street
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION
348			
350		CL	Clay with sand, medium brown, medium to low-plasticity, ~15-20% medium-grained sand.
352			
354		CL	Clay with sand, medium brown, medium plasticity, ~10-15% medium-grained sand.
356			
358			
360		CL	Clay with sand, medium brown, medium plasticity, ~5-10% medium-grained sand.
362			
364		CL	Clay with sand, medium brown, medium plasticity, ~5-10% medium-grained sand.
366			
368			
370		CL	Clay with sand, medium brown, medium plasticity, ~5-10% fine to medium-grained sand.
372			
374		CL	Clay with sand, medium brown, low plasticity, ~10% fine to medium-grained sand.
376			
378			
380			Total drilling depth 380' bgs.
382			
384			
386			
388			
390			
400			
402			
404			
406			
408			
410			
412			

PROJ.#: WVBA	DRILL DATE: 1/29-2/7/01
LOGGED BY: Chris Robertson	
PROJECT MANAGER: Rich Petrus	
NOTES: N/A	
DEPTH TO WATER: 87.56'	
RIG TYPE: Rotary	DIAMETER: 9 7/8"
DRILLER: Stewart Bros.	TOTAL DEPTH: 380'
DRILLING METHOD: Mud Rotary	

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB81-01
7200 West Sherman Street
PHOENIX, ARIZONA



J. #: 03103102-09	DATE: 05/17/2001	BEak/TerraNext	FIGURE 2 SITE CROSS SECTION WITH GENERAL GEOLOGICAL AND GEOPHYSICAL LOGS WEST VAN BUREN WQARF REGISTRY PHOENIX, ARIZONA
WN BY: MPR	SCALE: NA		
IGNED BY: MPR			
ROVED BY: AJG			

DEPTH (feet)	WELL CONSTRUCTION	CHEMICAL ANALYSES LABORATORY (mg/kg)	FLD vapor PID (ppm)	BLOWS/FOOT	SAMPLE INTERVAL	SAMPLE NUMBER	U.S.C.S. DESIGNATION	SOIL DESCRIPTION
0							CL	**Silty CLAY**, brown (7.5YR 5/4), firm to stiff, with some sand, moist.
5	10-inch diameter surface conductor casing to 20 feet							
10								
15							CL	**CLAY**, brown (7.5YR 5/4), stiff to hard, dry.
20								
25							CL	**Sandy CLAY**, brown (7.5YR 5/4), very stiff to hard, with occasional layers of moderate calcareous cementation and trace gravel.
30	4-inch diameter steel casing							
35								
40								
45								
50							SC	**Clayey Gravelly SAND**, red-brown (5YR 4/4), dense, with occasional cobbles, dry.
55							GW	**SAND, GRAVEL and COBBLES**, dark red-brown (2.5YR 2.5/4), well graded, grains rounded to very angular. Material is primarily igneous and metamorphic in origin.
60	Neat cement/bentonite grout							
65								
70								
75	Static ground water level						GW	**SAND, GRAVEL, COBBLES and BOULDERS**, dark red-brown (2.5YR 2.5/4), well-graded, grains rounded to very angular. Material is primarily igneous and metamorphic in origin. Significant caving of borehole and loss of drill fluid observed between 80 feet and 100 feet.
80								
85	Benseal/EZ Mud Grout							
90								
95								
100								

DRAFT

File #:	1015-02	Ground surface elevation (feet):	1035.2	Drilling method:	Mud Rotary
Logged by:	Steve Smelser	Total depth (feet):	850.0	Screen slot size:	0.125"
Date drilled:	11-19-91	Diameter of boring:	10"	Casing diameter:	4"

KLEINFELDER

PROJECT NUMBER 52-1015-02(IRA)

Arizona Department of Environmental Quality
West Van Buren Area
Phoenix, Arizona

LOG OF BORING MW-2

PLATE B-1

AVB10-02

DEPTH (feet)	WELL CONSTRUCTION	CHEMICAL ANALYSES LABORATORY (mg/kg)	FLD vapor PID (ppm)	BLOWS/FOOT	SAMPLE INTERVAL	SAMPLE NUMBER	U.S.C.S. DESIGNATION	SOIL DESCRIPTION
100								
105	4-inch diameter steel casing						GW	**SAND, GRAVEL, COBBLES and BOULDERS**, dark red-brown (2.5YR 2.5/4), well-graded, grains rounded to very angular.
110								
115								
120								
125								
130							CL	**CLAY**, brown (7.5YR 5/4), very stiff to hard, with some sand (fine to medium grained).
135								
140								
145								
150							CL	**CLAY**, brown (7.5YR 5/4), very stiff, with some sand and occasional gravel and cobbles.
155	Benseal/EZ Mud Grout						GW	**SAND, GRAVEL, COBBLES and BOULDERS**, dark red-brown (2.5YR 2.5/4), very dense. Slight caving and drilling fluid loss observed.
160								
165								
170								
175								
180								
185								
190								
195								
200	4-inch diameter steel casing							
205								
210								

DRAFT

KLEINFELDER

PROJECT NUMBER 52-1015-02(IRA)

Arizona Department of Environmental Quality
West Van Buren Area
Phoenix, Arizona

LOG OF BORING MW-2 (CONT.)

PLATE B-2

DEPTH (feet)	WELL CONSTRUCTION	CHEMICAL ANALYSES LABORATORY (mg/kg)	FLD vapor PID (ppm)	BLOWS/FOOT	SAMPLE INTERVAL	SAMPLE NUMBER	U.S.C.S. DESIGNATION	SOIL DESCRIPTION
215	Benseal/EZ Mud Grout							**SAND, GRAVEL, COBBLES and BOULDERS**, dark red-brown (2.5YR 2.5/4), very dense. Slight caving and drilling fluid loss observed.
220								
225	4-inch diameter steel casing						CL	**CLAY**, brown (7.5YR 5/4), hard, with some sand and isolated gravel and cobbles. Discontinuous thin layers of moderate to strong calcareous cementation.
230								
235								
240	Sand pack #10-20 Colorado Silica sand							
245								
250							GW	**SAND, GRAVEL, COBBLES and BOULDERS**, dark red-brown (2.5YR 3.5/4), very dense, with some clay.
255	Filter pack Tachna #8							
260								
265								
270								
275								
280							SP	**SAND** (coarse), red-brown (5YR 4/4), very dense, with occasional gravel and cobbles.
285								
290	4-inch diameter steel well screen (12 slots/foot)						SC	**Clayey Gravelly SAND**, brown (7.5YR 5/4), dense, clay content increases with depth.
295								
300								
305								
310								
315								
320								

DRAFT

KLEINFELDER

PROJECT NUMBER 52-1015-02(IRA)

Arizona Department of Environmental Quality
West Van Buren Area
Phoenix, Arizona

LOG OF BORING MW-2 (CONT.)

PLATE B-3

DEPTH (feet)	WELL CONSTRUCTION	CHEMICAL ANALYSES LABORATORY (mg/kg)	FLD vapor PID (ppm)	BLOWS/FOOT	SAMPLE INTERVAL	SAMPLE NUMBER	U.S.C.S. DESIGNATION	SOIL DESCRIPTION
325	Filter pack Tachna #8							
330							CL	**Sandy Gravelly CLAY**, brown (7.5YR 5/4), hard.
335	Neat cement/bentonite grout							
340								
345								
350								
355								
360							CL	**CLAY**, brown (7.5YR 5/4), hard.
365								
370								
375								
380							CL	**CLAY**, brown (7.5YR 5/4), hard, with some sand and fine gravel.
385								
390								
395	Benseal/EZ Mud Grout							
400								
405								
410								
415								
420								
425								
430								

DRAFT

KLEINFELDER

PROJECT NUMBER 52-1015-02(IRA)

Arizona Department of Environmental Quality
West Van Buren Area
Phoenix, Arizona

LOG OF BORING
MW-2 (CONT.)

PLATE
B-4

DEPTH (feet)	WELL CONSTRUCTION	CHEMICAL ANALYSES LABORATORY (mg/kg)	FLD vapor PID (ppm)	BLOWS/FOOT	SAMPLE INTERVAL	SAMPLE NUMBER	U.S.C.S. DESIGNATION	SOIL DESCRIPTION
435							CL	**CLAY**, brown (7.5YR 5/4), hard, with some sand and fine gravel.
440								
445								
450								
455	Benseal/EZ Mud Grout							
460								
465								
470							CL	**CLAY**, brown (7.5YR 5/4), hard, with trace sand.
475								
480								
485								
490								
495								
500								
505							CL	**Sandy CLAY**, brown (7.5YR 5/4), hard, with some gravel. Isolated cobbles observed between 520 feet and 525 feet.
510								
515	Benseal/EZ Mud Grout							
520								
525								
530								
535								
540								

DRAFT

KLEINFELDER

PROJECT NUMBER 52-1015-02(IRA)

Arizona Department of Environmental Quality
West Van Buren Area
Phoenix, Arizona

LOG OF BORING
MW-2 (CONT.)

PLATE B-5

DEPTH (feet)	WELL CONSTRUCTION	CHEMICAL ANALYSES LABORATORY (mg/kg)	FLD vapor PID (ppm)	BLOWS/FOOT	SAMPLE INTERVAL	SAMPLE NUMBER	U.S.C.S. DESIGNATION	SOIL DESCRIPTION
545							CL	**CLAY**, brown (7.5YR 5/4), hard, with trace clay and fine gravel.
550								
555								
560								
565	Benseal/EZ Mud Grout							
570								
575								
580								
585								
590								
595								
600							CL	**CLAY**, brown (7.5YR 5/4), hard, with trace clay and fine gravel.
605								
610								
615								
620								
625	Benseal/EZ Mud Grout							
630								
635								
640							SP	**SAND** (fine to medium grained), brown (7.5YR 5/4), dense.
645								
650								

DRAFT

KLEINFELDER

PROJECT NUMBER 52-1015-02(IRA)

Arizona Department of Environmental Quality
West Van Buren Area
Phoenix, Arizona

LOG OF BORING MW-2 (CONT.)

PLATE B-6

DEPTH (feet)	WELL CONSTRUCTION	CHEMICAL ANALYSES LABORATORY (mg/kg)	FLD vapor PID (ppm)	BLOWS/FOOT	SAMPLE INTERVAL	SAMPLE NUMBER	U.S.C.S. DESIGNATION	SOIL DESCRIPTION
655							CL	**Sandy CLAY**, brown (7.5YR 5/4), very stiff to hard, with some fine gravel.
660								
665								
670								
675	Benseal/EZ Mud Grout							
680								
685								
690								
695								
700								
705								
710							CL	**Clay**, brown (7.5YR 5/4), hard, with trace sand.
715								
720								
725								
730	Benseal/EZ Mud Grout							
735								
740								
745								
750								
755								
760								

DRAFT

KLEINFELDER

PROJECT NUMBER 52-1015-02(IRA)

Arizona Department of Environmental Quality
West Van Buren Area
Phoenix, Arizona

LOG OF BORING
MW-2 (CONT.)

PLATE
B-7

DEPTH (feet)	WELL CONSTRUCTION	CHEMICAL ANALYSES LABORATORY (mg/kg)	FLD vapor PID (ppm)	BLOWS/FOOT	SAMPLE INTERVAL	SAMPLE NUMBER	U.S.C.S. DESIGNATION	SOIL DESCRIPTION
765							CL	**CLAY**, brown (7.5YR 5/4), hard, with trace sand.
770								
775	Benseal/EZ Mud Grout							
780							CL	**CLAY**, brown (7.5YR 5/4), hard, with weak to moderate calcareous cementation.
785								
790								
795								
800								
805								
810								
815								
820							CL	**CLAY**, brown (7.5YR 5/4), hard, with weak to moderate calcareous cementation.
825								
830	Benseal/EZ Mud Grout							
835								
840								
845								
850								Boring terminated at 850 feet.
855								
860								
865								
870								

DRAFT

KLEINFELDER

PROJECT NUMBER 52-1015-02(IRA)

Arizona Department of Environmental Quality
West Van Buren Area
Phoenix, Arizona

LOG OF BORING
MW-2 (CONT.)

PLATE
B-8

welenco

CALIPER

FILING NO.

COMPANY KLEINFELDER, INC.
WELL MW-2 AVB10-02
FIELD WEST VAN BUREN
COUNTY MARICOPA STATE ARIZONA

LOCATION:

SEC TWP RGE

OTHER SERV:

E-LOG

PERMANENT DATUM: G.L. ELEV:

LOG MEASURED FROM G.L., 0 FT ABOVE PERM DATUM
DRILLING MEASURED FROM G.L.

ELEVATION:
KB.
DF.
GL.

DATE	11/20/91	
TYPE OF LOG	CALIPER	
RUN NO.	ONE	
DEPTH - DRILLER	850'	
DEPTH - LOGGER	843'	
BOTTOM LOGGED INT	842'	
TOP LOGGED INT	0'	
TYPE FLUID IN HOLE	BENTONITE	
DENSITY		
LEVEL		
MAX TEMP DEG F	N/A	
OPERATING RIG TIME		
OPERATOR	D. JACOVITCH	
WITNESSED BY	S. SMELSER	

RUN NO.	BORE HOLE RECORD BIT	FROM	TO	CASING RECORD SIZE	WGT.	FROM	TO
1	9 7/8"	20'	850'	10 INCH		0'	20'

Run No.	ONE	ONE
Log Type	CALIPER	
Speed Ft./Min.	40	
T.C.Sec.	1	
Sens. Settings		
Zero Div. L or R		
API Units/Div.		
Log Start Time		
Log End Time		
Pumping Rate		
Fluid Level		
Formation Factor		

Run No.	ONE	
Tool Model No.		
Diameter		
Detector Model No.		
Type		
Length		

General

Hoist Truck No.	L05	
Instrument, Truck No.	L05	
Tool Serial No.		

Remarks:

Fold Here

CALIPER
HOLE DIAMETER IN INCHES

DEPTHS	
	0

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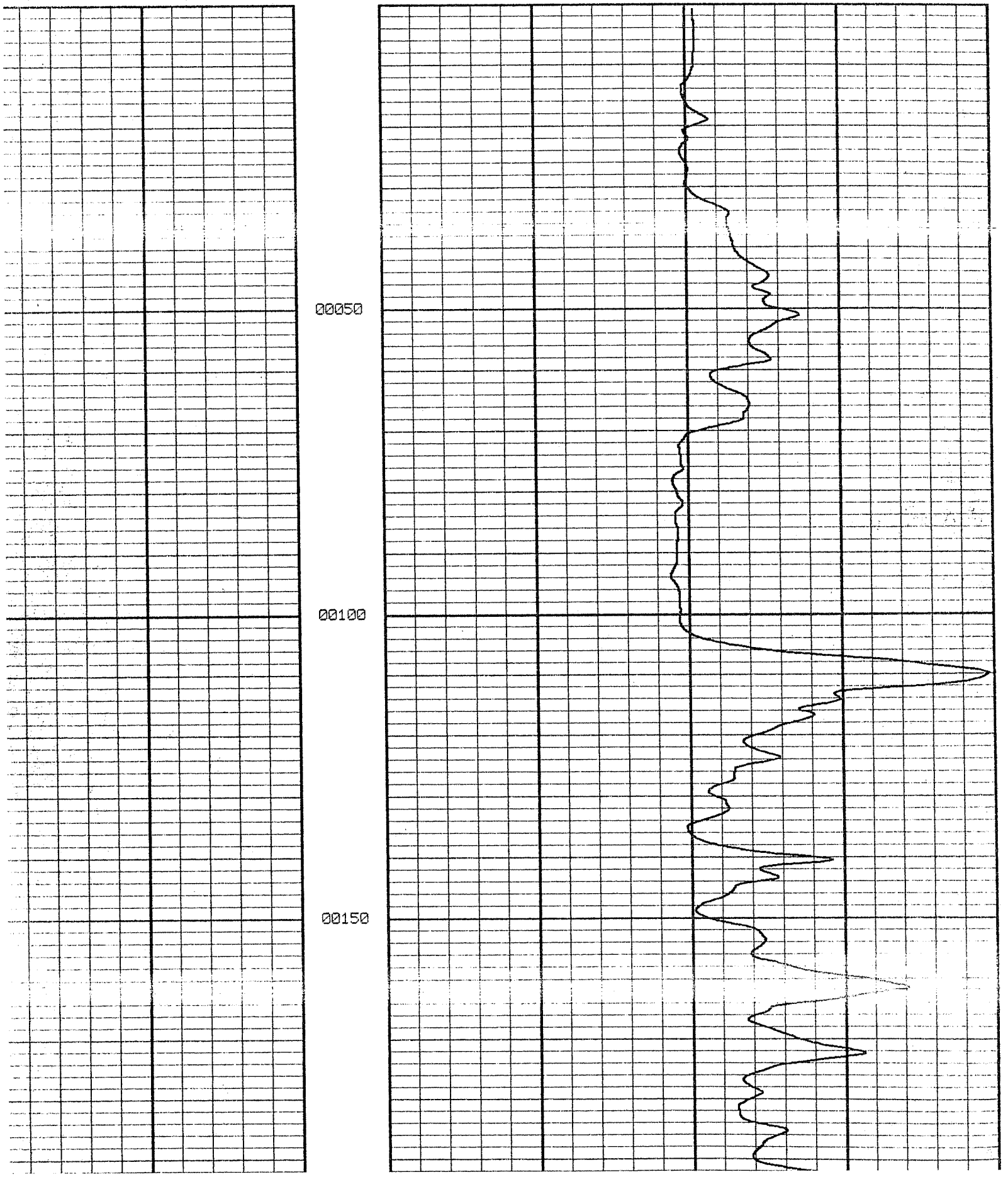
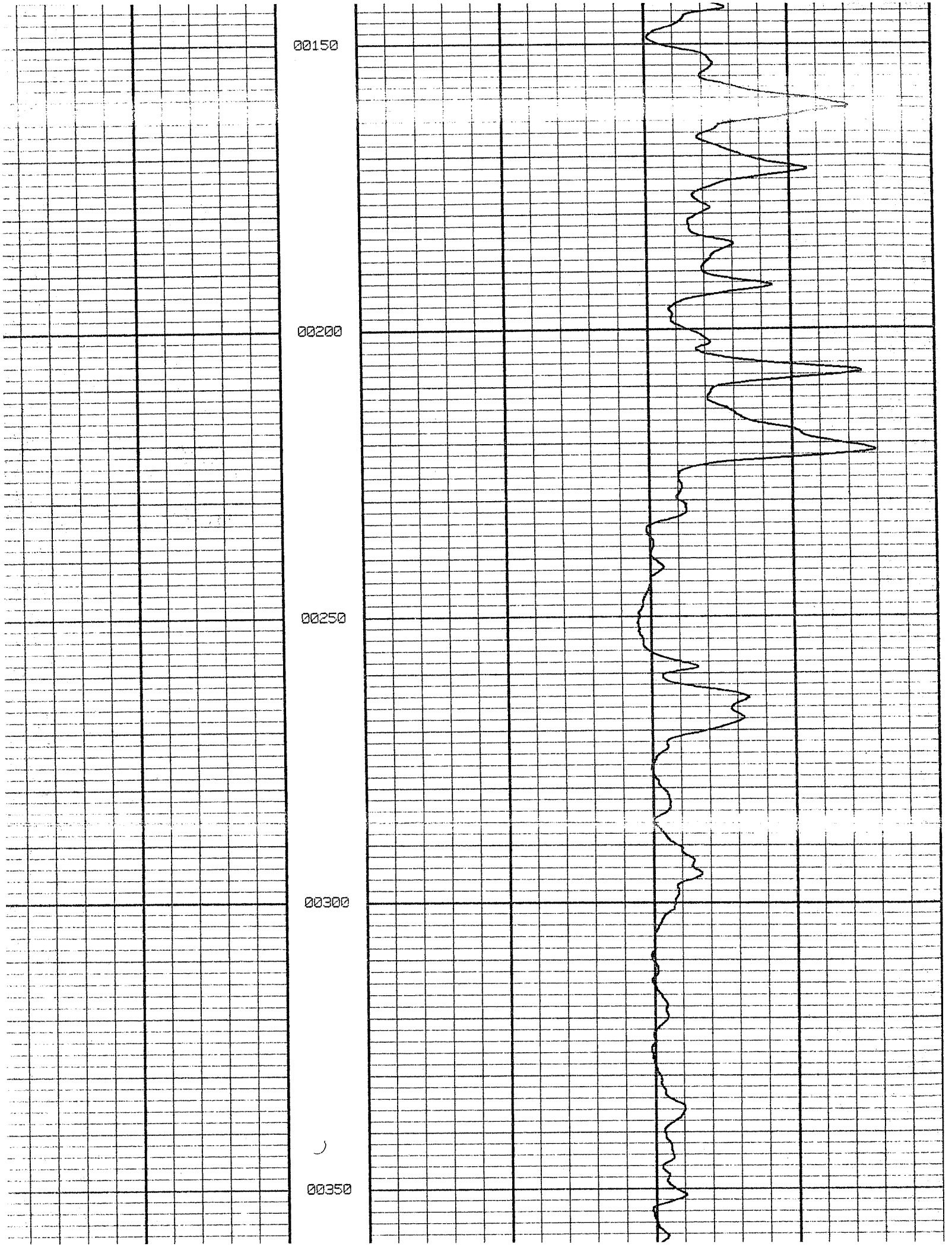
	DEPTHS	CALIPER HOLE DIAMETER IN INCHES
		0 20

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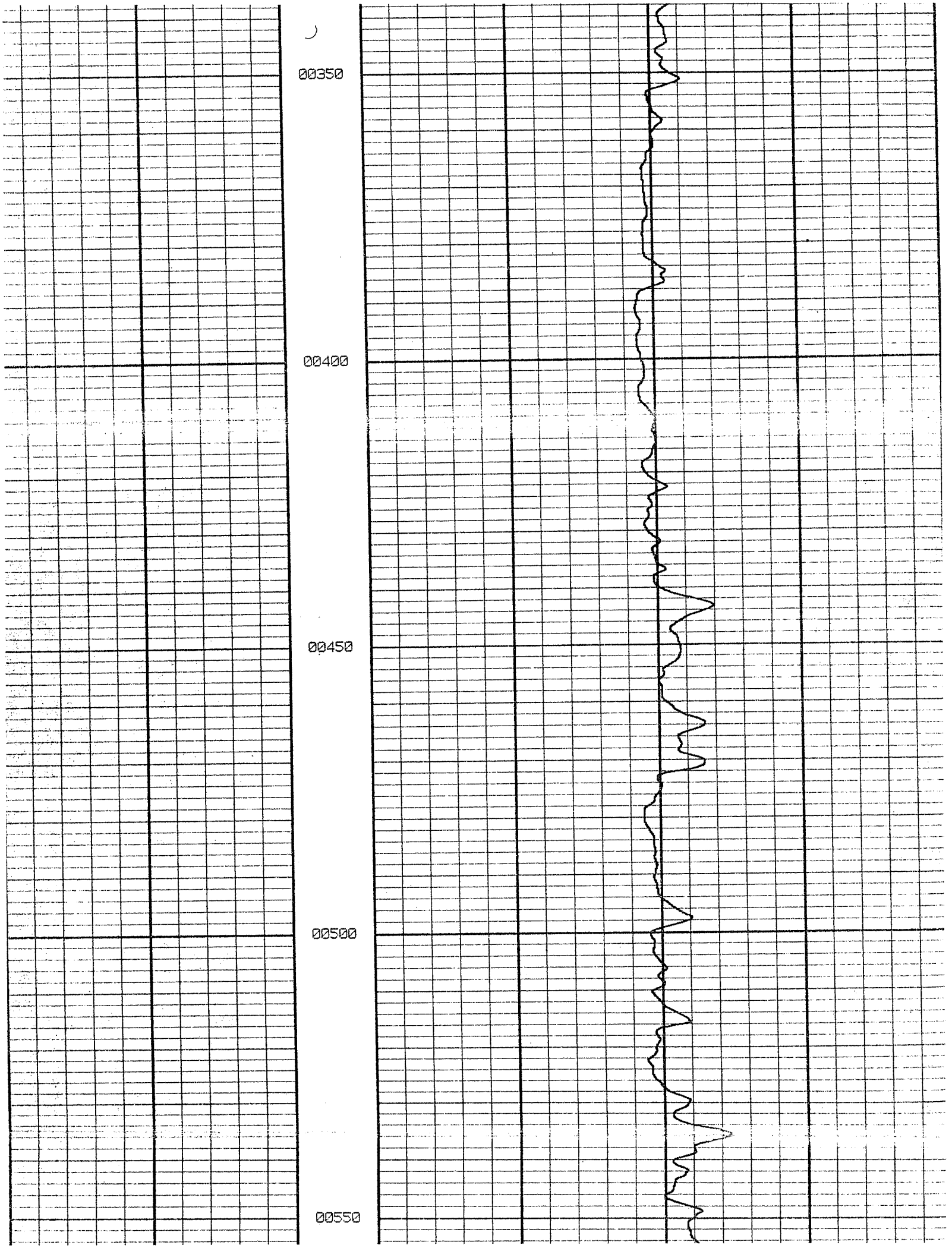
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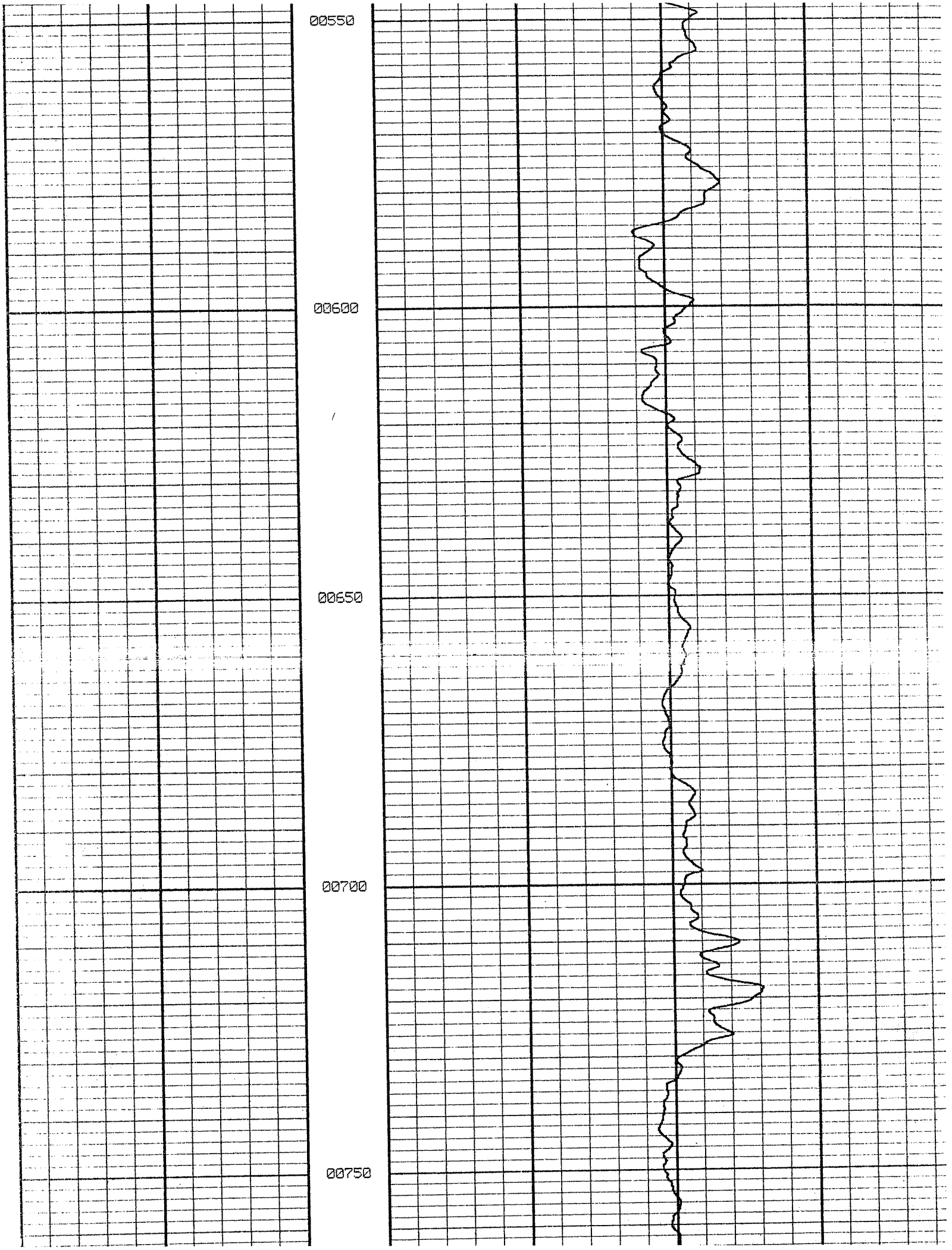
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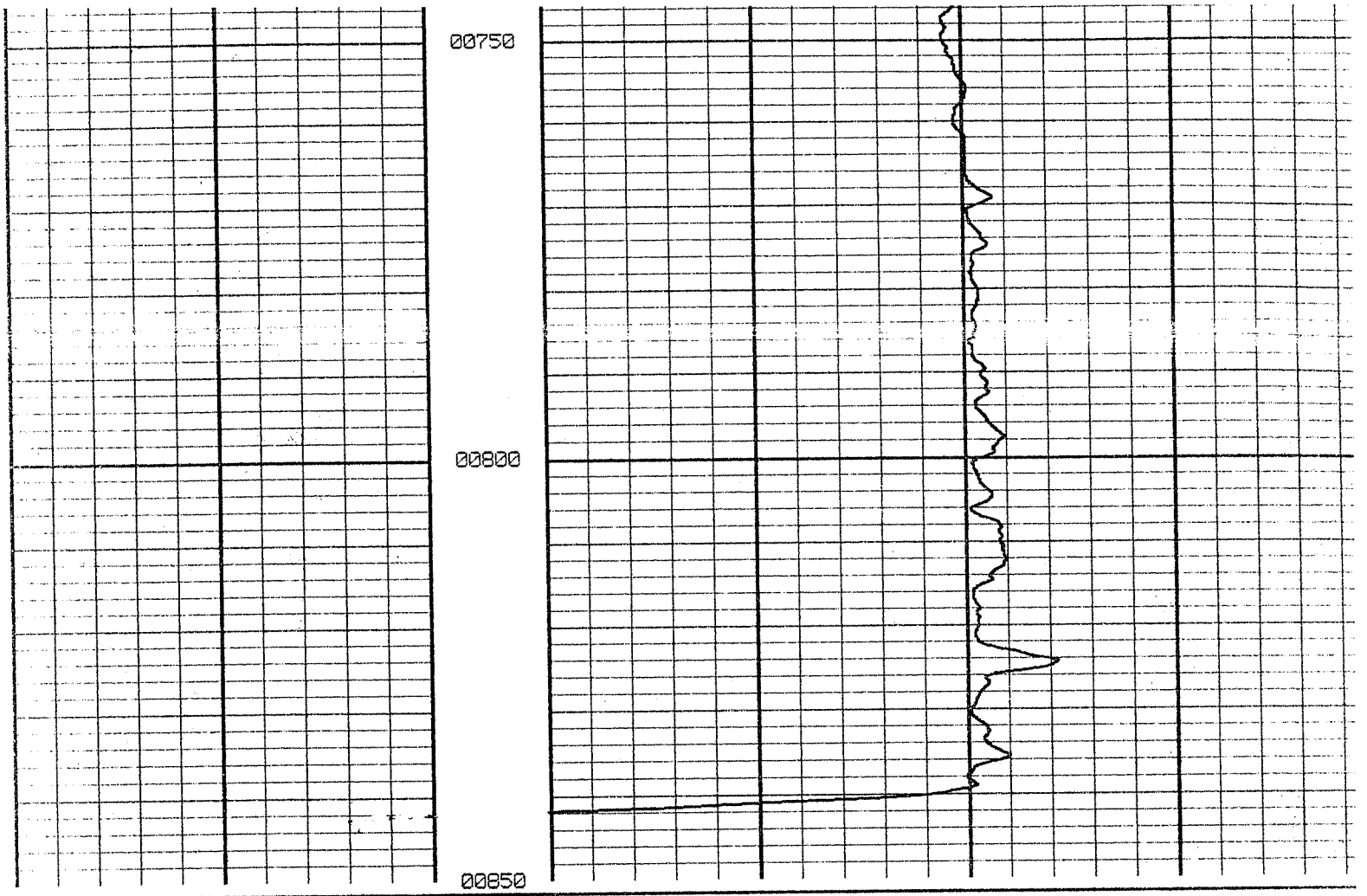


		0 2
	DEPTHS	HOLE DIAMETER IN INCHES CALIPER

weltenco

ELECTRIC LOG

FILING NO.	
COMPANY	KLEINFELDER, INC.
WELL	MW-2 AVB10-02
FIELD	WEST VAN BUREN
STATE	ARIZONA COUNTY MARICOPA
LOCATION:	OTHER SERV:
	CALIPER
SEC ____ TWP ____ RGE ____	

Permanent Datum: G.L. Elev: ____ K.B. ____
Log Measured From G.L., 0 Ft Above Perm Datum D.F. ____
Drilling Measured From G.L. G.L. ____

Date	11-20-91	- -	- -
Run No.	ONE	TWO	THREE
Depth - Driller	850'		
Depth - Logger	842'		
Btm. Log Inter.	842'		
Top Log Inter.	40'		
Casing-Driller	10" at20'	at	at
Casing-Logger	at	at	at
Bit Size	9 7/8"		
Type Fluid In Hole	BENTONITE		
Dens. | Visc.	N/A	N/A	N/A
pH Fluid Loss	N/A	N/A	N/A
Source of Sample	PIT		
Rm at Meas.Temp	4.54 at 68 F	at 68 F	at 68 F
Rmf at Meas.Temp	at 68 F	at 68 F	at 68 F
Rmc at Meas.Temp	N/A at F	N/A at F	N/A at F
Source:Rmf Rmc	MEAS	MEAS	MEAS
Rm at BHT	N/A at F	N/A at F	N/A at F
Time Since Circ.	2 HRS.		
Max. Rec. Temp.	N/A F	F	F
Equip | Location	L05 AZ	L05 AZ	L05 AZ
Recorded By	D. JACOVITCH	D. JACOVITCH	D. JACOVITCH
Witnessed By	S. SMELSER		

Fold Here

This Heading and Log Conform To API RP 31

REMARKS

Changes in Mud Type or Additional Samples

Date	Sample No.	Depth-Driller	Type Fluid in Hole	Dens.	Visc.	ph	Fluid Loss	Source of Sample	Rm at Meas. Temp.	Rmf at Meas. Temp.	Rmc at Meas. Temp.	Source:Rmf	Rmc	Rm at BHT	Rmf at BHT	Rmc at BHT
							ml		at F	at F	at F			at F	at F	at F
							ml		at F	at F	at F			at F	at F	at F

Scale Changes

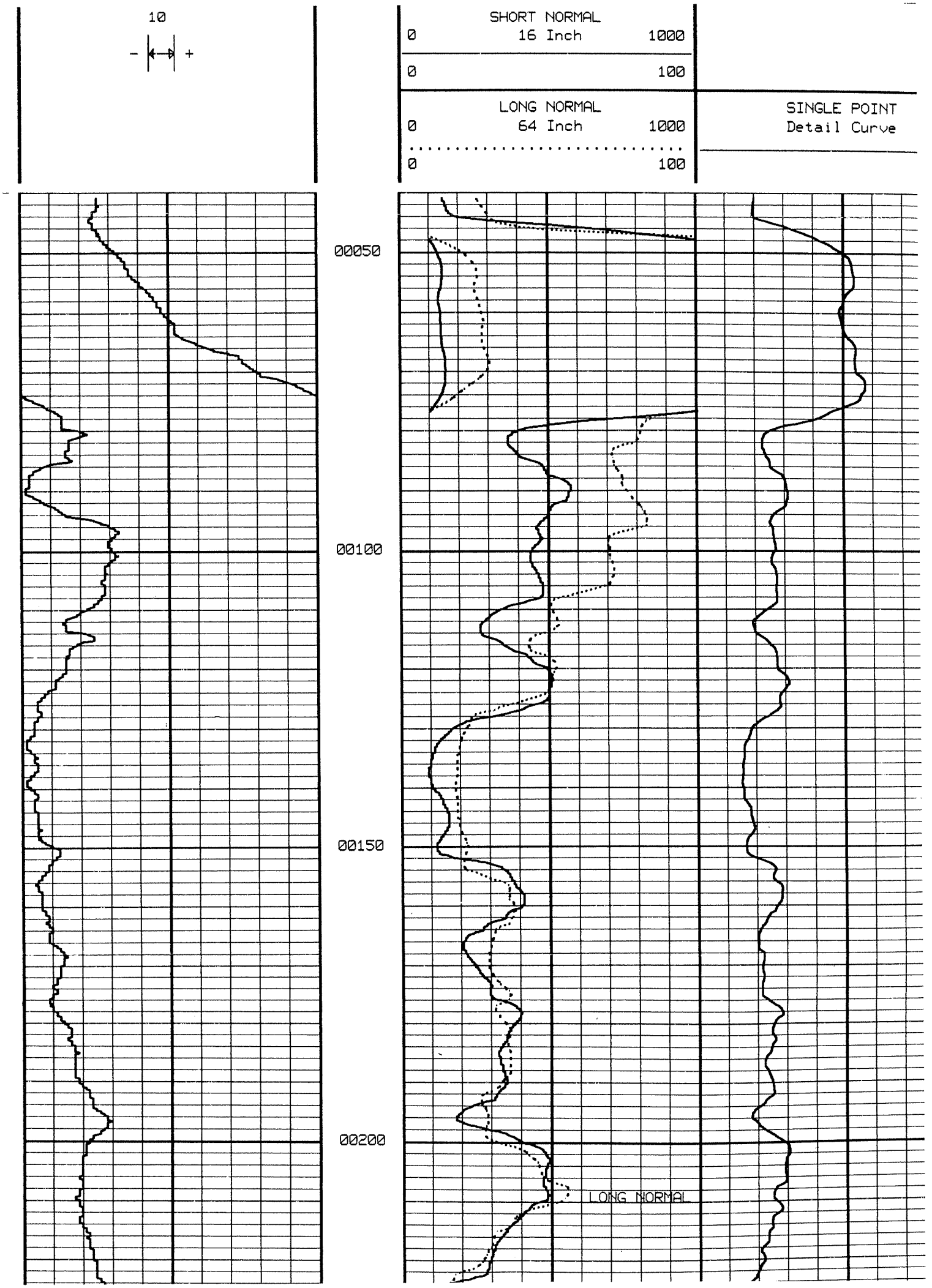
Type Log	Depth	Scale Up Hole	Scale Down

Equipment Data

Run No.	Tool Type	PadType	Tool Pos	Other
ONE	ELECTRIC		FREE	

NOTE: TRUCK GROUNDED TO CASING AND RIG.

SPONTANEOUS POTENTIAL millivolts | DEPTHS | RESISTIVITY ohmmeters2 /meter | RESISTANCE ohms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- +
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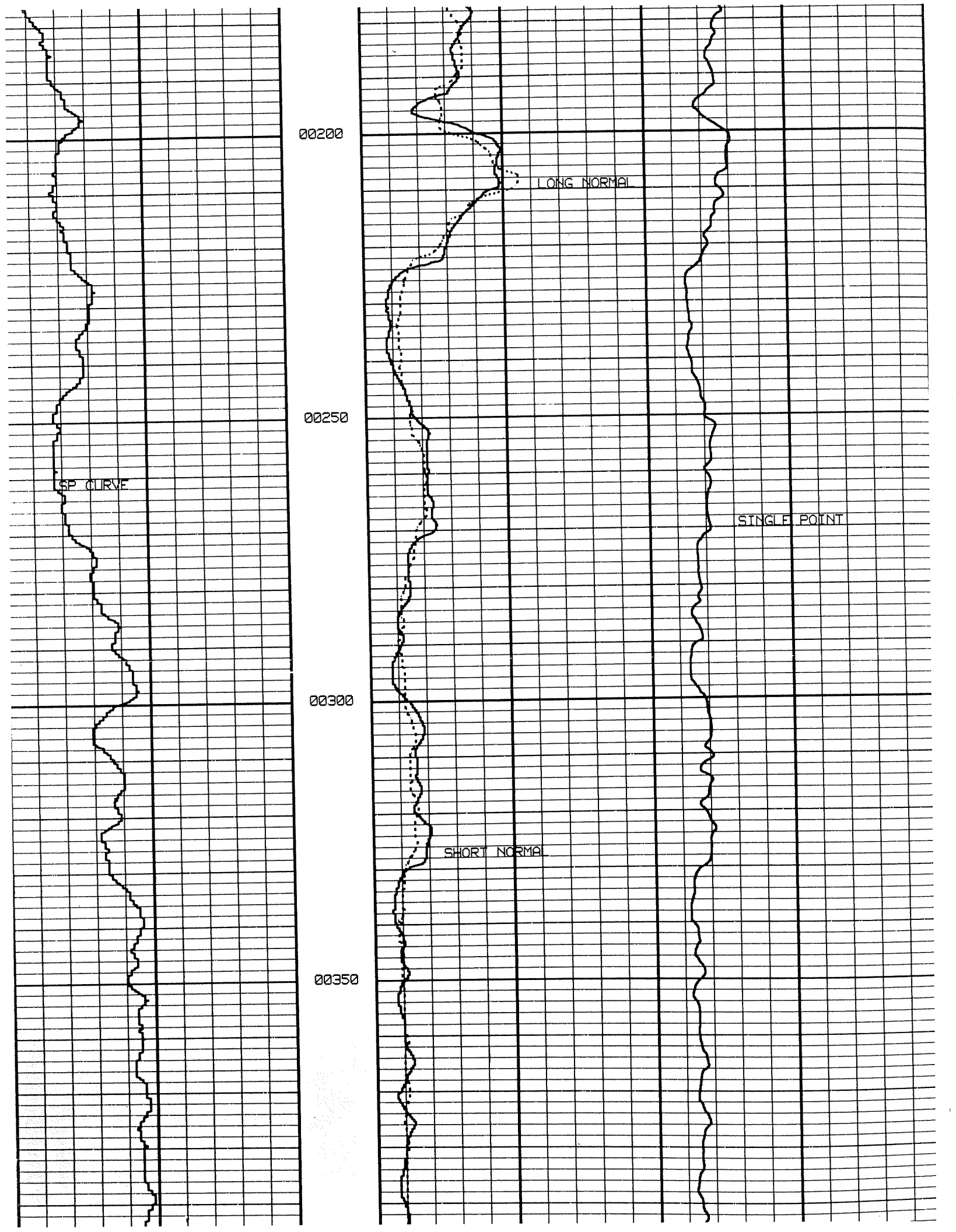
LONG NORMAL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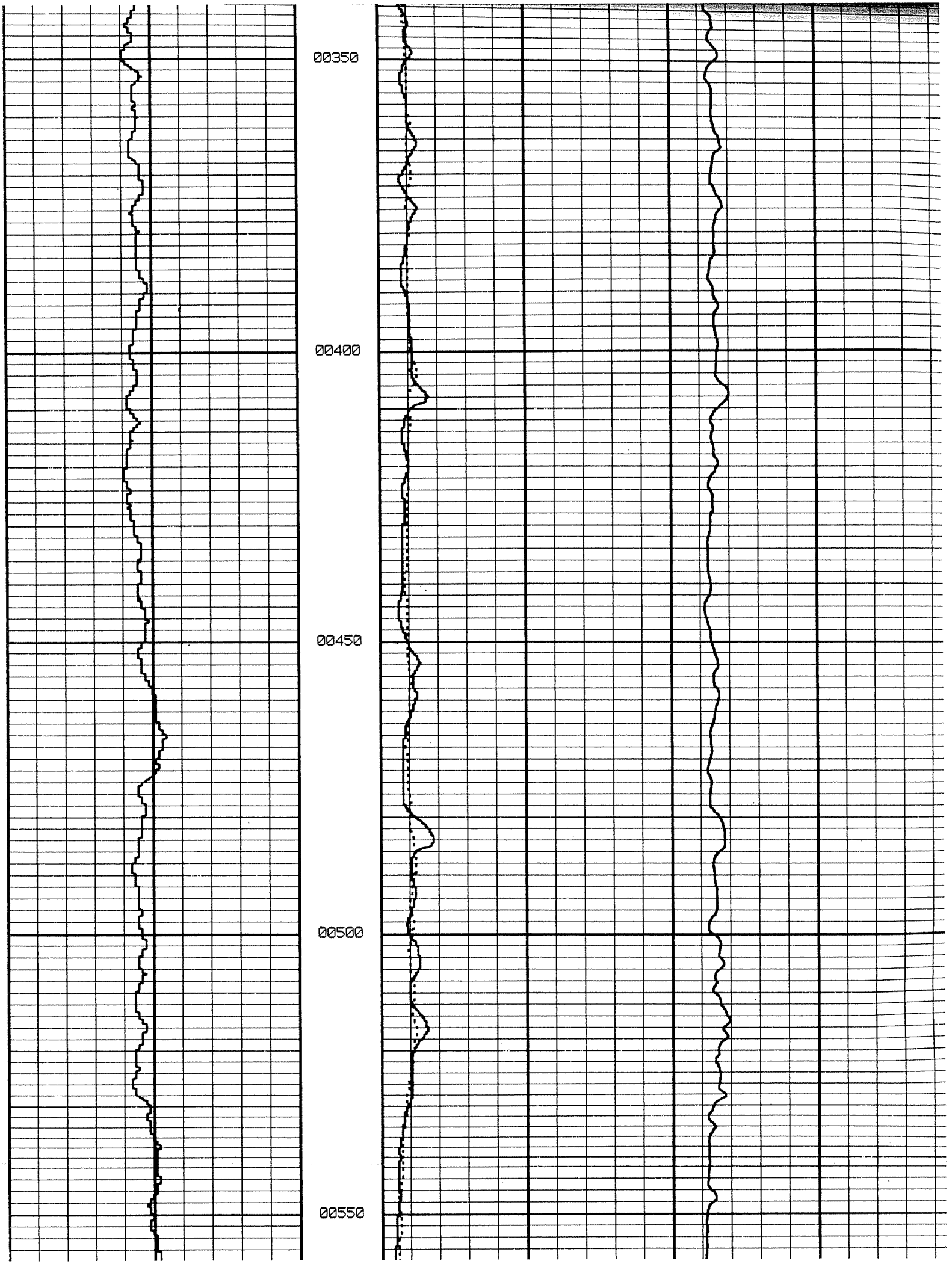
SHORT NORMAL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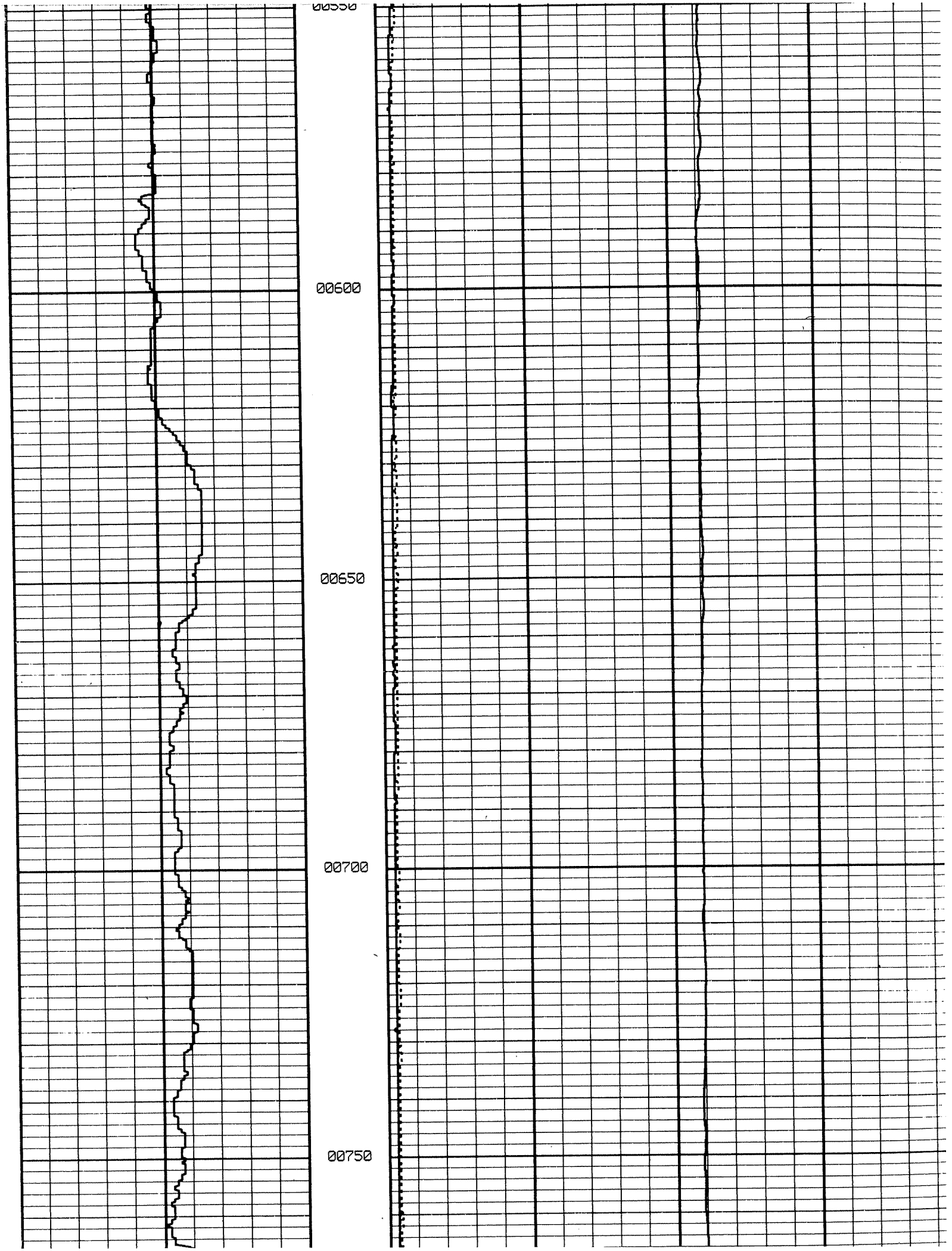
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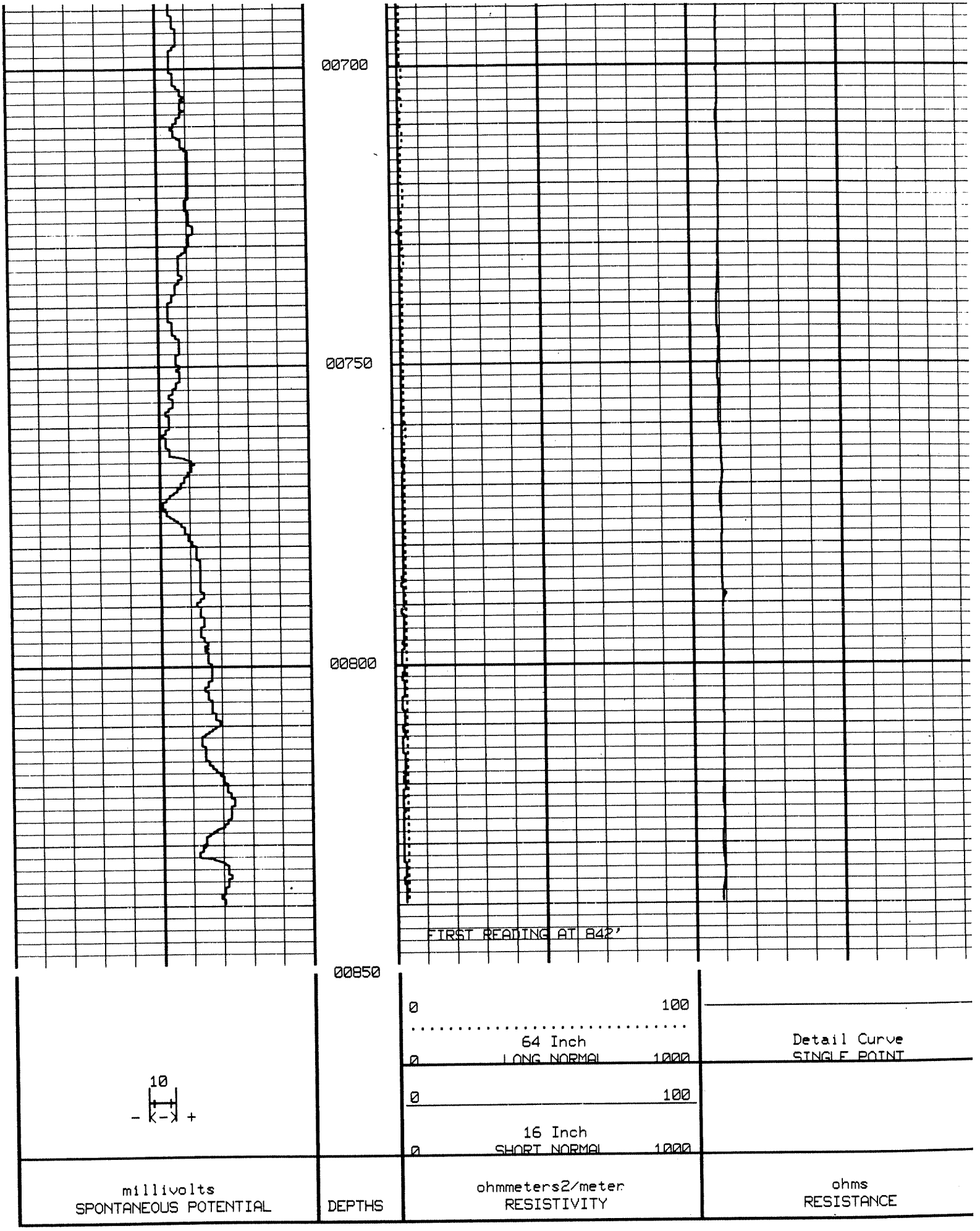
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FIRST READING AT 842'
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LONG NORMAL
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100
16 Inch
SHORT NORMAL
0
1000
Detail Curve
SINGLE POINT
millivolts
SPONTANEOUS POTENTIAL
DEPTHS
ohmmeters2/meter
RESISTIVITY
ohms
RESISTANCE

BROWN AND CALDWELL
Phoenix, Arizona

BORING LOG

Project Name: **Dolphin Phase II Hydrogeologic Investigation** Project Number: **18799.400**

Soil Boring ☐ Monitoring Well ☒ Boring/Well Number: **DIMW-8D** Sheet 1 of 11

Boring Location: **West of Dolphin III in field along 61st Ave.**	Elevation and Datum: **1038.68 ft amsl TOC**
Drilling Contractor: **Layne Christensen** / Driller: **Bill Kinkle**	Date Started: **5/10/00** / Date Finished: **6/30/00**
Drilling Equipment: **Schramm 685** / Borehole Diameter: **10"**	Completed Depth: (feet) **426.0** / Water Depth: (feet) **105.1**
Sampling Method: California Method ☐ Shelby Tube ☐ Split Spoon ☐	WELL CONSTRUCTION
Drilling Method: **Mud Rotary** / Drilling Fluid: **mud**	Type and Diameter of Well Casing: **4" Diameter PVC, sch 80**
Backfill Material: **Well**	Slot Size: **0.020** / Filter Material: **10-20 Silica Sand**
Logged By: **MAC** / Checked By: **MLD**	Development Method: **Bail/Swab/Pump**

Depth (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample	Graphic Log: Lithology	Graphic Log: Well	FID Readings PPM	Remarks
	SM	SILTY SAND. Reddish brown (10R4/6), damp, soft, pooly sorted, fine to course, no odor, no stain.							Begin drilling surface casing @ 0725
5									
	SW	GRAVELLY SAND with cobbles. Pale brown (5YR5/2), dry, very loose, very poorly sorted, medium to course, subrounded to angular. Gravel (25%), to 20 mm, granitic, rounded, cobbles to 76 mm, granitic, subangular to subrounded, occasional boulders, no odor, no stain.							
10									
	SM	SILTY SAND. Moderate brown (5YR3/4), soft, poorly sorted, fine to course, occasionally very course. Silt (20%), trace gravel, no odor, no stain.							
15									
20									Base of 18-inch Low Carbon Steel surface casing. Begin mud rotary drilling on 6/13/00 @ 1245. Base of 20-ft Cement/Grout surface seal. Top of EnviroPlug Bentonite Grout.
	SW	GRAVELY SAND. Moderate brown (5YR4/4), fine to course, angular to subrounded. Gravel (30%), to 10 mm, granitic, angular to subrounded, no odor, no stain.							
25									Drilling rate 18.2-ft/hr
	CL	SANDY CLAY with gravel. Moderate reddish brown (10YR4/6), stiff, moderately plastic. Sand (30%), fine to course, gravel (10%), to 8 mm, no odor, no stain.							
30									Mud viscosity: 45 sec.

FORM C:\BC\DBF\LIBRARY\BERMCAD\GDP 8/3/00

BROWN AND CALDWELL
Phoenix, Arizona

BORING LOG

Project Name: Dolphin Phase II Hydrogeologic Investigation

Project Number: 18799.400

Soil Boring ☐ Monitoring Well ☒ Boring/Well Number: DIMW-8D

Depth (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample	Graphic Log: Lithology	Graphic Log: Well	FID Readings PPM	Remarks
35									Drilling rate 13.3-ft/hr
40	SC	CLAYEY SAND with gravel. Moderate yellowish brown (10YR5/4), fine to medium. Clay (30%), moderately stiff, non-plastic, gravel (<5%), to 8 mm, granitic, subangular to subrounded, no odor, no stain.							Mud viscosity: 49 sec.
45									Drilling rate 20-ft/hr
50	SW	GRAVELLY SAND. Moderate brown (5YR4/4), fine to course, angular to subrounded. Gravel (30%), to 10 mm, granitic, angular to rounded, no odor, no stain.							Mud viscosity: 60 sec.
55									Drilling rate 15-ft/hr. Moderate rig chatter
60	GP	SANDY GRAVEL with cobbles. Moderate brown (5YR4/4), gravel to 12 mm, granitic, angular to subrounded. Sand (30%), fine to course, cobbles to 76 mm, granitic, angular to subrounded, no odor, no staining.							Mud viscosity: 55 sec.
65									Drilling rate 6.3-ft/hr. Heavy rig chatter, loosing drilling mud to formation.
70									

BROWN AND CALDWELL
Phoenix, Arizona

BORING LOG

Project Name: Dolphin Phase II Hydrogeologic Investigation Project Number: 18799.400

Soil Boring ☐ Monitoring Well ☒ Boring/Well Number: DIMW-8D Sheet 3 of 11

Depth (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample	Graphic Log: Lithology	Graphic Log: Well	FID Readings PPM	Remarks
									Drilling rate 8-ft/hr.
									Severe rig chatter, loosing drilling mud to formation.
80	SW	GRAVELLY SAND with cobbles. Moderate brown (5YR4/4), fine to course, angular to subrounded. Gravel (35%), to 10 mm, granitic, angular to rounded, cobbles (5%) to 76 mm, granitic, angular to subrounded, no odor, no stain.							Mud viscosity: 110 sec.
85									Drilling rate 12-ft/hr.
									Moderate rig chatter.
90									Mud viscosity: 100 sec.
95									Drilling rate 6-ft/hr.
									Heavy rig chatter.
100	GP	SANDY GRAVEL with cobbles. Moderate brown (5YR4/4), gravel to 14 mm, granitic, angular to subrounded. Sand (30%), fine to course, cobbles (<5%), to 76 mm, granitic, angular to subrounded, no odor, no staining.							
105									Stabilized water level @ 105.13 on 7/19/00.
									Drilling rate 10-ft/hr.
110	SW	GRAVELLY SAND. Moderately brown (5YR4/4), fine to course, angular to subrounded. Gravel (35%), to 15 mm, granitic, angular to rounded, no odor, no stain.							Mud viscosity: 50 sec.
115									Drilling rate 9.2-ft/hr, complete loss of circulation (approx. 2000 gallons), heavy rig chatter.

BORING LOG DOMESTIC HOUSE BENNCAP.GDT 8/3/00

BROWN AND CALDWELL
Phoenix, Arizona

BORING LOG

Project Name: Dolphin Phase II Hydrogeologic Investigation

Project Number: 18799.400

Soil Boring ☐ Monitoring Well ☒

Boring/Well Number: DIMW-8D

Depth (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample	Graphic Log: Lithology	Graphic Log: Well	FID Readings PPM	Remarks
120	GP	SANDY GRAVEL. Moderate brown (5YR4/4), gravel to 12 mm, granitic, angular to subrounded. Sand (30%), fine to course, no odor, no staining.							Mud viscosity: 180 sec.
125									Drilling rate 19.35-ft/hr. Continue to lose drilling mud to formation. Heavy rig chatter.
130	GW	GRAVEL & COBBLES. Color dependant on rock type, gravel to 60 mm, granitic, subrounded to angular. Cobbles (40%) to 180 mm, granitic, subrounded to angular, sand (<5%) medium to very course, no odor, no stain.							Mud viscosity: 166 sec.
135									Drilling rate 8-ft/hr. Heavy rig chatter.
140									Mud viscosity: 135 sec.
145									Drilling rate 20-ft/hr. Moderate rig chatter.
150	GW	GRAVEL & COBBLES. Color dependant on rock type, gravel to 60 mm, granitic, subrounded to angular. Cobbles (40%) to 180 mm, granitic, subrounded to angular, sand (<5%) medium to very course, no odor, no stain.							Mud viscosity: 115 sec.
155									Drilling rate 20-ft/hr. Moderate rig chatter.

BROWN AND CALDWELL
Phoenix, Arizona

BORING LOG

Project Name: Dolphin Phase II Hydrogeologic Investigation Project Number: 18799.400

Soil Boring ☐ Monitoring Well ☒ Boring/Well Number: DIMW-8D Sheet 5 of 11

Depth (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample	Graphic Log: Lithology	Graphic Log: Well	FID Readings PPM	Remarks
	SW	SAND with gravel. Moderate brown (5YR4/4), fine to very course, subrounded to subangular. Gravel (10%) to 6 mm, granitic, subangular to rounded, no odor, no stain.							
165									Drilling rate 21.4-ft/hr.
170									Mud viscosity: 135 sec.
175									Drilling rate 35.3-ft/hr.
180	SW	AA - SAND, no gravel present in cuttings.							Mud viscosity: 101 sec.
185									Drilling rate 20-ft/hr. Heavy rig chatter.
190	GP	SANDY GRAVEL. Moderate brown (5YR3/4), gravel to 15 mm, granitic, rounded to angular. Sand (30%), fine to course, rounded to subangular, no odor, no stain.							
195									Drilling rate 40-ft/hr. Moderate rig chatter.
200	GP	SANDY GRAVEL. Moderate brown (5YR3/4), gravel to 19 mm, granitic, rounded to angular. Sand (35%), fine to course, rounded to subangular, no odor, no stain.							Mud viscosity: 134 sec.

BORING LOG DOLPHIN GPT BRN&CALD.GDT 9/3/00

BROWN AND CALDWELL
Phoenix, Arizona

BORING LOG

Project Name: Dolphin Phase II Hydrogeologic Investigation

Project Number: 18799.400

Boring/Well Number: DIMW-8D

Sheet 6 of 11

Soil Boring ☐ Monitoring Well ☒

Depth (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample	Graphic Log: Lithology	Graphic Log: Well	FID Readings PPM	Remarks
205									Drilling rate 35.3-ft/hr.
210	SW	GRAVELLY SAND. Moderate brown (5YR4/4), medium to course, rounded to subangular. Gravel (35%) to 8 mm, granitic, subrounded to angular, no odor, no stain.							Mud viscosity: 142 sec.
215									Drilling rate 46.2-ft/hr.
220									
225									Drilling rate 50-ft/hr.
230	SW	GRAVELLY SAND. Moderate brown (5YR4/4), medium to course, rounded to subangular. Gravel (30%) to 8 mm, granitic, subrounded to angular, no odor, no stain.							
235									Drilling rate 46.2-ft/hr.
240									

BROWN AND CALDWELL
Phoenix, Arizona

BORING LOG

Project Name: Dolphin Phase II Hydrogeologic Investigation

Project Number: 18799.400

Soil Boring ☐ Monitoring Well ☒ Boring/Well Number: DIMW-8D

Depth (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample	Graphic Log: Lithology	Graphic Log: Well	FID Readings PPM	Remarks
									Drilling rate 22.2-ft/hr.
250	CL	GRAVELLY CLAY. Moderate reddish brown (10R4/6), moderately stiff, moderately plastic. Gravel (15%) to 8 mm, granitic, rounded to subangular, no odor, no stain.							Mud viscosity: 135 sec.
255									Drilling rate 13.3-ft/hr.
260	CL	SILTY CLAY with gravel. Moderate reddish brown (10R4/6), moderately stiff, moderately plastic. Gravel (10%) to 8 mm, granitic, rounded to subangular, no odor, no stain.							
265									Drilling rate 33.3-ft/hr.
270	CL	CLAY with gravel. Moderate reddish brown (10R4/6), moderately stiff, moderately plastic. Gravel (<5%) to 6 mm, granitic, rounded to subangular, no odor, no stain.							
275									Drilling rate 35.3-ft/hr.
280									
285									Drilling rate 40-ft/hr.

BORING LOGS DOLPHIN GPJ BRN&CALD.GDT 8/3/00

BROWN AND CALDWELL
Phoenix, Arizona

BORING LOG

Project Name: Dolphin Phase II Hydrogeologic Investigation

Project Number: 18799.400

Boring/Well Number: DIMW-8D

Sheet 8 of 11

Soil Boring ☐ Monitoring Well ☒

Depth (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample	Graphic Log: Lithology	Graphic Log: Well	FID Readings PPM	Remarks
									Mud viscosity: 204 sec.
290	CL	SANDY CLAY. Moderate reddish brown (10R4/6), moderately stiff, moderate to non-plastic. Sand (20%), fine to medium, gravel (<1%), no odor, no stain.							
									Drilling rate 30-ft/hr.
295									
300									
									Drilling rate 15-ft/hr.
305									
310									
									Drilling rate 17.1-ft/hr.
315	CL	AA							
									Mud viscosity: 160 sec.
320									
									Drilling rate 20-ft/hr.
325									

BROWN AND CALDWELL
Phoenix, Arizona

BORING LOG

Project Name: Dolphin Phase II Hydrogeologic Investigation

Project Number: 18799.400

Soil Boring ☐ Monitoring Well ☒ Boring/Well Number: DIMW-8D

Depth (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample	Graphic Log: Lithology	Graphic Log: Well	FID Readings PPM	Remarks
	CL	SANDY CLAY. Moderate reddish brown (10R4/6), moderately stiff, moderate to non-plastic. Sand (20%), fine to medium, no odor, no stain.							
335									Drilling rate 24-ft/hr.
340									
345									Drilling rate 20.7-ft/hr.
350	CL	SANDY CLAY. Moderate reddish brown (10R4/6), moderately stiff, moderate to non-plastic. Sand (20%), fine to medium, no odor, no stain.							Mud viscosity: 162 sec. Top of 20-ft Cement/Grout bottom seal. Base of EnviroPlug Grout.
355									Drilling rate 19.4-ft/hr.
360									
365	CL	SANDY CLAY. Moderate reddish brown (10R4/6), moderately stiff, moderate to non-plastic. Sand (20%), fine to medium, no odor, no stain.							Drilling rate 25-ft/hr.
370	SW	SAND, cement & sand assciated with cement plug @ base of casing. Some formation clay.							Base of 12.75-inch Low Carbon Steel conductor casing @ 370-ft. Top of bentonite seal @ 370.5-ft

BORING LOG DOLPHIN 1.GPJ BRN&CALD.GDT 8/3/00

BROWN AND CALDWELL
Phoenix, Arizona

BORING LOG

Project Name: Dolphin Phase II Hydrogeologic Investigation

Project Number: 18799.400

Soil Boring ☐ Monitoring Well ☒ Boring/Well Number: DIMW-8D

Depth (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample	Graphic Log: Lithology	Graphic Log: Well	FID Readings PPM	Remarks
									Drilling rate 25-ft/hr
375	CL	SANDY CLAY. Moderate brown (5YR4/4) to light brown (5YR5/6), stiff, moderately plastic. Sand (15%), very fine to medium, rounded to subangular, no odor, no stain.							Top of filter pack @ 375.5-ft
380									Mud viscosity: 30 sec.
385									Drilling rate 8.6-ft/hr.
390									
395									Drilling rate 40-ft/hr.
400									Mud viscosity: 35 sec. Mud wieght: 8.8 lbs/gallon.
405									Top of screen interval @ 405-ft Drilling rate 15.8-ft/hr
410									Mud viscosity: 34 sec. Mud wieght: 9.08 lbs/gallon.

BROWN AND CALDWELL
Phoenix, Arizona

BORING LOG

Project Name: Dolphin Phase II Hydrogeologic Investigation

Project Number: 18799.400

Soil Boring ☐ Monitoring Well ☒

Boring/Well Number: DIMW-8D

Sheet 11 of 11

Depth (feet)	USC Soil Type	Description	Blow Counts	Sample No.	Graphic Log: Sample	Graphic Log: Lithology	Graphic Log: Well	FID Readings PPM	Remarks
	CL	SANDY CLAY. Moderate brown (5YR4/4) to light brown (5YR5/6), stiff, moderately plastic. Sand (15%), very fine to medium, rounded to subangular, no odor, no stain.							Base of screen interval @ 415-ft Drilling rate 50-ft/hr.
420									Base of well casing and well cap @ 420-ft
425									TD of borehole @ 426-ft

BORING LOG DOLPHI-1.GPJ BRNCALD.GDT 8/3/00

Southwest Geophysical Services, Inc.

COMPANY	BROWN & CALDWELL
WELL ID	DIMW-8D
FIELD	PHOENIX
COUNTY	MARICOPA STATE ARIZONA

CO / WELL / FLD / CTY / STE / FILING No

LOCATION

A(1-2)7dac

SEC 7 TWP 1N RGE 2E

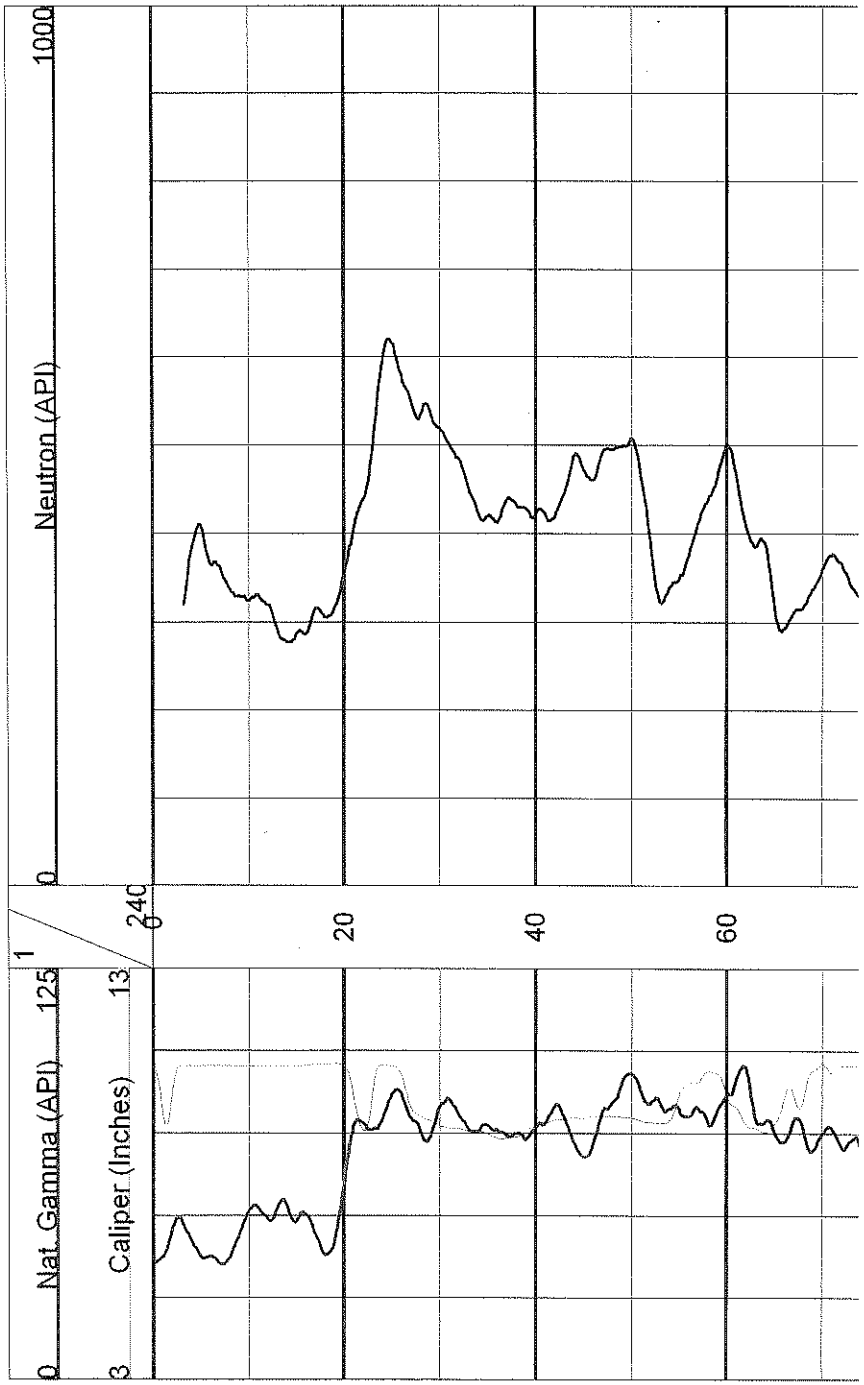
OTHER SERVICES

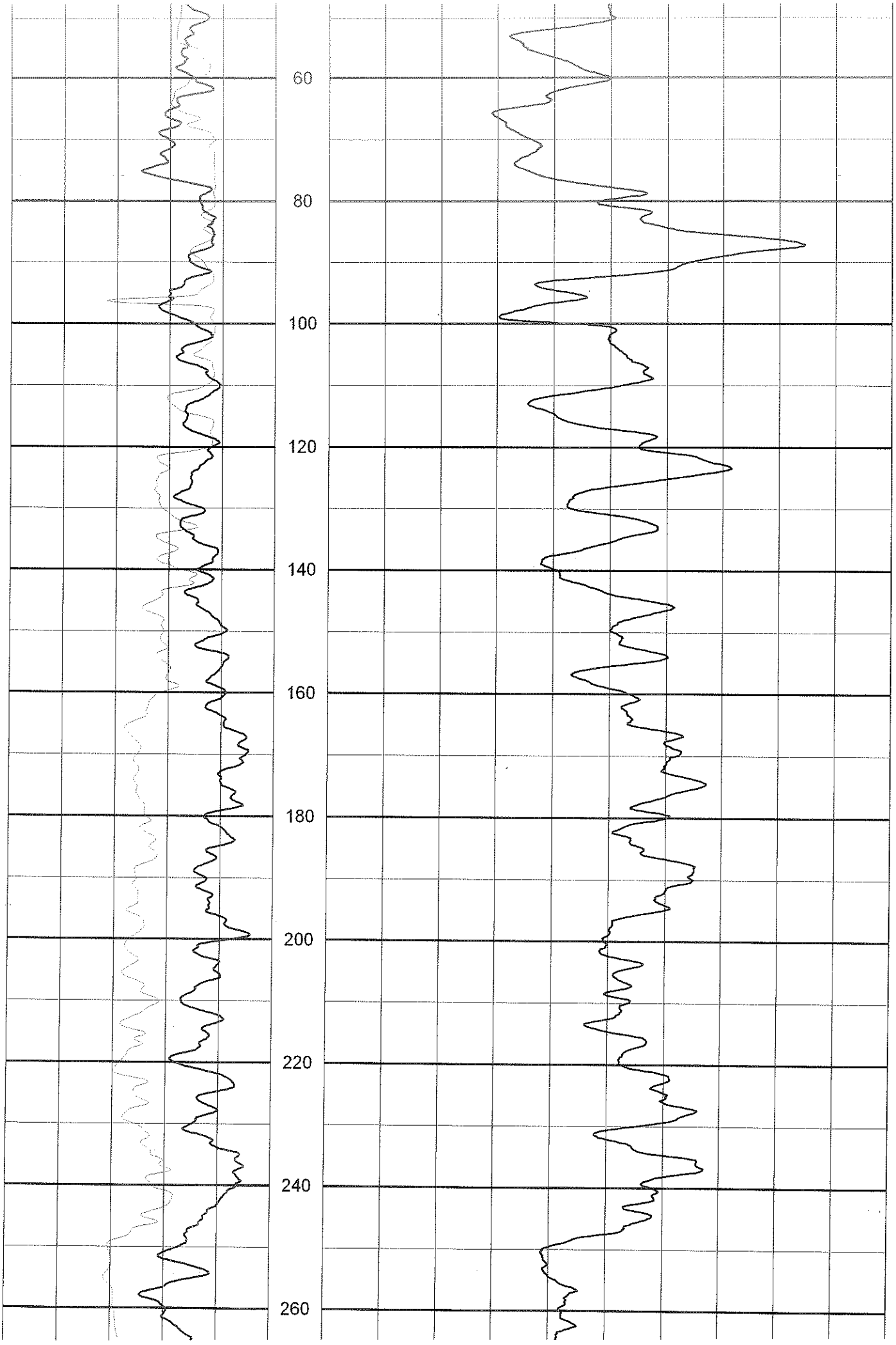
E-LOG
THIS LOG CONSISTS OF 2 SEPARATE RUNS COMBINED AT 372'.

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM			G.L.

DATE	6-17 & 6-28-2000	TYPE FLUID IN HOLE	FRESH MUD
RUN No	1 2	SALINITY	
TYPE LOG	GAMMA-NEUTRON-CAL	DENSITY	
DEPTH-DRILLER	380 FT 423 FT	LEVEL	
DEPTH-LOGGER	376 FT 426 FT	MAX. REC. TEMP.	
BTM LOGGED INTERVAL	376 FT 426 FT		
TOP LOGGED INTERVAL	SURFACE		
OPERATING RIG TIME			
RECORDED BY	K. MITCHELL		
WITNESSED BY	M. DANIEL		

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	AUGER	SURFACE	20 FT	24"		SURFACE	19 FT
2	9 7/8"	20 FT	TOTAL DEPTH				
LOWER	SECTION	COMPLETION					
1	9 7/8"	372 FT	423 FT	12"		SURFACE	372 FT

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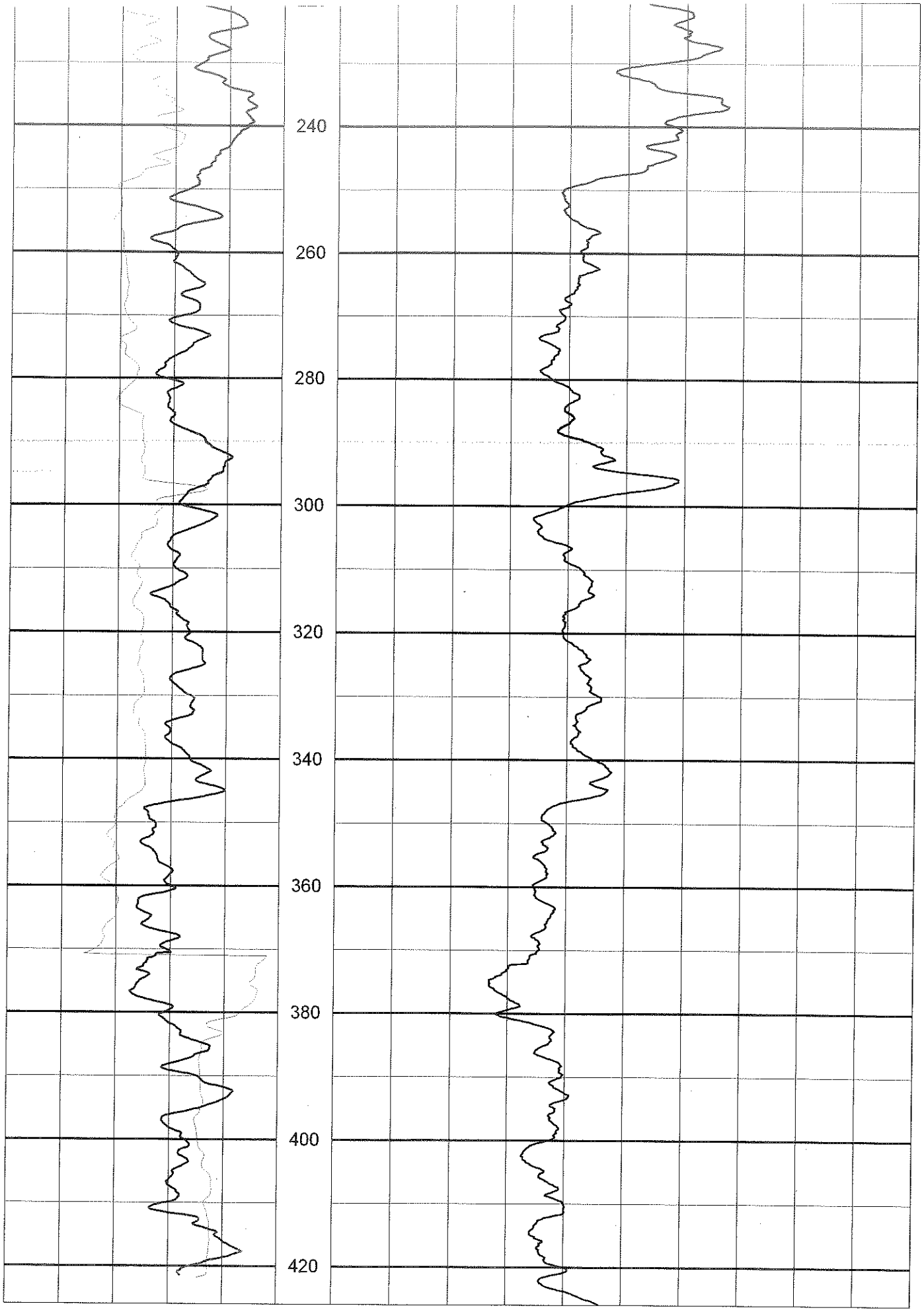
80
100
120
140
160
180
200
220
240
260


240
260
280
300
320
340
360
380
400
420

Southwest Geophysical Services, Inc.

COMPANY	BROWN & CALDWELL
WELL ID	DIMW-8D
FIELD	PHOENIX
COUNTY	MARICOPA STATE ARIZONA

CO
WELL
FLD
CTY
STE
FILING No

LOCATION

A(1-2)7dac

SEC 7 TWP 1N RGE 2E

OTHER SERVICES

GAMMA
NEUTRON
CALIPER
THIS LOG CONSISTS OF 2 SEPARATE RUNS COMBINED AT 372'.

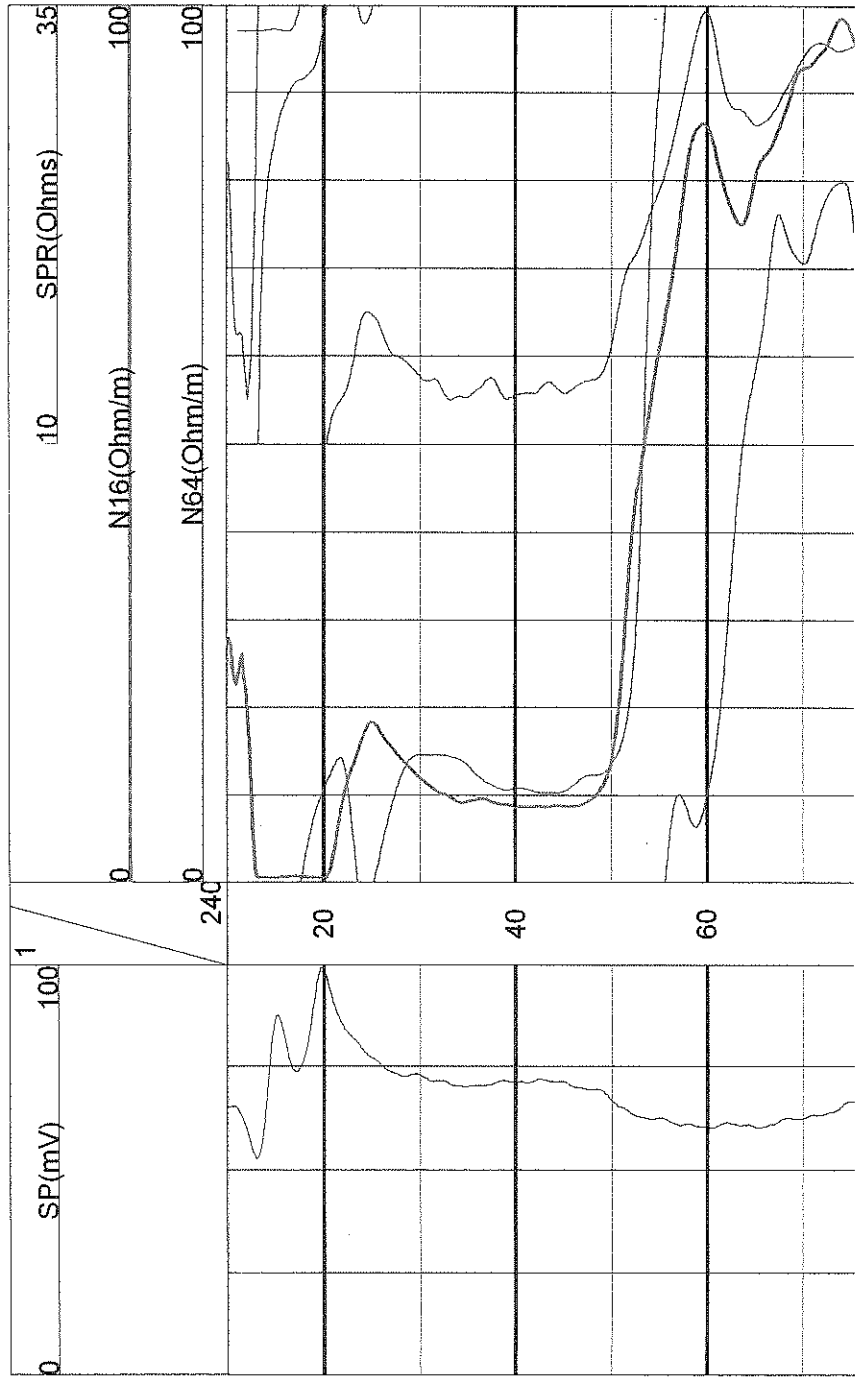
PERMANENT DATUM ELEVATION K.B.

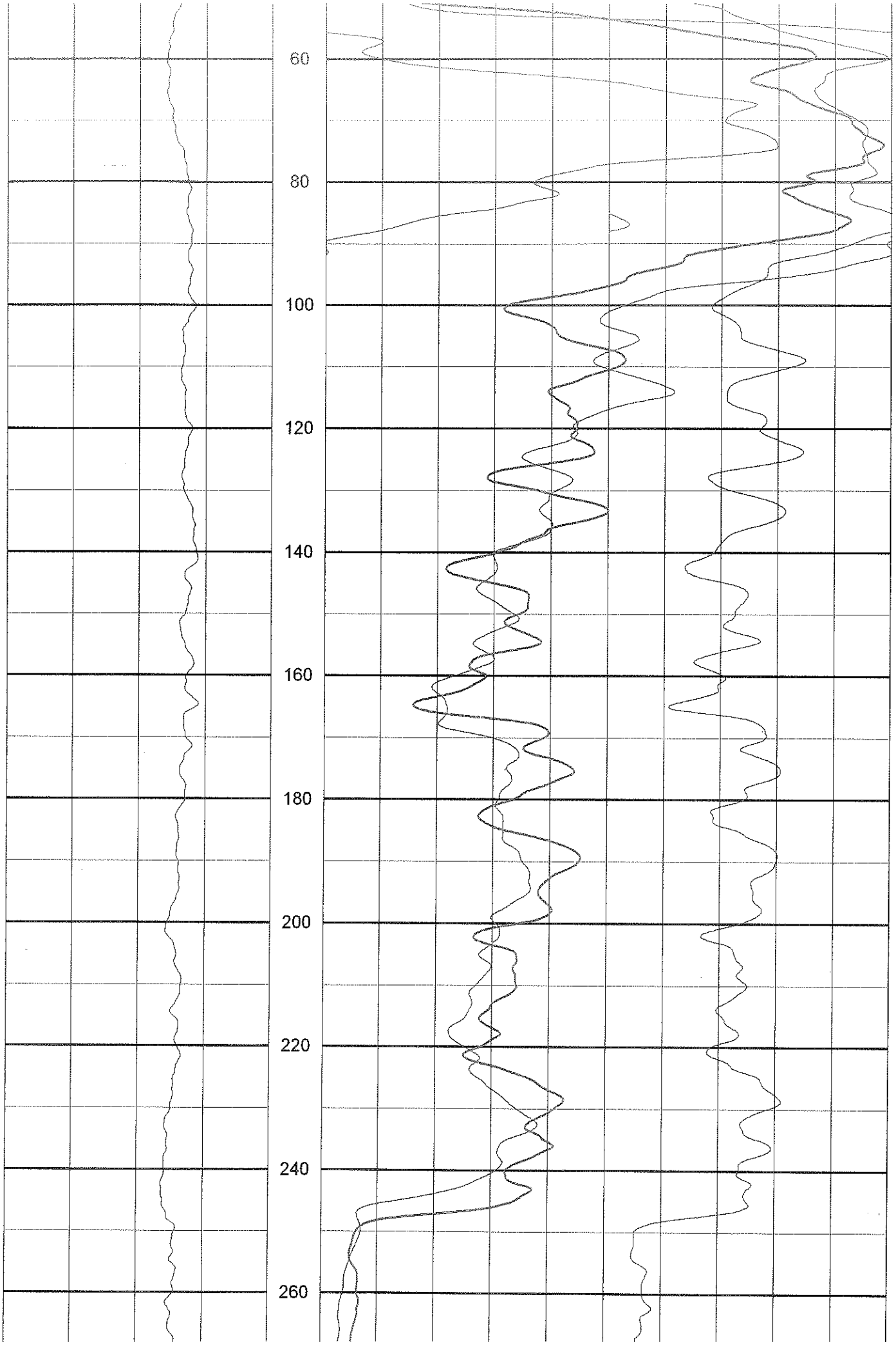
LOG MEAS. FROM GROUND LEVEL ABOVE PERM. DATUM D.F.

DRILLING MEAS. FROM G.L.

DATE	6-17, & 6-28-2000	TYPE FLUID IN HOLE	FRESH MUD
RUN No	1 2	SALINITY	
TYPE LOG	E-LOG E-LOG	DENSITY	
DEPTH-DRILLER	380 FT 423 FT	LEVEL	
DEPTH-LOGGER	375 ft 426 FT	MAX. REC. TEMP.	
BTM LOGGED INTERVAL	375 FT 426 FT		
TOP LOGGED INTERVAL	10 FT 372 FT		
OPERATING RIG TIME			
RECORDED BY	K. MITCHELL		
WITNESSED BY	M. DANIEL		

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	AUGER	SURFACE	20 FT	24"		SURFACE	19 FT
2	9 7/8"	20 FT	TOTAL DEPTH				
LOWER	SECTION	COMPLETION					
1	9 7/8"	372 FT	423 FT	12"		SURFACE	372 FT

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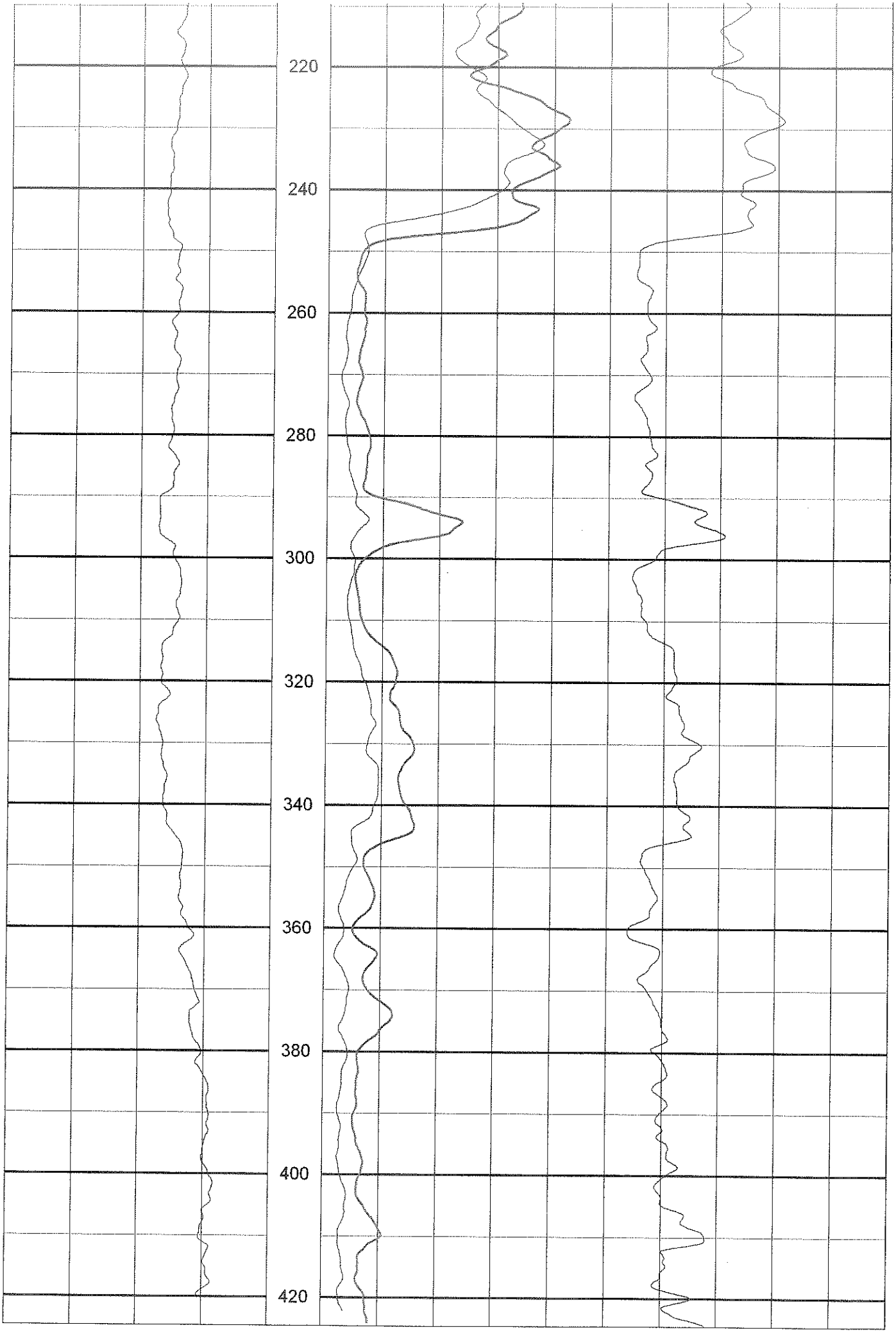
80
100
120
140
160
180
200
220
240
260


220
240
260
280
300
320
340
360
380
400
420

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
			ASPHALT OVER ROAD BASE		7TH MAY 2004
5					AUGER DRILLED TO 20', SURFACE CASING INSTALLED
10		SW	GRAVELLY SILTY SAND, SLIGHTLY MOIST		
15					
20		SM	SILTY FINE TO MEDIUM SAND, MOIST		10TH MAY 2004
25					
30		SP	COARSE, POORLY GRADED SAND	0	
35					
40		SW	GRAVELLY COARSE SAND	0	
45					
50		SC	CLAYEY GRAVELLY COARSE SAND	0	
55					
60		SC	CLAYEY GRAVELLY COARSE SAND	0	11TH MAY 2004
65					
70		GP	COARSE GRAVEL WITH COBBLES & TRACE CLAY	0	07:11
75					

PROJ.#:03103154-11	DRILL DATE: 05-07/15-04
LOGGED BY: CHARMAN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER:	
RIG TYPE:SPEEDSTAR	DIAMETER: 9 7/8"
DRILLER: WDC	TOTAL DEPTH:350'
DRILLING METHOD: MUD ROTARY	

TERRANEXT

FIELD BOREHOLE LOG

AVB 122-03

55TH AVENUE AND BUCHANAN

PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
80		GP	FINE TO COARSE GRAVEL W/COBBLES	0	08:36
85					
90		GP	FINE GRAVEL	0	15:25
95					12TH MAY 2004
100		GP	COARSE GRAVEL WITH SOME COBBLES	0	09:08
105					
110		GW	SANDY, FINE TO COARSE GRAVEL	0	09:43
115					
120		GW	COARSE SANDY GRAVEL	0	10:44
125					
130		GW	COARSE SANDY GRAVEL		13:11
135					
140		GW	COARSE SANDY GRAVEL	0	14:00
145					
150		GP	POORLY GRADED GRAVEL	0	5:35

PROJ.#:03103154-11	DRILL DATE: 05-07/15/04
LOGGED BY: CHARMAN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER:	
RIG TYPE: SPEEDSTAR	DIAMETER: 10"
DRILLER: WDC	TOTAL DEPTH:350'
DRILLING METHOD: MUD ROTARY	

TERRANEXT

FIELD BOREHOLE LOG
AVB 122-03
55 AVENUE & BUCHANAN
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
155					
160		GP	FINE GRAVEL	0	16:50
165					13TH MAY 2004
170		GP	FINE GRAVEL	0	07:47
175					
180		GP	FINE GRAVEL	0	07:55
185					
190		GC	CLAYEY FINE GRAVEL	0	08:10
195					
200		GC	CLAYEY FINE GRAVEL	0	08:20
205					
210		GC	CLAYEY FINE GRAVEL	0	08:39
215					
220		GC	CLAYEY FINE GRAVEL	0	08:50
225					

PROJ.#:03103154-11	DRILL DATE: 05-07/15-04
LOGGED BY: CHARMAN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER:	
RIG TYPE:SPEEDSTAR	DIAMETER: 10"
DRILLER: WDC	TOTAL DEPTH: 350'
DRILLING METHOD: MUD ROTARY	

TERRANEXT

FIELD BOREHOLE LOG
AVB 122-03
55TH AVENUE & BUCHANAN
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
230		GC	CLAYEY FINE GRAVEL, TRACE SAND AND SILT		09:09 LOST CIRCULATION
					14TH MAY 2004
235					
240		GW	COARSE SANDY GRAVEL		14:48
245					
250		GC	CLAYEY FINE GRAVEL W/TRACE COARSE SAND		15:21
255					
260		GP	POORLY GRADED GRAVEL		15:26
265					
270		GP	POORLY GRADED GRAVEL		15:40
275					
280		GP	POORLY GRADED GRAVEL W/ MINOR COARSE SAND		15:52
285					
290		GW/SW	GRAVELLY SAND/SANDY GRAVEL		16:10
295					
300		GW/SW	GRAVELLY SAND/SANDY GRAVEL		16:25

PROJ.#:03103154-11	DRILL DATE: 05-07/15-05
LOGGED BY: CHARMAN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER:	
RIG TYPE:SPEEDSTAR	DIAMETER: 10"
DRILLER: WDC	TOTAL DEPTH:350'
DRILLING METHOD: MUD ROTARY	

TERRANEXT

FIELD BOREHOLE LOG
AVB 122-03
55TH AVENUE AND BUCHANAN
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
310		GW/SW	GRAVELLY SAND/SANDY GRAVEL		17:00
315					
320		GP	POORLY GRADED GRAVEL		17:05
325					
330		GC	CLAYEY GRAVEL		17:40
335					
340		GC	CLAYEY SANDY GRAVEL		17:50
345					
350		GC	CLAYEY SANDY GRAVEL		18:00 TD = 350'
355					
360					
365					
370					
375					
380					

PROJ.#:03103154-11	DRILL DATE: 05-07/15-04
LOGGED BY: CHARMAN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER:	
RIG TYPE: SPEEDSTAR	DIAMETER: 10"
DRILLER: WDC	TOTAL DEPTH: 350'
DRILLING METHOD: MUD ROTARY	

TERRANEXT

FIELD BOREHOLE LOG
AVB 122-03
55TH AVENUE AND BUCHANAN
PHOENIX, ARIZONA

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	TERRANEXT
WELL ID	AVB 132-03
FIELD	PHOENIX
COUNTY	MARICOPA
STATE	ARIZONA

TYPE OF LOGS: E-LOGS -GAMMA

MORE:

LOCATION

SEC TWP RGE

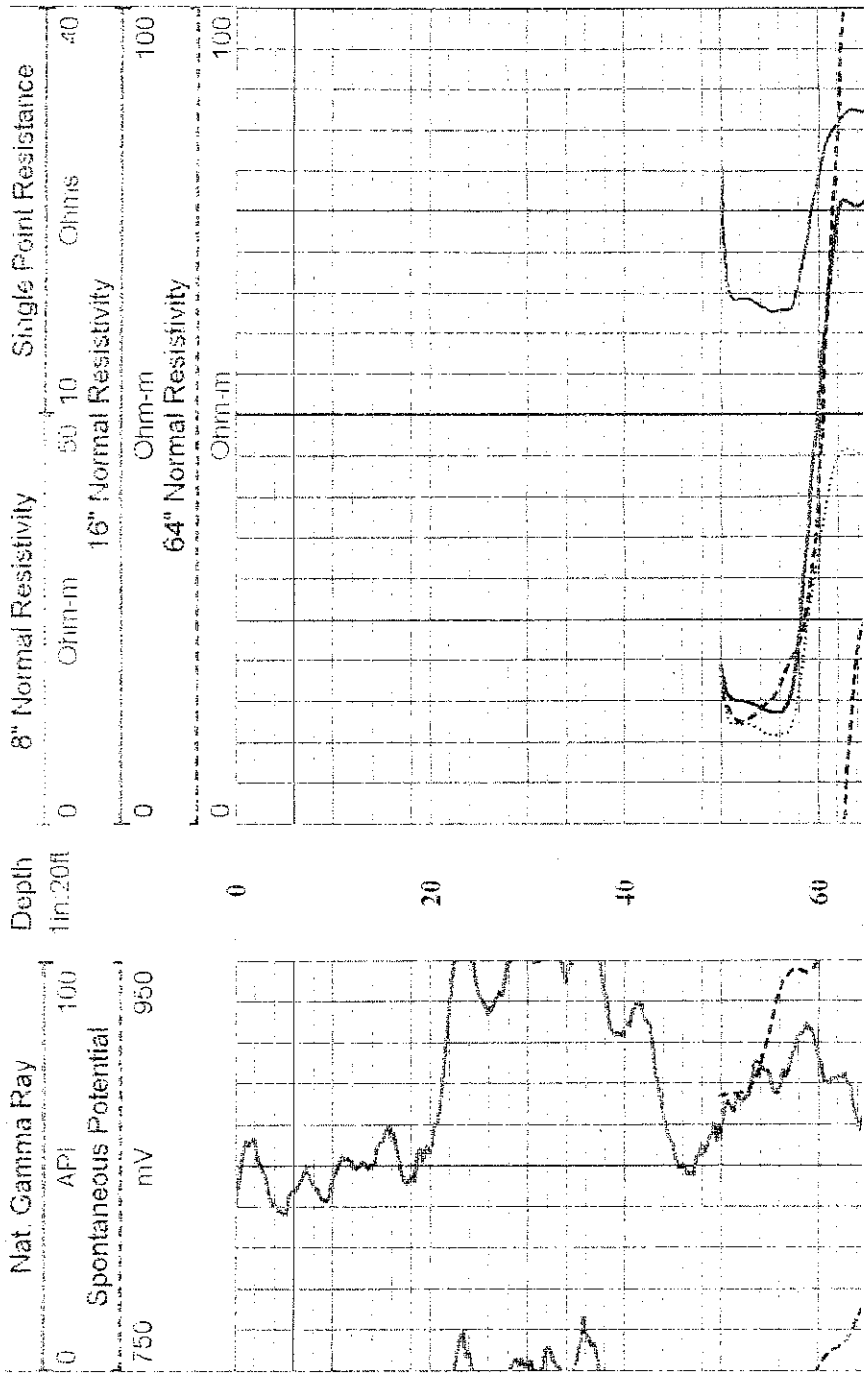
OTHER SERVICES

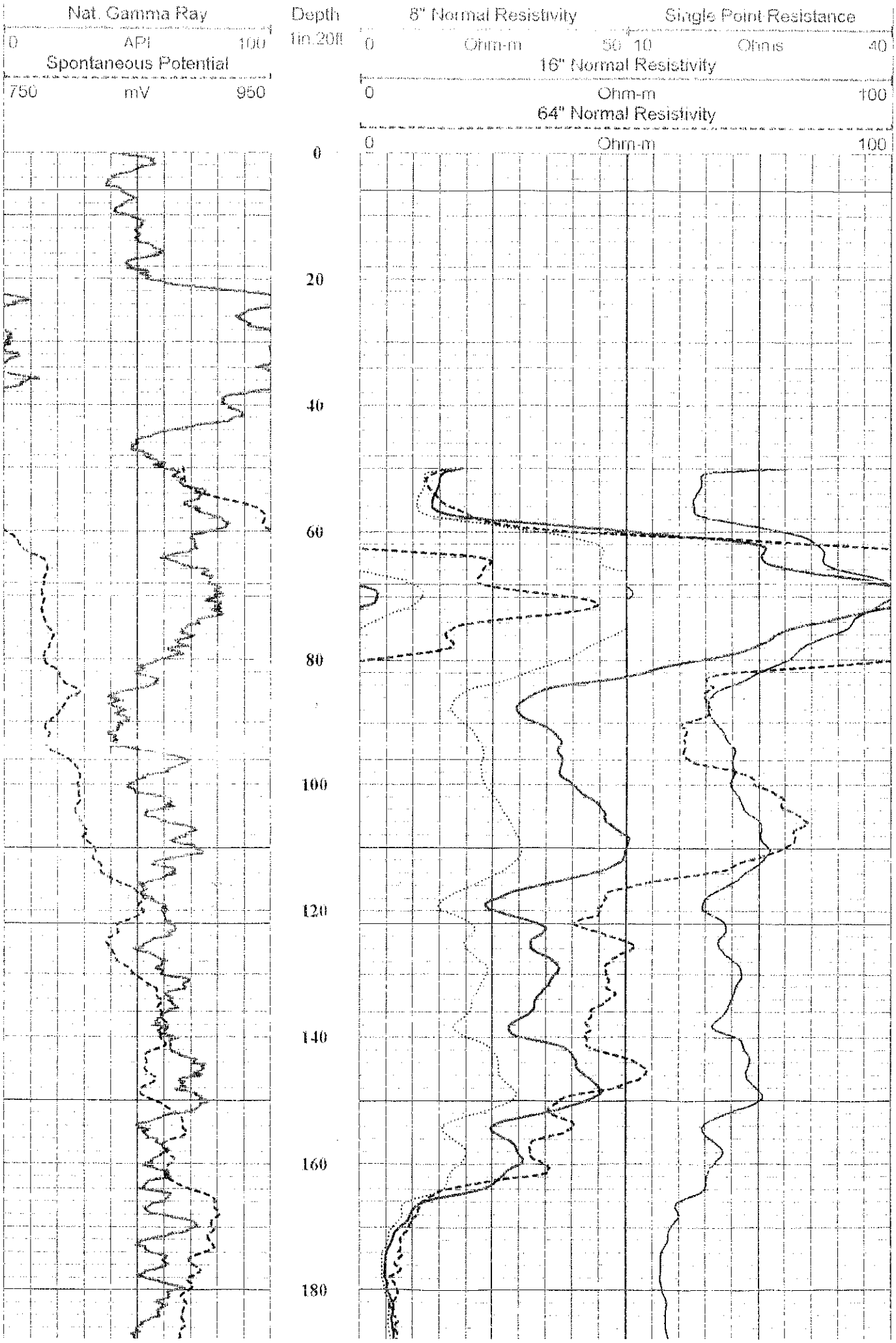
CALIPER
NEUTRON
GAMMA

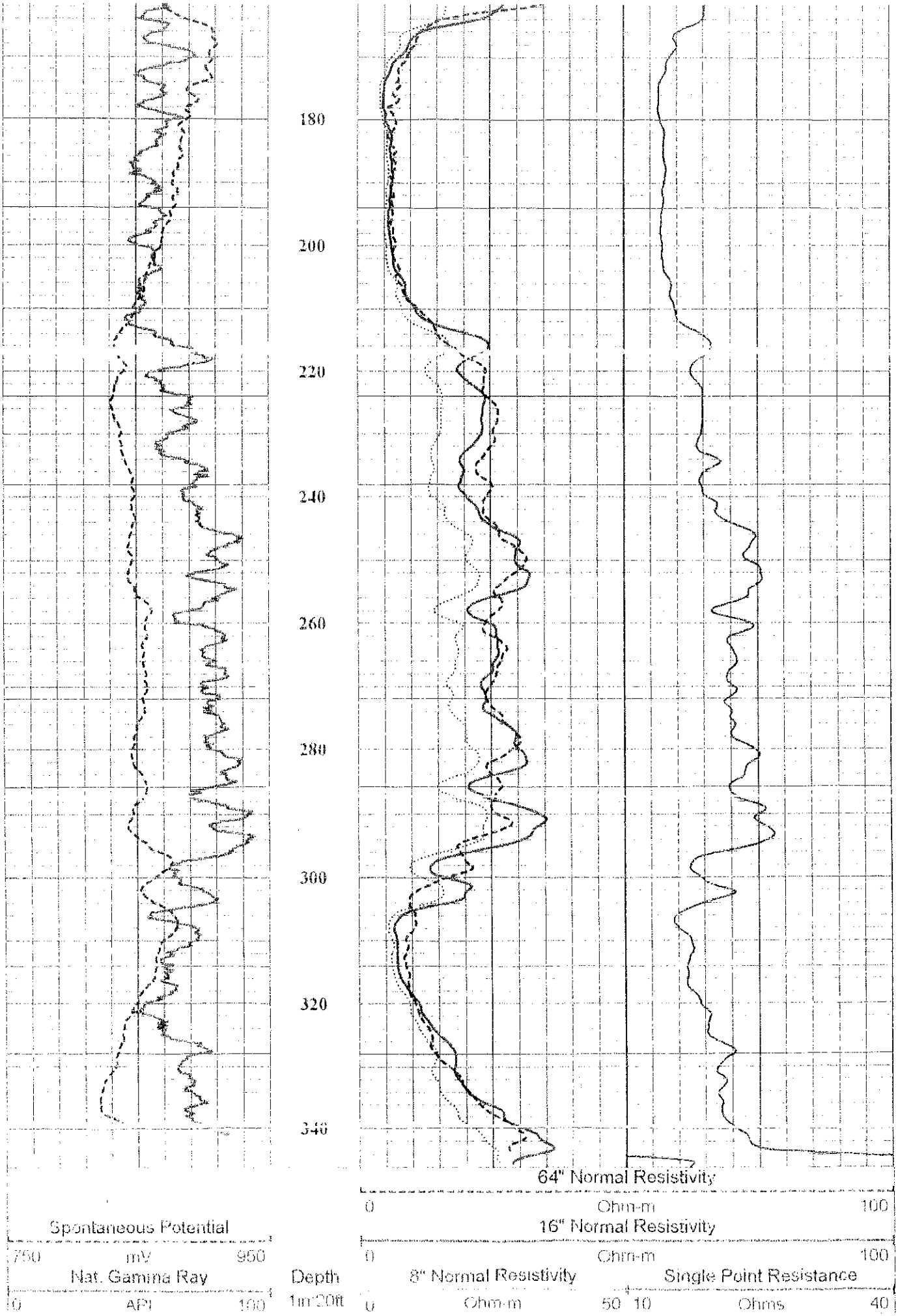
PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	TOP OF CASING	1 ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM			G.L.

DATE	05-19-08	TYPE FLUID IN HOLE	FRESH MUD
RUN No.	2	SALINITY	
TYPE LOG	E-LOGS-GAMMA	DENSITY	
DEPTH-DRILLER	560 FT	LEVEL	10 FT
DEPTH-LOGGER	[illegible]	MAX. REC. TEMP.	
BTM. LOGGED INTERVAL	[illegible]		
TOP LOGGED INTERVAL	SURFACE		
OPERATING RIG TIME			
RECORDED BY	D. MITCHELL		
WITNESSED BY	TERRANEXT		

BIT No.	BOREHOLE RECORD			CASING RECORD			
No.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	[illegible]	SURFACE	20 FT	12"		SURFACE	20 FT
2	[illegible] 8"	20 FT	TOTAL DEPTH				
3							




Nat. Gamma Ray
0
API
100
Spontaneous Potential
750
mV
950
Depth
1in.20ft
0
20
40
60
80
100
120
140
160
180
8" Normal Resistivity
0
Ohm-m
50
Single Point Resistance
10
Ohms
40
16" Normal Resistivity
0
Ohm-m
100
64" Normal Resistivity
0
Ohm-m
100


180
200
220
240
260
280
300
320
340
64" Normal Resistivity
0
Ohm-m
100
Spontaneous Potential
16" Normal Resistivity
750
mV
950
0
Ohm-m
100
Nat. Gamma Ray
Depth
8" Normal Resistivity
Single Point Resistance
0
API
100
1m:20ft
0
Ohm-m
50
10
Ohms
40

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	TERRANEXT		
WELL ID	AVB 122-03		
FIELD	PHOENIX		
COUNTY	MARICOPA	STATE	ARIZONA

TYPE OF LOGS: GAMMA-NEUTRON-CAL

MORE:

LOCATION

SEC TWP RGE

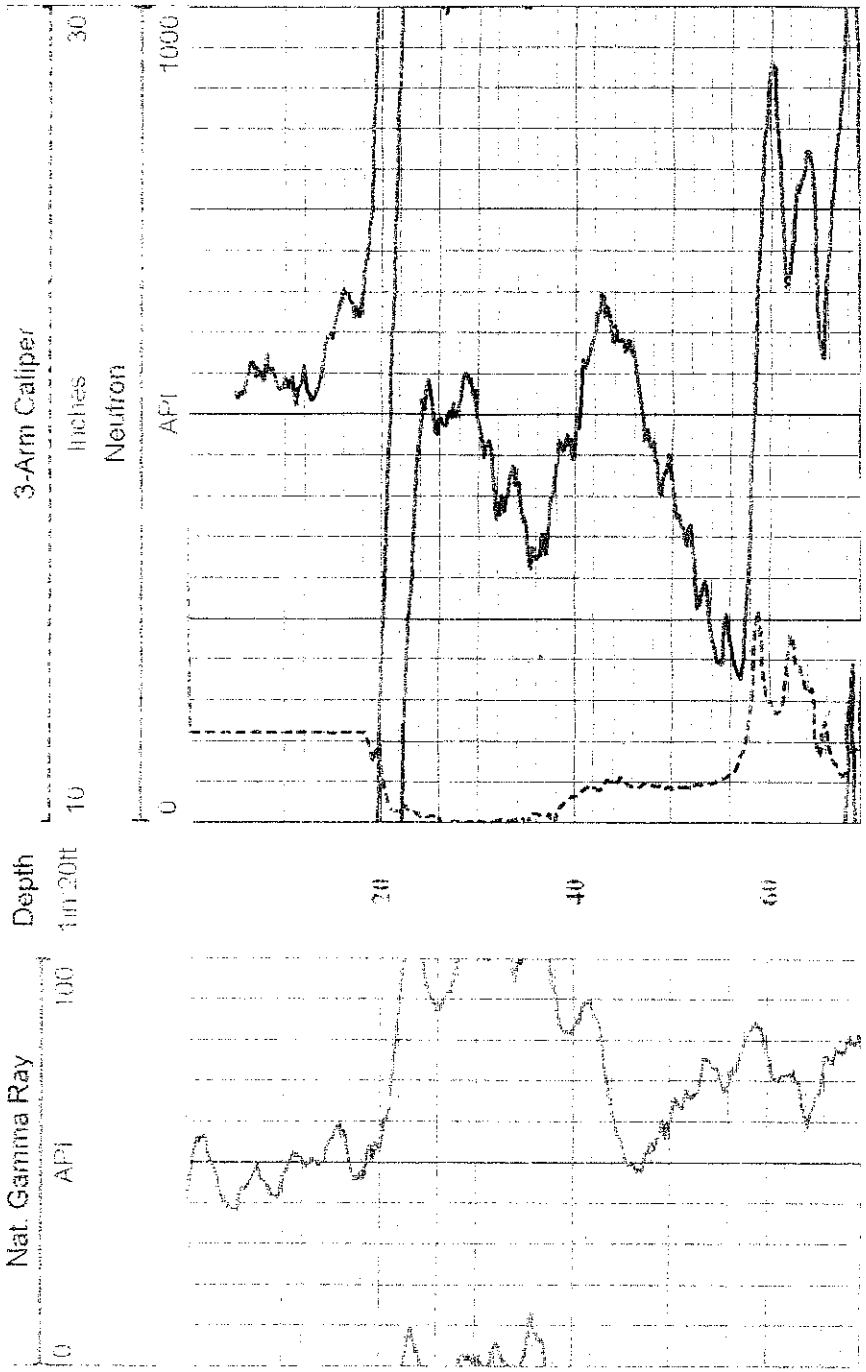
OTHER SERVICES

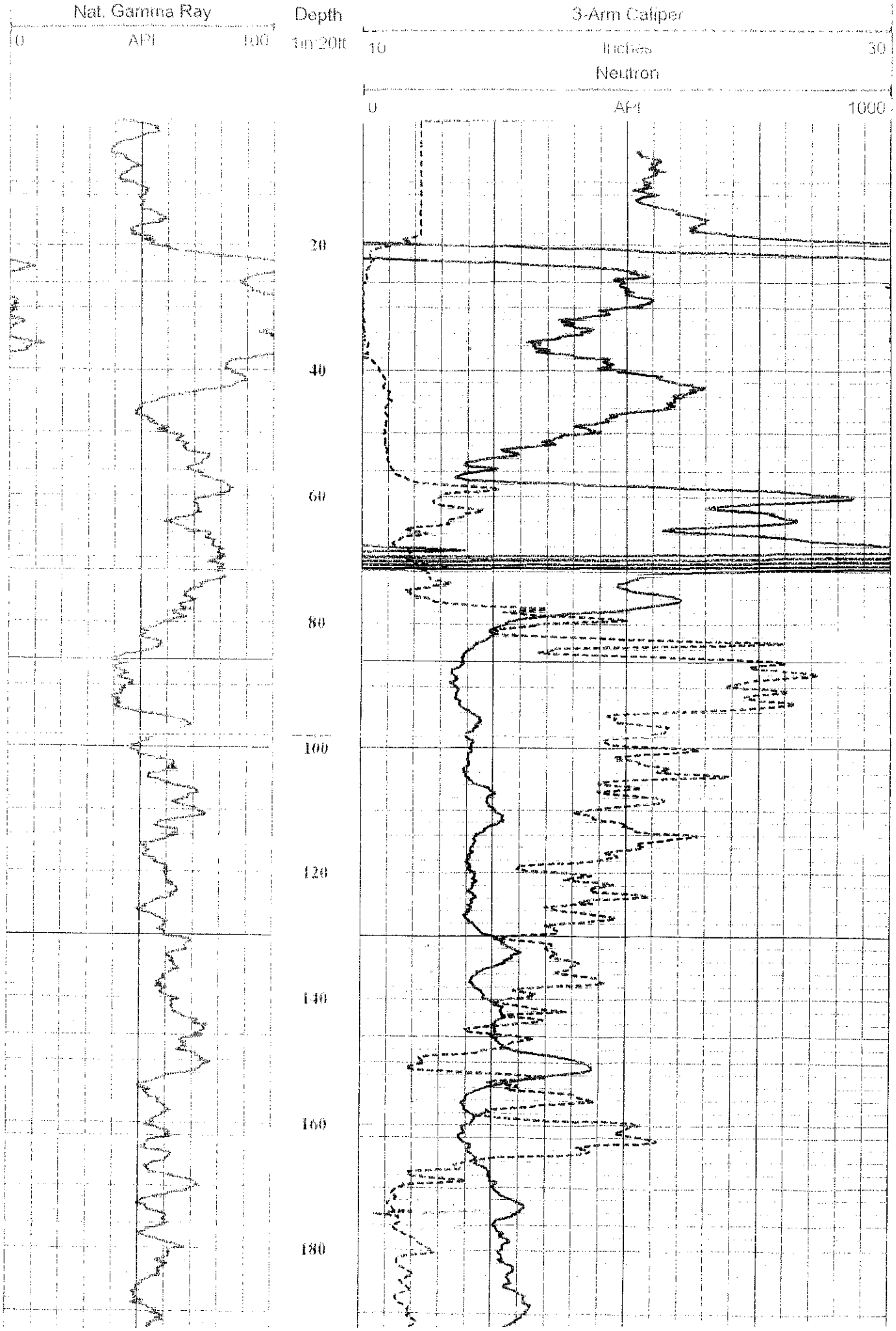
E-LOGS

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	TOP OF CASING	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM			G.L.

DATE	05-16-04	TYPE FLUID IN HOLE	FRESH MUD
RUN No	1	SALINITY	
TYPE LOG	GAMMA-NEUTRON-CAL	DENSITY	
DEPTH-DRILLER	360 FT	LEVEL	10 FT
DEPTH-LOGGER	306 FT	MAX. REC. TEMP.	
BTM LOGGED INTERVAL	306 FT		
TOP LOGGED INTERVAL	SURFACE		
OPERATING RIG TIME			
RECORDED BY	K. MITCHELL		
WITNESSED BY	TERRANEXT		

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT	FROM	TO
1	12 3/4"	SURFACE	20 FT	12"		SURFACE	20 FT
2	9 7/8"	20 FT	TOTAL DEPTH				
3							




Nat. Gamma Ray
0
API
100
Depth
1in 20ft
3-Arm Caliper
10
Inches
30
Neutron
0
API
1000
20
40
60
80
100
120
140
160
180

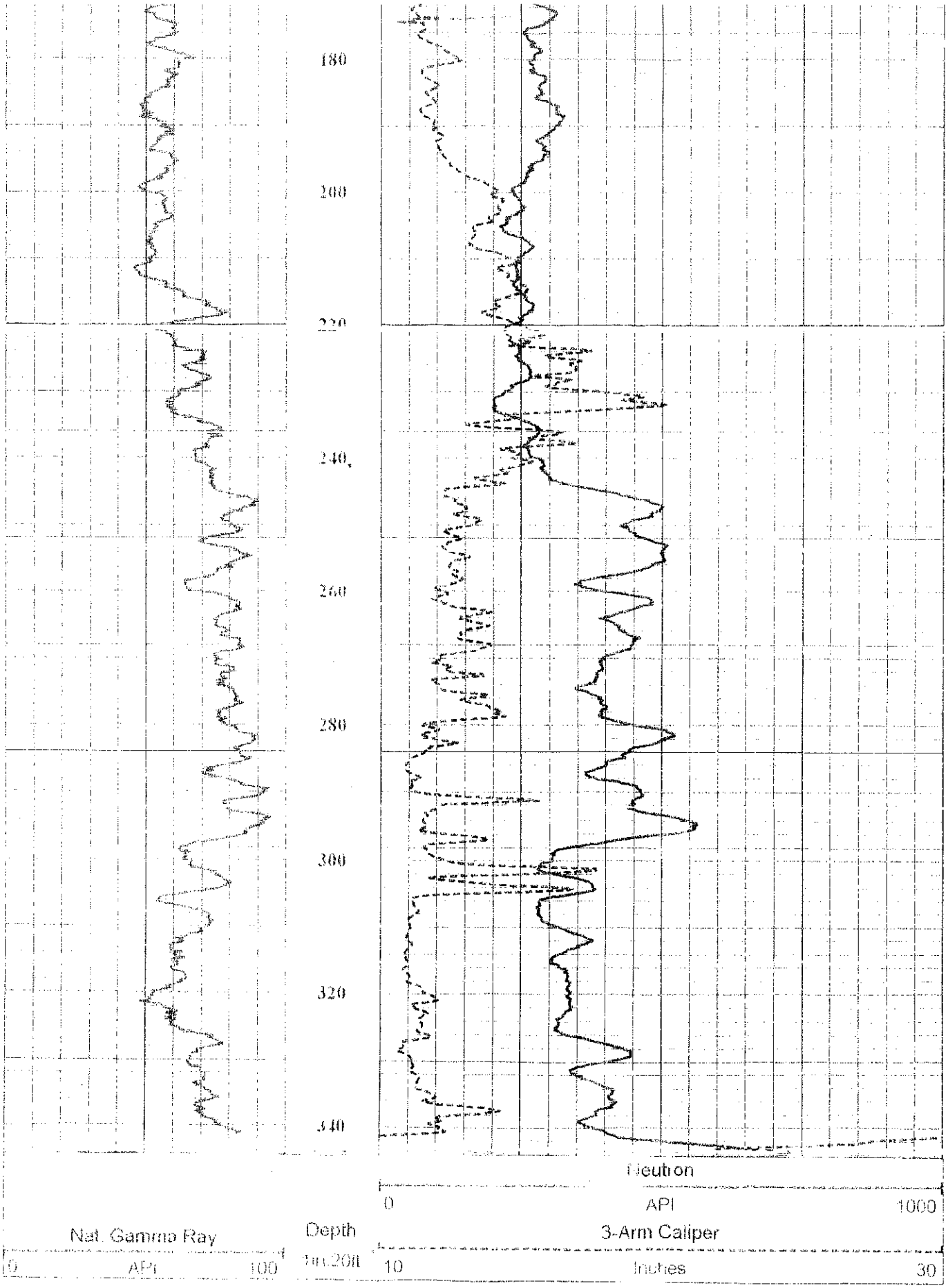
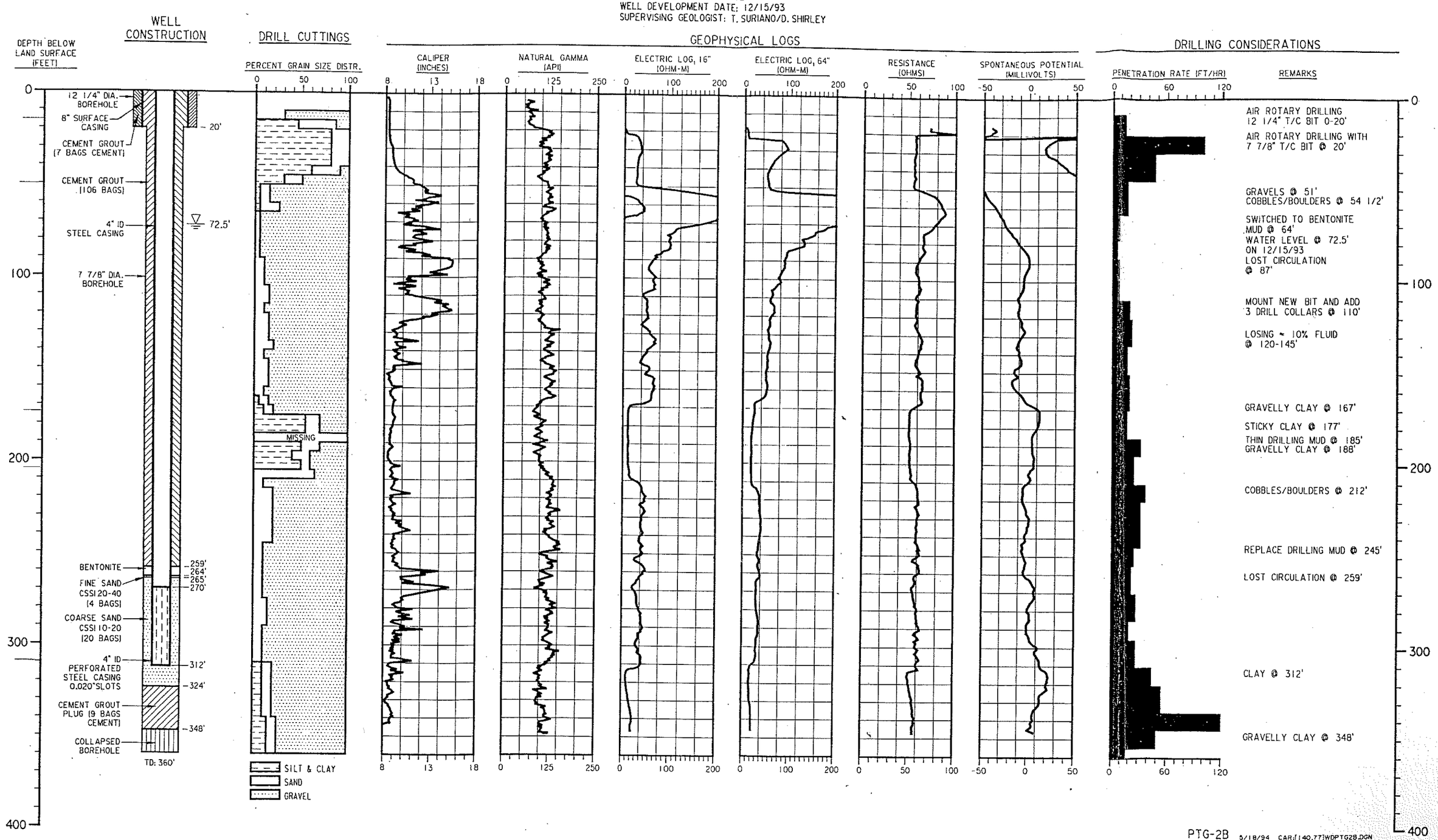

180
200
220
240
260
280
300
320
340
Neutron
0
API
1000
Nat. Gamma Ray
Depth
3-Arm Caliper
0
API
100
1in:20ft
10
Inches
30

FIGURE 9. WELL DATA PROFILE WELL PTG-2B

ADWR REGISTRATION NO. 55-540987

DRILLING METHOD: AIR/MUD ROTARY
DRILLING CONTRACTOR: B.J. DRILLING CO.
START DRILLING DATE: 12/7/93
WELL COMPLETION DATE: 12/14/93
WELL DEVELOPMENT DATE: 12/15/93
SUPERVISING GEOLOGIST: T. SURIANO/D. SHIRLEY



36311

Sampler: grab/2" split spoon
Equipment: Schramm
Elevation: 1055.69 Date: 7/13/97

Odor	PID	Depth (ft)	Sample	Description
		0		Concrete
				Brown Clay (CL) [7.5YR 4/2] hard, moist, 60% clay, 35% silt, 5% fine sand
No	0	5		
		10		
		15		**Brown Silt (ML)** [7.5YR 4/3] hard, moist, 75% silt, 20% clay, 5% fine sand
No	0			
		20		
No	0	25		dark yellowish brown [10YR 4/6] 80% silt, 10% clay, 10% fine to medium sand
				dry
		30		
No	0	35		
		40		**Yellowish Brown Sandy Silt with Gravel (ML)** [10YR 5/4] 50% silt, 30% fine to coarse sand, 20% fine gravel

16" Diameter Cement Seal
0 to 6 feet bgs

10" Diameter Driven Steel Casing
0 to 185 feet bgs

10" Diameter Borehole
6 to 185 feet bgs

4.5" SDR 17 Blank PVC Well Casing
+2 to 213.75 feet bgs

Enviroplug Bentonite Grout Seal
0 to 207 feet bgs

(sheet 1 of 7)

Harding Lawson Associates
Engineering and Environmental Services

LOG OF BORING MW-11
Van Waters & Rogers Inc.
Phoenix, Arizona

FIGURE A4

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
DBS	36311-4	ECS	7/8/97	10/22/97

36311

Sampler: grab/2" split spoon
Equipment: Schramm
Elevation: 1055.69 Date: 7/13/97

Odor	PID	Depth (ft)	Sample	Description
		40		
		45		**Light Yellowish Brown Silty Sand (SM)** medium dense, dry, 60% fine to medium sand, 40% silt
No	0			
		50		**Well Graded Gravel with Sand (GW)** dense, dry, 50% fine to coarse gravel, 40% fine to coarse sand, 10% silt
No	0	55		
		60		
		65		
No	0			
		70		**Brown Well Graded Sand with Gravel (SW)** [7.5YR 4/3] dense, 50% fine to coarse sand, 40% fine to coarse gravel, 10% silt
No	0			
		75		
		80		**Well Graded Gravel with Sand (GW)** dense, dry, 50% fine to coarse gravel, 40% fine to coarse sand, 10% silt

(sheet 2 of 7)

Harding Lawson Associates
Engineering and Environmental Services

LOG OF BORING MW-11
Van Waters & Rogers Inc.
Phoenix, Arizona

FIGURE A4

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
DBS	36311-4	ECS	7/8/97	10/22/97

36311

Sampler: grab/2" split spoon
Equipment: Schramm
Elevation: 1055.69 Date: 7/13/97

Odor	PID	Depth (ft)	Sample	
No	0	80		
		85		
No	0	90		
No	0	95		
		100		**Brown Poorly Graded Sand with Gravel (SP)** [7.5YR 4/3] dense, 60% fine to medium sand, 30% fine to coarse gravel, 10% silt
		105		
No	0	110		75% fine to medium sand, 15% fine gravel, 10% silt
No	0	115		**Poorly Graded Gravel with Sand (GP)** dense, wet, 60% fine to coarse gravel, 30% fine to coarse sand, 10% silt
		120		

(sheet 3 of 7)

Harding Lawson Associates
Engineering and
Environmental Services

LOG OF BORING MW-11
Van Waters & Rogers Inc.
Phoenix, Arizona

FIGURE
A4

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
DBS	36311-4	FCS	7/8/97	10/22/97

36311

Sampler: grab/2" split spoon
Equipment: Schramm
Elevation: 1055.69 Date: 7/13/97

Odor	PID	Depth (ft)	Sample	
		120		
		125		
		130		
		135		
		140		**Well Graded Gravel with Sand (GW)** dense, wet, 60% fine to coarse gravel, 30% fine to coarse sand, 10% silt
		145		
		150		
		155		70% fine to coarse gravel, 20% fine to coarse sand, 10% silt
		160		

(sheet 4 of 7)

Harding Lawson Associates
Engineering and Environmental Services

LOG OF BORING MW-11
Van Waters & Rogers Inc.
Phoenix, Arizona

FIGURE A4

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
DBS	36311-4	ECS	7/8/97	10/22/97

36311

Sampler: grab/2" split spoon
Equipment: Schramm
Elevation: 1055.69 Date: 7/13/97

Sample	Odor	PID	Depth (ft)	Description
			160	50% fine to coarse gravel, 40% fine to coarse sand, 10% silt
			165	
			170	
150	No	0	175	
			180	Brown Clay (CL) [7.5YR 4/3] hard, moist, 5% fine sand
			185	
			190	
73/10"	No	0		brown [7.5YR 5/4]
			195	
			200	

8" Diameter Borehole
185 to 270 feet bgs

(sheet 5 of 7)

Harding Lawson Associates
Engineering and
Environmental Services

LOG OF BORING MW-11
Van Waters & Rogers Inc.
Phoenix, Arizona

FIGURE
A4

DRAWN:	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
DBS	36311-4	KCS	7/8/97	10/22/97

36311

Sampler: grab/2" split spoon
Equipment: Schramm
Elevation: 1055.69 Date: 7/13/97

Odor | PID | Depth (ft) | Sample

200
205
210
215
220
225
230
235
240

Bentonite Seal
207 to 217 feet bgs

Filter Pack, 10-20 Sand
217 to 270 feet bgs
4.5" SDR 17 Slotted (0.020")
PVC Well Casing
220 to 270 feet bgs

Brown Silty Sand (SM) [7.5YR 4/3]
dense, moist, 55% fine to medium sand, 45% silt

65% fine to coarse sand, 30% silt, 5% fine gravel

(sheet 6 of 7)

Harding Lawson Associates
Engineering and
Environmental Services

LOG OF BORING MW-11
Van Waters & Rogers Inc.
Phoenix, Arizona

FIGURE
A4

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
DBS	36311-4	FCS	7/8/97	10/22/97

36311

Sampler: grab/2" split spoon
Equipment: Schramm
Elevation: 1055.69 Date: 7/13/97

Odor	PID	Depth (ft)	Sample	Description
		240		**Well Graded Gravel with Sand (GW)** dense, saturated, 60% fine to coarse gravel, 30% fine to coarse sand, 10% silt
		245		
		250		
		255		
		260		**Brown Well Graded Sand with Gravel (SW)** [7.5YR 4/3] dense, wet, 70% fine to coarse sand, 20% fine gravel, 10% silt
		265		
		270		Boring terminated at 270 feet. Groundwater encountered at approximately 105 feet while drilling. Boring converted to monitor well MW-11 on July 2, 1997.
		275		
		280		

PVC End Cap

(sheet 7 of 7)

Harding Lawson Associates
Engineering and Environmental Services

LOG OF BORING MW-11
Van Waters & Rogers Inc.
Phoenix, Arizona

FIGURE A4

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
DBS	36311-4	KCS	7/8/97	10/22/97

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
			ASPHALT OVER ROAD BASE		17TH MAY 04
5					
		SM	SILTY FINE SAND, SLIGHTLY MOIST, TAN	0.5	
10					
15					
		SM	SILTY FINE SAND, MOIST, LT. BROWN	0.6	AUGER DRILLED TO 20' SURFACE CASING INSTALLED
20					19TH MAY 04
25					
		SM	SILTY FINE SAND W/TRACE GRAVEL	0	11:40
30					
35					
		GW	CLAYEY COARSE SANDY GRAVEL	0	11:51
40					
45					
		GC	CLAYEY GRAVEL W/COBBLES	0	12:24
50					
55					
		GP	COARSE GRAVEL W/COBBLES	0	13:05
60					
65					
		GP	COARSE GRAVEL W/COBBLES	0	13:40
70					
75					

PROJ.#:03103154-11	DRILL DATE:05-17/24-04
LOGGED BY: CHARMAN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 95'	
RIG TYPE:SPEEDSTAR	DIAMETER: 9 7/8"
DRILLER: WDC	TOTAL DEPTH: 301'
DRILLING METHOD: MUD ROTARY	

TERRANEXT

FIELD BOREHOLE LOG

AVB 128-01

39TH AVENUE & WASHINGTON

PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
80		GP	COARSE GRAVEL W/COBBLES	0	16:40
85					20TH MAY 2004
90		GP	GRAVEL W/COBBLES	0	08:22
95					
100		GW	FINE TO COARSE SANDY GRAVEL	0	09:15
105					
110		GW	FINE TO COARSE SANDY GRAVEL	0	10:19
115					
120		GW	COARSE SANDY GRAVEL W/COBBLES	0	10:40
					MUD PUMP DOWN
125					21ST MAY 2004
130		GP	COARSE GRAVEL W/COBBLES	0	09:43
135					
140		GP	COARSE GRAVEL W/COBBLES	0	10:15
145					
150		GP	COARSE GRAVEL W/COBBLES	0	11:03

PROJ.#:03103154-11	DRILL DATE: 05-17/24-04
LOGGED BY: CHARMAN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 95'	
RIG TYPE: SPEEDSTAR	DIAMETER: 9 7/8"
DRILLER: WDC	TOTAL DEPTH:301'
DRILLING METHOD: MUD ROTARY	

TERRANEXT

FIELD BOREHOLE LOG
AVB 128-01
39TH AVENUE & WASHINGTON
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
155					
160		GC	CLAYEY COARSE GRAVEL W/COBBLES	0	11:14
165					
170		CL	GRAVELLY CLAY W/COBBLES	0	11:21
175					
180		CL	GRAVELLY CLAY	0	11:30
185					
190		CL	GRAVELLY CLAY	0	11:53
195					
200		GC	CLAYEY, COARSE SANDY GRAVEL	0	12:46
205					BREAK FOR WEEKEND
210		GC	CLAYEY GRAVEL	0	12:02 24TH MAY 2004
215					
220		GC	CLAYEY COARSE GRAVEL	0	12:19
225					

PROJ.#:03103154-11	DRILL DATE: 05-07/24-04
LOGGED BY: CHARMAN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 95'	
RIG TYPE:SPEEDSTAR	DIAMETER: 9 7/8"
DRILLER: WDC	TOTAL DEPTH: 301'
DRILLING METHOD: MUD ROTARY	

TERRANEXT

FIELD BOREHOLE LOG
AVB 128-01
39TH AVENUE & WASHINGTON
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
230		GC	CLAYEY COARSE GRAVEL	0	13:42
235					
240		CL	GRAVELLY CLAY	0	14:00
245					
250		GC	CLAYEY COARSE GRAVEL	0	14:18
255					
260		CL	GRAVELLY CLAY	0	14:33
265					
270		GC	CLAYEY FINE-COARSE GRAVEL	0	15:03
275					
280		GC	CLAYEY FINE GRAVEL	0	15:22
285					
290		GP	FINE-COARSE WELL SORTED GRAVEL		16:33
295					
300		GP	FINE WELL SORTED GRAVEL		16:52 TD = 300'

PROJ.#:03103154-11	DRILL DATE: 05-07/24-04
LOGGED BY: CHARMAN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 95'	
RIG TYPE:SPEEDSTAR	DIAMETER: 9 7/8"
DRILLER: WDC	TOTAL DEPTH: 301'
DRILLING METHOD: MUD ROTARY	

TERRANEXT

FIELD BOREHOLE LOG
AVB 128-01
39TH AVENUE & WASHINGTON
PHOENIX, ARIZONA

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	TERRANEXT		
WELL ID	AVB-128-01		
FIELD	PHOENIX		
COUNTY	MARICOPA	STATE	ARIZONA

TYPE OF LOGS: ELOGS-NAT GAMMA
MORE:

LOCATION
A(1-2)10

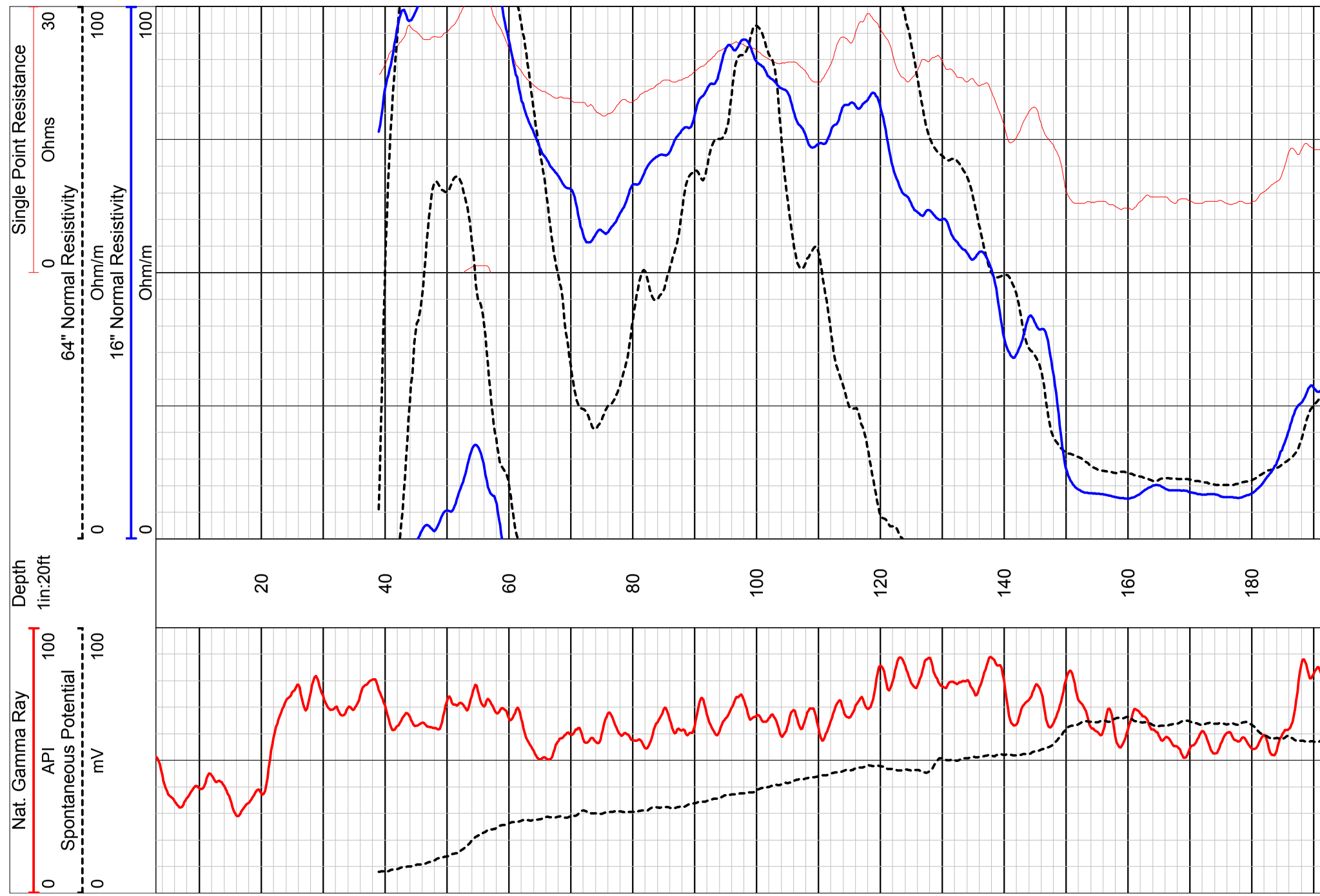
SEC 10 TWP 1N RGE 2E

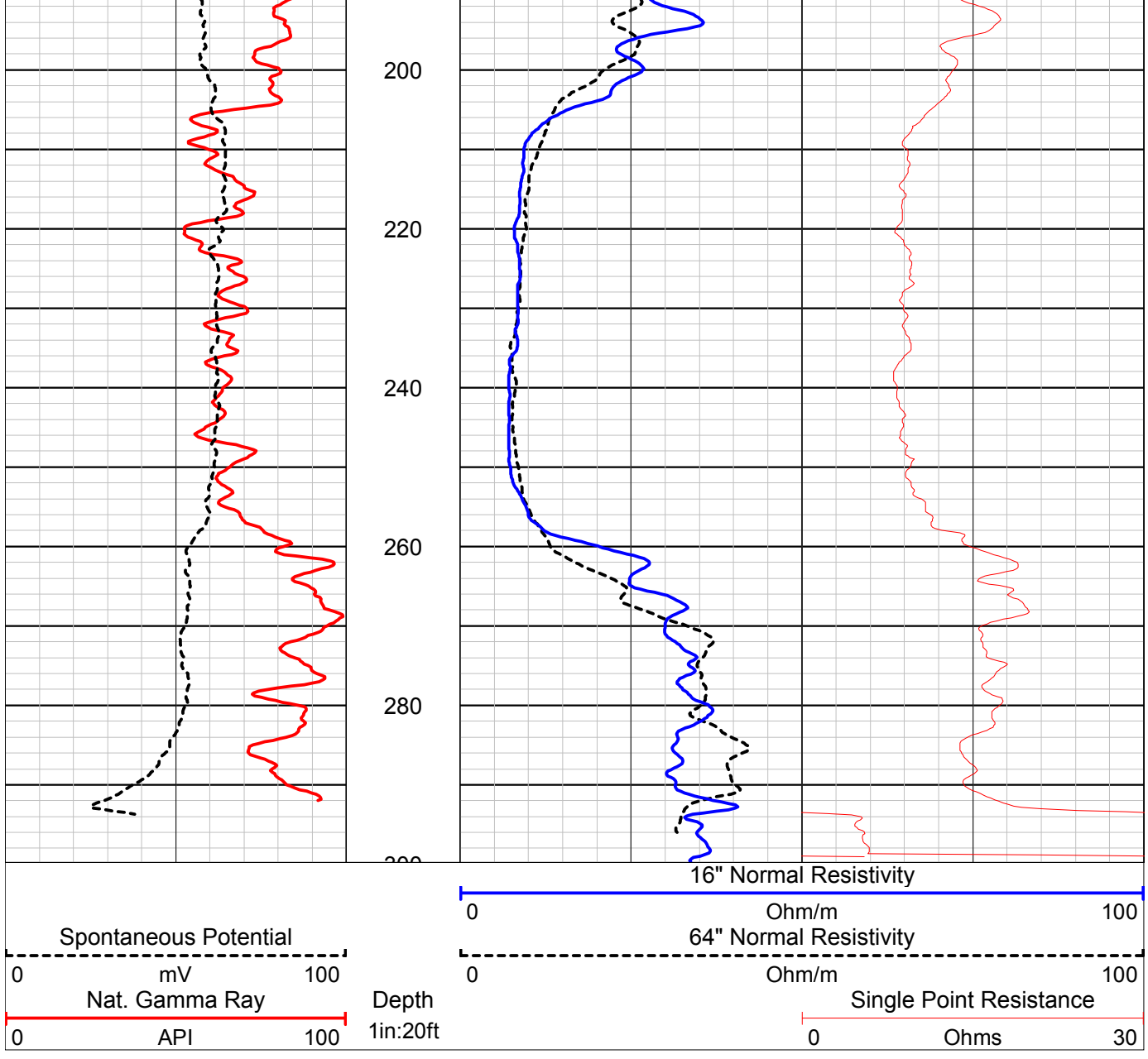
OTHER SERVICES
NEUTRON
CALIPER

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	TOP OF CASING	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM			G.L.

DATE	5-25-04	TYPE FLUID IN HOLE	FRESH MUD
RUN No	1	SALINITY	
TYPE LOG	ELOG-GAMMA	DENSITY	
DEPTH-DRILLER	300 FT	LEVEL	FULL
DEPTH-LOGGER	297 FT	MAX. REC. TEMP.	
BTM LOGGED INTERVAL	297 FT		
TOP LOGGED INTERVAL	SURFACE		
OPERATING RIG TIME			
RECORDED BY	A HEDRICK		
WITNESSED BY	WDC		

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	17.5"	SURFACE	20 FT	12"		SURFACE	20 FT
2	9 7/8"	20 FT	TOTAL DEPTH				
3							




200
220
240
260
280
16" Normal Resistivity
0
Ohm/m
100
Spontaneous Potential
0
mV
100
64" Normal Resistivity
0
Ohm/m
100
Nat. Gamma Ray
0
API
100
Depth
1in:20ft
Single Point Resistance
0
Ohms
30

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	TERRANEXT		
WELL ID	AVB-128-01		
FIELD	PHOENIX		
COUNTY	MARICOPA	STATE	ARIZONA

TYPE OF LOGS: GAMMA-NEUT-CAL

MORE:

OTHER SERVICES

ELOGS

LOCATION

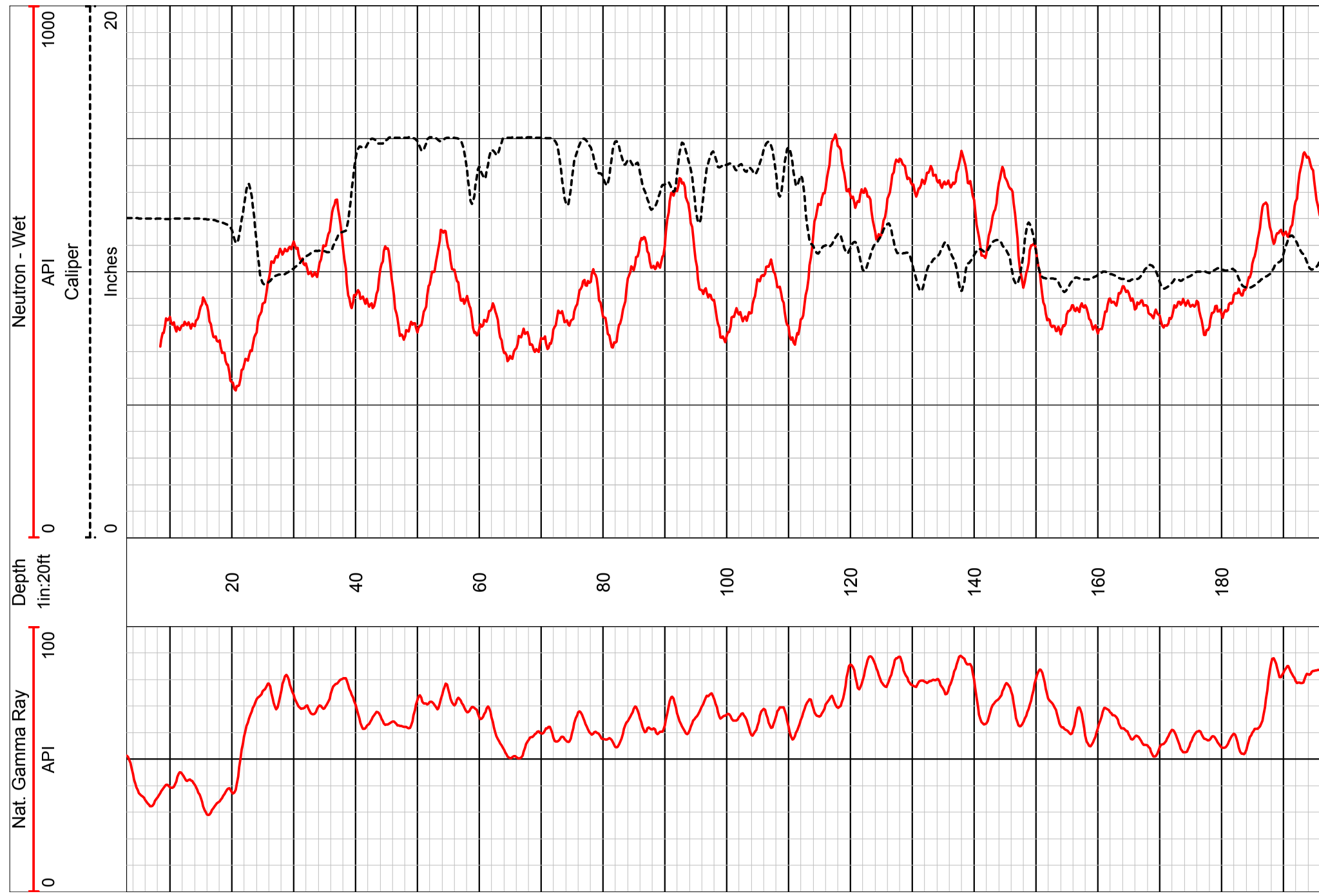
A(1-2)10

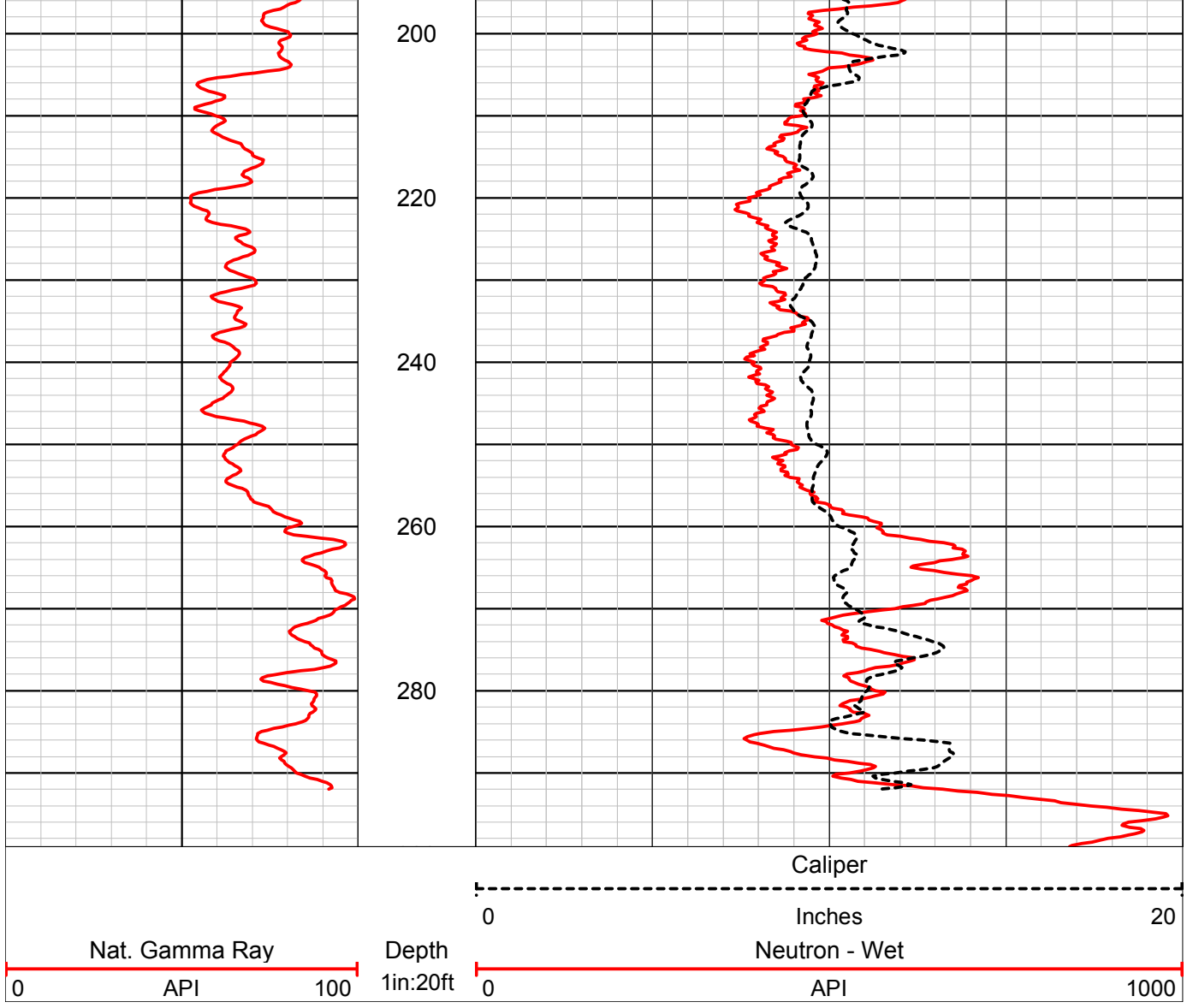
SEC 10 TWP 1N RGE 2E

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	TOP OF CASING	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM			G.L.

DATE	5-25-04	TYPE FLUID IN HOLE	FRESH MUD
RUN No	1	SALINITY	
TYPE LOG	GAMMA-NEUT-CAL	DENSITY	
DEPTH-DRILLER	300 FT	LEVEL	FULL
DEPTH-LOGGER	297 FT	MAX. REC. TEMP.	
BTM LOGGED INTERVAL	297 FT		
TOP LOGGED INTERVAL	SURFACE		
OPERATING RIG TIME			
RECORDED BY	A HEDRICK		
WITNESSED BY	WDC		

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	17.5"	SURFACE	20 FT	12"		SURFACE	20 FT
2	9 7/8"	20 FT	TOTAL DEPTH				
3							




200
220
240
260
280
Caliper
0
Inches
20
Nat. Gamma Ray
0
API
100
Depth
1in:20ft
Neutron - Wet
0
API
1000

ROOSEVELT IRRIGATION DISTRICT

Redrill

REPORT ON WELL 10E-4¼N (#95)

4548

Work started - July 7, 1964
Work Completed - December 29, 1964
Total Depth - 1800 feet
Depth of Casing - 1800 feet

LOG OF WELL

0 - 12 Top soil
12 - 114 sand and boulders
114 - 253 Loose sand and gravel
253 - 280 clay and gravel
280 - 350 caliche, clay and gravel
350 - 360 sand and gravel.
360 - 385 sticky clay with hard streaks
385 - 410 sandy clay, coarse gravel
410 - 485 sticky clay, hard streaks
485 - 760 sticky gray clay
760 - 775 sand and gravel
775 - 795 sticky clay
795 - 807 sand and gravel
807 - 915 sticky clay, sandy streaks
915 - 1185 sand and gravel, some clay
1185- 1240 tight gravel, some clay
1240- 1530 granite, rock embedded in clay
1530- 1800 conglomerate, or hill formation.

PERFORATION

24" - 180' to 815' 12 holes per 5 inches
20" - 836' to 1470' 10 holes per 5 inches
16" - 1497' to 1775' 8 holes per 4 inches
Moss Hydraulic perforator used
Diameter of Perforations 5/16"
Length of Perforations 2¼"
Depth at which water first found 135'
Standing level before perforating 71'
Standing level after perforating 89'

836' of 24" 6 & 8 ga. casing used and left in well
678' of 20" 8 ga. casing used and left in well
317' of 16" 8 ga. casing used and left in well

REMARKS

Drilled by Roscoe Moss Company
Drillers - H.C. Cope, J.E. Garner, & M.G. Cope
Cable Tool Rig No. 47

Cost $65,273.88

DEPTH	SOIL SYMBOL	USCS	SOIL DESCRIPTION	TIME	COMMENTS
		ML	BROWN SANDY SILT, SLIGHTLY MOIST, SOFT, NO PLASTICITY	08:45A	12TH OCTOBER, 2005 START DRILLING
		CL	BROWN SILTY CLAY, SLIGHTLY MOIST, SOFT, SLIGHT PLASTICITY		
10		SM	LT BROWN, SILTY FINE SAND, SLIGHTLY MOIST, LOOSE		
		ML	LT BROWN, FINE SANDY SILT, SLIGHTLY MOIST, SOFT, NO PLASTICITY		
				09:00A	STOP DRILLING TO UNLOAD DRILL SUPPLIES
		SM	SILTY FINE-COARSE SAND W/ SOME FINE SUB ANGULAR-ANGULAR GRAVEL, GREY BROWN, DENSE, SLIGHTLY MOIST		
20		SW	FINE-COARSE SAND W/ SOME FINE-COARSE SUB ROUNDED-ROUNDED GRAVEL, RED BROWN, VERY DENSE, SLIGHTLY MOIST	01:20P	
			AS ABOVE		
		ML	SILT W/ FINE-COARSE SAND & SOME FINE ANGULAR GRAVEL, HARD, SLIGHTLY MOIST, GREY BROWN		
30		GW/ GM	SANDY FINE-COARSE GRAVEL W/ SOME CLAY, SILT & COBBLES, VERY DENSE, GREY BROWN, MOIST		
		CL	FINE-COARSE GRAVELLY CLAY W/ FINE-COARSE SAND & SOME SILT, DARK BROWN, HARD, MOIST	03:05P	
		GW	FINE-COARSE SANDY FINE-COARSE SUB ROUNDED GRAVEL W/ SOME SILT & OCCASIONAL COBBLES, GREY BROWN, VERY DENSE, SLIGHTLY MOIST		
40				03:30P	
		SW	FINE-COARSE SAND W/ SOME FINE-COARSE SUB ANGULAR-SUB ROUNDED GRAVEL, SILT & TR CLAY, GREY BROWN, VERY DENSE, SLIGHTLY MOIST		
50		GW	FINE-COARSE SANDY FINE-COARSE ROUNDED-SUB ROUNDED GRAVEL W/ SOME SILT, GREY BROWN, VERY DENSE, SLIGHTLY MOIST	04:15P	
		SM	SILTY FINE-COARSE SAND W/ SOME FINE-COARSE GRAVEL & TR CLAY, VERY DENSE, DRY		
		GW	FINE-COARSE SANDY FINE-COARSE SUB ROUNDED GRAVEL W/ SOME SILT, GREY BROWN, VERY DENSE, MOIST		13TH OCTOBER, 2005

PROJECT # : 0310-3154	DRILL DATE: 10/12-21/05
LOGGED BY: AJG/BS	
PROJECT MANAGER: CHUCK GORDON	
NOTES:	
DEPTH TO WATER: 114FT	
RIG TYPE: SR102	DIAMETER: 9"
DRILLER: PROSONIC	TOTAL DEPTH: 300'
DRILLING METHOD: ROTOSONIC	

TERRANEXT

FIELD BOREHOLE LOG
AVB 132-02
55-208663
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOL	USCS	SOIL DESCRIPTION	TIME	COMMENTS
		GW			
				07:20A	
		CL	CLAY W/ TR SILT & FINE SAND, BROWN, HARD, MOIST, MODERATE PLASTICITY		
			AS ABOVE EXCEPT SOME SILT, LOW-MODERATE PLASTICITY		
70			AS ABOVE EXCEPT SOME FINE SAND	07:55A	
		ML	SILT W/ SOME FINE SAND & CLAY, BROWN, HARD, SLIGHTLY MOIST, VERY LOW PLASTICITY		
80					
		SP	FINE-MEDIUM SAND W/ SOME SILT & TR CLAY, VERY DENSE, RED GREY, MOIST		
		SW	AS ABOVE W/ SOME FINE-COARSE SUB ROUNDED-SUB ANGULAR GRAVEL & OCCASIONAL COBBLES	09:00A	
		GW	FINE-COARSE SUB ROUNDED-SUB ANGULAR GRAVEL W/ SOME SAND & SILT & SOME COBBLES, GREY BROWN, VERY DENSE, MOIST		
90		SW	FINE-COARSE SAND W/ FINE-COARSE GRAVEL & SOME SILT, GREY BROWN, VERY DENSE, MOIST		
			GRADING TO GRAVELLY SAND		
		GW	FINE-COARSE ROUNDED-SUB ROUNDED SANDY GRAVEL W/ SOME COBBLES & SILT, GREY BROWN, VERY DENSE, SLIGHTLY MOIST		
			AS ABOVE EXCEPT BROWN	09:30A	
100			AS ABOVE W/ SOME SAND		
				10:05A	
			AS ABOVE EXCEPT VARIABLE AMOUNTS OF SAND		
		SM	FINE-COARSE SAND W/ SILT, FINE-COARSE GRAVEL & TR CLAY, GREY BROWN, VERY DENSE, SLIGHTLY MOIST		
110		GW	FINE-COARSE SANDY FINE-COARSE GRAVEL W/ SILT & ROUNDED COBBLES, GREY BROWN, VERY DENSE, SLIGHTLY MOIST		
				11:50A	
			AS ABOVE W/ SOME COBBLES		GROUND WATER STABILIZED AT 114'
		ML	FINE-COARSE SANDY SILT W/ GRAVEL & ROUNDED COBBLES, GREY BROWN, VERY DENSE, SLIGHTLY MOIST		
		GW	SAND, GRAVEL & COBBLES W/ SOME SILT, BROWN, VERY DENSE, VERY MOIST		

PROJECT # : 0310-3154	DRILL DATE: 10/12-21/05
LOGGED BY: AJG/BS	
PROJECT MANAGER: CHUCK GORDON	
NOTES:	
DEPTH TO WATER: 114FT	
RIG TYPE: SR102	DIAMETER: 9"
DRILLER: PROSONIC	TOTAL DEPTH: 300'
DRILLING METHOD: ROTOSONIC	

TERRANEXT

FIELD BOREHOLE LOG
AVB 132-02
55-208663
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOL	USCS	SOIL DESCRIPTION	TIME	COMMENTS
		GW/ GM	AS ABOVE W/ SOME CLAY & SILT		
		SP	FINE-MEDIUM SAND W/ TR SILT, RED GREY, VERY DENSE, WET	12:35P	GROUNDWATER FIRST ENCOUNTERED
		SW	FINE-COARSE SAND W/ SOME SILT & FINE-COARSE ROUNDED GRAVEL, DK RED GREY, VERY DENSE,WET		
130		GW	FINE-COARSE GRAVEL W/ SAND & COBBLES, GREY BROWN, VERY DENSE, WET		
		SW	FINE-COARSE ROUNDED GRAVELLY FINE-COARSE SAND W/ SOME COBBLES & TRACE SILT, GREY BROWN, VERY DENSE, WET	01:25P	
		SC	AS ABOVE WITH CLAY & SOME SILT, BROWN, VERY DENSE, WET		
140		CL	SILTY CLAY W/ SOME FINE SAND, BROWN, HARD, WET		
		GC	SAND, GRAVEL & COBBLES WITH CLAY & SOME SILT, GREY BROWN, VERY DENSE, WET		
		GW	GRAVEL & COBBLES W/ SOME SAND & SILT	02:00P	
150		GC	SAND, GRAVEL & COBBLES W/ CLAY & SOME SILT		
		GW	GRAVEL & COBBLES W/ SAND & SOME SILT, LT BROWN		
			SANDY LAYER		
160		GM	SAND, GRAVEL & COBBLES W/ SILT & SOME CLAY, GREY BROWN, VERY DENSE, WET		
		GW	AS ABOVE EXCEPT SOME SILT & CLAY		
		GM	SAND, GRAVEL & COBBLES W/ SILT & SOME CLAY, GREY BROWN, VERY DENSE, WET		
		SW	FINE-COARSE SAND W/ TR SILT & FINE GRAVEL, DK RED GREY, VERY DENSE, WET		
170		GW	SAND, GRAVEL & COBBLES W/ SILT & SOME CLAY, GREY BROWN, VERY DENSE, WET	07:50P	14TH OCTOBER, 2005
		CL	BROWN SANDY SILTY CLAY, HARD, WET		

PROJECT # : 0310-3154	DRILL DATE: 10/12-21/05
LOGGED BY: AJG/BS	
PROJECT MANAGER: CHUCK GORDON	
NOTES:	
DEPTH TO WATER: 114FT	
RIG TYPE: SR102	DIAMETER: 9"
DRILLER: PROSONIC	TOTAL DEPTH: 300'
DRILLING METHOD: ROTOSONIC	

TERRANEXT

FIELD BOREHOLE LOG
AVB 132-02
55-208663
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOL	USCS	SOIL DESCRIPTION	TIME	COMMENTS
		CL		08:30A	14TH OCTOBER
		SP	WELL SORTED FINE SAND W/ SILT, BROWN, MEDIUM DENSE, WET		
		SC	CLAYEY FINE SAND, BROWN, MEDIUM DENSE, WET		
190		CL	FINE SANDY CLAY, LT BROWN, HARD, WET		
			DECREASING SAND		
		SC	CLAYEY MEDIUM SAND, BROWN-REDDISH BROWN, MEDIUM DENSE, WET		
			DECREASING CLAY		
200		SM	SILTY FINE SAND, TR CLAY, BROWN-REDDISH BROWN, MEDIUM DENSE, WET		
		CL	SILTY CLAY W/ TRACE SAND, BROWN, HARD, WET		
		CH	FINE SANDY CLAY, HIGH PLASTICITY, BROWN, HARD, WET		
210			DECREASING SAND		
		CL	SILTY CLAY, BROWN, HARD, WET		
		SM	CLAYEY SILTY FINE SAND W/ TRACE GRAVEL, BROWN, DENSE, WET		
220		SP	COARSE WELL SORTED SAND, BROWN, DENSE, WET	12:00P	
			INCREASING GRAVEL		
		GW	SANDY GRAVEL W/ TRACE CLAY, BROWN, DENSE, WET		
			INCREASING CLAY		
		CL	SILTY CLAY, BROWN, HARD, WET		
230		SC	CLAYEY MEDIUM SAND, BROWN, DENSE, WET		
		CL	SILTY CLAY W/ CLAYEY SAND LAYERS, BROWN, HARD, WET		
				02:00P	

PROJECT # : 0310-3154	DRILL DATE: 10/12-21/05
LOGGED BY: AJG/BS	
PROJECT MANAGER: CHUCK GORDON	
NOTES:	
DEPTH TO WATER: 114FT	
RIG TYPE: SR102	DIAMETER: 9"
DRILLER: PROSONIC	TOTAL DEPTH: 300'
DRILLING METHOD: ROTOSONIC	

TERRANEXT

FIELD BOREHOLE LOG
AVB 132-02
55-208663
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOL	USCS	SOIL DESCRIPTION	TIME	COMMENTS
		SC	CLAYEY FINE SAND, BROWN, DENSE, WET		
		CL	SILTY CLAY, BROWN, HARD, WET		
250		ML	CLAYEY SILT W/ TRACE SAND, BROWN, STIFF, WET		
				02:30P	STOP FOR WEEKEND
		CL	SILTY CLAY W/ TRACE SAND, BROWN, HARD, WET	08:00A	17TH OCTOBER
260			INCREASING SAND		
		ML	CLAYEY SILT, BROWN, HARD, WET		
		CH	HIGH PLASTICITY CLAY, BROWN, HARD, WET	09:10A	
		ML/CL	CLAYEY SILT / SILTY CLAY, BROWN, HARD, WET		
270		SP	WELL SORTED FINE-COARSE SAND W/ TRACE CLAY, LOOSE, WET		
		ML	CLAYEY SILT, BROWN, HARD, WET		
		CL	SILTY CLAY, BROWN, HARD, WET		
		ML	CLAYEY SILT W/ TRACE SAND, BROWN, STIFF, WET		
280		SM	SILTY FINE SAND W/ CLAY, BROWN, DENSE, WET		
		ML	CLAYEY SILT W/ TRACE SAND, BROWN, STIFF, WET		
		SM	SILTY FINE SAND, BROWN, LOOSE, WET		
					NO RECOVERY
290					NO RECOVERY
		CL	SILTY CLAY W/ SOME GRAVEL, BROWN, HARD, WET		
		ML	CLAYEY SANDY SILT, BROWN, MEDIUM DENSE, WET		
		SM	SILTY FINE-MEDIUM SAND, BROWN, DENSE, WET		
		ML	CLAYEY SILT, BROWN, HARD, WET	11:30A	TOTAL DEPTH 300'

PROJECT # : 0310-3154	DRILL DATE: 10/12-21/05
LOGGED BY: AJG/BS	
PROJECT MANAGER: CHUCK GORDON	
NOTES:	
DEPTH TO WATER: 114FT	
RIG TYPE: SR102	DIAMETER: 9"
DRILLER: PROSONIC	TOTAL DEPTH: 300'
DRILLING METHOD: ROTOSONIC	

TERRANEXT

FIELD BOREHOLE LOG
AVB 132-02
55-208663
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
5			ASPHALT OVER ROAD BASE		09:20 19TH APRIL 2004
10		SW	COARSE GRAVELLY SAND, DRY, LT. BROWN	0	09:25
15					
20		SW	COARSE GRAVELLY SAND, DRY, LT. BROWN	0	09:30 RIG DOWN FOR REPAIR 20TH APRIL 2004
25					
30		GW	COARSE SANDY GRAVEL W/COBBLES, DRY	0	11:18
35					
40		SW	COARSE GRAVELLY SAND, DRY, BROWN		11:25
45					
50		SW	COARSE GRAVELLY SAND, DRY, BROWN	0	11:45
55					
60		SC	CLAYEY GRAVELLY SAND, SLIGHTLY MOIST		11:50
		GW	COARSE SANDY GRAVEL W/COBBLES, DRY	0	11:55
65					
70		SM	SILTY SAND WITH TRACE CLAY, BRN., SLIGHTLY MOIST	0	12:10
75					

PROJ.#:03103154-11	DRILL DATE: 04-19/21-04
LOGGED BY: CHARMAN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 121'	
RIG TYPE:SPEEDSTAR	DIAMETER: 10"
DRILLER: WDC	TOTAL DEPTH: 232'
DRILLING METHOD: ARCH	

TERRANEXT

FIELD BOREHOLE LOG
AVB 116-02
JACKSON & 21ST AVENUE
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
80		GP	POORLY GRADED GRAVEL W/COBBLES, DRY	0	12:22
85					
90		SP	COARSE BROWN SAND, SLIGHTLY MOIST	0	12:40
95					
100		GP	POORLY GRADED GRAVEL, DRY	0	12:51
105					
110		SW	GRAVELLY SILTY SAND, SLIGHTLY MOIST	0	13:15
115					
120		GP	POORLY GRADED GRAVEL, MOIST	0	13:28
					WATER @ APPROX. 121'
125					
130		SM	SILTY SAND W/TRACE GRAVEL, WET		13:48
135					
140		GM	SILTY SANDY GRAVEL, WET		13:57
145					
150		GW	COARSE SANDY GRAVEL, WET	0	14:25

PROJ.#:03103154-11	DRILL DATE: 04-19/21-04
LOGGED BY: CHARMAN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 121'	
RIG TYPE: SPEEDSTAR	DIAMETER: 10"
DRILLER: WDC	TOTAL DEPTH:232'
DRILLING METHOD: ARCH	

TERRANEXT

FIELD BOREHOLE LOG
AVB 116-02
JACKSON & 21ST AVENUE
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
155					
160		GW	COARSE SANDY GRAVEL, WET	0	14:34
165					
170		GW	COARSE SANDY GRAVEL, WET	0	14:55
175					
180		GW	COARSE SANDY GRAVEL, WET		15:08
185					
190		SM	SILTY SAND W/TRACE GRAVEL, WET, LT. BROWN	0	15:26
195					
200		SM	SILTY SAND W/TRACE GRAVEL, WET, LT. BROWN	0	15:40
205					
210		SW	GRAVELLY SAND, WET		17:53
215					
220		SW	COARSE GRAVELLY SAND, WET	0	18:30
225					

PROJ.#:03103154-11	DRILL DATE: 04-19/21-04
LOGGED BY: CHARMAN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 121'	
RIG TYPE:SPEEDSTAR	DIAMETER: 10"
DRILLER: WDC	TOTAL DEPTH: 232'
DRILLING METHOD: ARCH	

TERRANEXT

FIELD BOREHOLE LOG
AVB 116-02
JACKSON & 21ST AVENUE
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
225		ML	FINE SANDY CLAYEY SILT, WET, LT. BROWN	0	11:32 21ST APRIL 2004
230		SC	CLAYEY SAND W/TRACE GRAVEL, LT. BROWN, WET	0	11:47
			TD = 232'		
240					
245					
250					
255					
260					
265					
270					
275					
280					
285					
290					
295					
300					

PROJ.#:03103154-11	DRILL DATE: 04-19/21-04
LOGGED BY: CHARMAN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 121'	
RIG TYPE:SPEEDSTAR	DIAMETER: 10"
DRILLER: WDC	TOTAL DEPTH:232'
DRILLING METHOD: ARCH	

TERRANEXT

FIELD BOREHOLE LOG
AVB 116-02
JACKSON & 21ST AVENUE
PHOENIX, ARIZONA

T1N R3E Sec 7

Drilling Log AVB 68-01 (MW-1)

Monitoring Well MAU Production Well

FLUOR DANIEL GTI

See Site Map For Boring Location

Project ADEQ/West Van Buren WQARF Owner ADEQ
Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588
Surface Elev. _____ Total Hole Depth 304 ft. Diameter 12 in.
Top of Casing 1075.56 ft. Water Level Initial 55 ft. Static 80.6 ft.
Screen: Dia 6 in. Length 50 ft. Type/Size 0.020 in.
Casing: Dia 6 in. Length 250.5 ft. Type Low Carbon Steel
Fill Material Colorado Sand 10/20 Rig/Core AP 1000
Drill Co. Layne Environmental Method Air Hammer
Driller D. Peterson Log By M. Nation Date 5/12/97 Permit # 55-562206
Checked By _____ License No. AZ 21616

COMMENTS:

All USCS soil type boundaries are gradational. All percentages are approximate.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2							
0							0 – 20 Feet: Gravelly Clayey/Silty Sand Light tan, dry, moderately sorted, semi-hard. Sand is fine to coarse grained, subrounded. Gravel is fine, subrounded. No petroleum hydrocarbon odors. Sand 60%, clay/silt 20-30%, gravel 0-20%.
2							
4							
6							
8							
10						SW	
12							
14							Low gravel content below 14 feet
16							
18							
20							20 – 67 Feet: Sandy Gravel/Cobbles Tan, dry, poorly sorted, semi-hard to hard. Gravel are medium to coarse, rounded to subrounded. Cobbles 4 inches maximum size. Sand is fine to coarse grained, subrounded to subangular. Gravel/cobbles 60-70%, sand 30-40%.
22						GW	
24							

FLUOR DANIEL GTI

Drilling Log

Monitoring Well MAU Production Well

Project ADEQ/West Van Buren WQARF Owner ADEQ
Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24							Sandy Gravel/Cobbles (continued)
26							
28							
30							30 – 67 Feet: Bimodal sorted cobbles and sand. Cobbles greater than 6 inches in size. Trace of clay/silt ≤10% present.
32							
34							
36							
38							
40						GW	
42							
44							
46							
48							
50							
52							
54							▽
56							

FLUOR DANIEL GTI

Drilling Log

Monitoring Well MAU Production Well

Project ADEQ/West Van Buren WQARF Owner ADEQ
Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
56, 58, 60, 62, 64, 66						GW	Sandy Gravel/Cobbles (continued)
68, 70, 72, 74						CL	67 – 75 Feet: Gravelly Sandy Clay/Silt Light brown, damp to moist, well sorted, semi-hard. Sand is fine grained, subrounded. Gravel is fine to medium, subrounded. No odors detected Clay/silt 70-80% sand ≤20%, gravel ≤20%.
76, 78, 80, 82, 84, 86, 88						GC	75 – 118 Feet: Clayey/Silty Sandy Gravel/Cobbles Light brown, moist to saturated, moderate to poorly sorted, hard. Gravel is medium to coarse, rounded to subangular Sand is fine to coarse grained Gravel/cobbles 40-50%, sand 30-40%, clay/silt ≤10-20%

FLUOR DANIEL GTI

Drilling Log

Monitoring Well MAU Production Well

Project ADEQ/West Van Buren WQARF Owner ADEQ
Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
88							Clayey/Silty Sandy Gravel/Cobbles (continued)
90							
92							
94							
96							
98							
100							
102						GC	
104							
106							
108							
110							
112							
114							
116							
118						GW	118 – 178 Feet: Sandy Gravel/Cobbles Saturated, poorly sorted, hard. Gravel is fine to coarse, rounded to angular. Most gravel is coarse. Cobbles are up to 8 inches maximum size. Sand is fine to coarse grained, subangular. Gravel/cobbles 60-80%, sand 20%, clay/silt ≤10%
120							

FLUOR DANIEL GTI

Drilling Log

Monitoring Well MAU Production Well

Project ADEQ/West Van Buren WQARF Owner ADEQ
Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
120							Sandy Gravel/Cobbles (continued)
122							
124							
126							
128							
130							
132							
134							
136						GW	
138							
140			NR	ADEQWVB -PWCI composite			
142							
144							
146							
148							
150							
152							

AVB68-01

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU Production Well**

Project ADEQ/West Van Buren WQARF Owner ADEQ
Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
152							Sandy Gravel/Cobbles (continued)
154							
156							
158							
160							
162							
164						GW	
166							
168							
170							Cobble size decreases to 178
172							
174							
176							
178							178 – 190 Feet: Gravelly Clayey/Silty Sand Light brown, saturated, well sorted, semi-hard to hard. Sand is medium to coarse grained, subrounded to subangular. Gravel is medium, rounded to subrounded, low percentage below 180'. Sand 78–80%, clay/silt 20–30%, gravel ≤20–30%.
180						SC	
182							
184							

AVB68-01

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU Production Well**

Project ADEQ/West Van Buren WQARF Owner ADEQ
Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
184						SC	Gravelly Clayey/Silty Sand (continued)
186							
188							
190						SW	190 – 198 Feet: Sandy Gravel/Cobbles Tan gray, saturated, moderate to poorly sorted, well graded, semi-hard. Gravel is fine to coarse, rounded to subrounded. Sand is fine to coarse grained, mostly medium, subrounded to subangular. Gravel/cobbles 40-70%, sand 30-50% clay/silt ≤10%
192							
194							
196							
198						SC	198 – 200 Feet: Clayey/Silty Sand Tan gray, saturated, well sorted, soft to semi-hard. Sand is fine to coarse grained, subrounded to subangular. Sand 80%±, clay/silt ≤20%.
200						GW	200 – 224 Feet: Sandy Gravel/Cobbles Gray/tan, saturated, poorly sorted, semi-hard to hard. Gravel is fine to coarse, rounded to subrounded. Sand is medium grained, subrounded. Gravel/cobbles 70-80%, sand 20-30%
202							
204							
206							
208							
210			ADEQWVB -PWC2 composite				210 – 224 Feet: Gravel/cobbles 80%, sand ≤20%.
212							
214							
216							

AUB68-01

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU Production Well**

Project ADEQ/West Van Buren WQARF Owner ADEQ
Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ x Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
216–248						GW	Sandy Gravel/Cobbles (continued)
UAU / MAU 224–226						SC	224 – 227 Feet: Clayey/Silty Sand Tan/gray saturated, well sorted, semi-hard. Sand is fine to coarse grained subrounded to subangular: Sand 80%, clay/silt 20%.
227–240						ML	227 – 240 Feet: Sandy Clay/Silt Light brown, moist to wet, well sorted, seim-hard. Sand is fine to medium grained, subrounded to subangular. Approximately 50% of fines are silt Clay/silt 60-70%, sand 30-40%
240–248						SC	240 – 254 Feet: Clayey/Silty Sand Light brown/gray, damp, very well to well sorted, very hard, brittle. Sand is fine to medium grained, mostly medium gravel, subrounded to subangular. Sand is moderately indurated and laminae are present in some fragments. Sand 90%, clay/silt ≤10%.

AVB68-01

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU Production Well**

Project ADEQ/West Van Buren WQARF Owner ADEQ
Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
248							Clayey/Silty Sand (continued)
250							
252						SC	
254							254 – 304 Feet: Sandy Clay/Silt Light brown, moist, well sorted, semi-hard. Sand is fine grained. Clay 50–60%, silt 20–30%, sand 10–20%.
256							
258							
260							
262							
264							
266							
268						CL	
270							270 – 290 Feet: Light brown, moist to wet, very well to well sorted hard. Sand is fine grained subrounded. Clay 40–50%, silt 30% sand 20–30%
272							
274							
276							
278							
280							

AUB68-01

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU Production Well**

Project ADEQ/West Van Buren WQARF Owner ADEQ
Location 13th Avenue and Madison, Phoenix, Arizona Proj. No. 023300588

Depth (Ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
280							Sandy Clay/Silt (continued)
282							
284							
286							
288							
290			ADEQMVB -PWCJ composite				290 - 304 Feet: Brown tan damp to wet, very well to well sorted. hard. Sand is fine grained, subrounded to subangular Clay 40-60%. silt 30% sand 20-40%.
292						CL	
294							
296							
298							
300							
302							
304							304 Feet: Total Depth of Drilling for MAU Production Well
306							
308							
310							
312							

AV B77-02 T1N, R3E Sec 7

GROUNDWATER TECHNOLOGY

Drilling Log

Monitoring Well UAU-MW5-D

Project ADEQ/ALSCo Owner Arizona Dept of Environmantal Quality
Location 720 W. Buchanan St., Phoenix, AZ Proj. No. 103260
Surface Elev. _____ Total Hole Depth 230 ft. Diameter 8 in.
Top of Casing 1076.12 ft. Water Level Initial 73 ft. Static 75.26 ft.
Screen: Dia 4 in. Length 20 ft. Type/Size SCH 80 PVC/0.020 in.
Casing: Dia 4 in. Length 205 ft. Type SCH 80 PVC
Fill Material Colorado 10/20 Sand Rig/Core RT - 1800
Drill Co. THF Method ODEX Air Rotary
Driller V. Christensen Log By M. Nation Date 04/13/98 Permit # 55-567445
Checked By _____ License No. AZ21616

See Site Map For Boring Location

COMMENTS:

All USCS soil type boundaries are gradational. All percentages are approximate.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0						**0 – 10 Feet: Gravelly Silty Sand** Brown, dry to damp, moderately well sorted, loose. Gravel is fine to coarse. Sand is fine to coarse grained, subangular to angular. Sand 65%, silt 20%, gravel 15%.
2						
4		8				
6		5				
8					SP SM	
10		4				**10 – 15 Feet: Clayey Gravelly Silty Sand** Brown, damp to moist, well to moderately well sorted, loose. Gravel is fine to coarse, subrounded to subangular. Sand is fine to medium grained, subangular to angular. Sand 60%, silt 20%, gravel 10%, clay 10%.
12						
14						
16		4				**15 – 25 Feet: Silty Gravelly Sand** Brown, damp to moist, moderately well to poorly sorted, loose. Gravel is fine to coarse, rounded to subangular. Sand is fine to medium grained, subangular to angular. Sand 65%, gravel 30%, silt 15%.
18						
20					SP	
22						
24						

GROUNDWATER TECHNOLOGY

Drilling Log

Monitoring Well UAU-MW5-D

Project ADEQ/ALSCo Owner Arizona Dept of Environmantal Quality
Location 720 W. Buchanan St., Phoenix, AZ Proj. No. 103260

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24						
26		3			SP	**25 – 30 Feet: Clayey Silty Sand** Brown, damp, well to moderately well sorted, loose. Trace of gravel is fine to coarse, rounded to subangular. Sand is fine to medium grained, subangular to angular. Sand 80%, silt 10%, clay 10%.
28						
30		3			SW	**30 – 35 Feet: Cobbley Gravelly Sand** Brown, damp, poorly sorted, loose. Cobble is rounded to subrounded. Gravel is fine to coarse, subrounded. Sand is fine to medium grained, subrounded to subangular. Sand 60%, gravel 30%, cobble 10%.
32						
34		3			SP	**35 – 45 Feet: Silty Gravelly Sand** Brown, dry to damp, poorly sorted, loose. Gravel is fine to coarse, rounded to subangular. Sand is fine to medium grained, subangular to angular. Sand 50%, gravel 30%, silt 20%.
36						
38						
40						
42						
44		9			SM	**45 – 50 Feet: Gravelly Silty Sand** Brownish red, moist, moderately well sorted, loose. Gravel is fine, subrounded to subangular. Sand is fine to coarse grained, subrounded to subangular. Sand 60%, silt 25%, gravel 15%.
46						
48						
50		9			SC	**50 – 60 Feet: Silty Sandy Clay** Brown, moist to wet, well to moderately well sorted, loose. Sand is fine grained. Clay 45%, sand 35%, silt 20%.
52						
54		13				
56						

GROUNDWATER TECHNOLOGY

Drilling Log

Monitoring Well UAU-MW5-D

Project ADEQ/ALSCo Owner Arizona Dept of Environmantal Quality
Location 720 W. Buchanan St., Phoenix, AZ Proj. No. 103260

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
56, 58, 60					SC	**Silty Sandy Clay** (continued)
62, 64, 66, 68					GM	**60 – 70 Feet: Gravelly Silty Sand** Reddish brown, moist, moderately well to poorly sorted, loose. Gravel is coarse, rounded to subangular. Sand is fine to coarse grained, subrounded to angular. Sand 50%, silt 30%, gravel 20%.
70		2.6			SP	**70 – 75 Feet: Silty Gravelly Sand** Light brown, dry to damp, poorly sorted, loose. Gravel is fine to coarse, rounded to subrounded. Sand is fine to medium grained, subrounded to angular. Sand 60%, gravel 30%, silt 10%.
72, 74						
76		7.1			SM	**75 – 80 Feet: Gravelly Silty Sand** Reddish brown, moist, poorly sorted, loose. Grvel is fine to coarse, rounded to subangular. Sand is fine to medium grained, subrounded to angular. Sand 50%, silt 30%, gravel 20%.
78						
80		4.2			SP	**80 – 90 Feet: Silty Gravelly Sand** Reddish brown, moist to wet, moderately well to poorly sorted. Gravel is fine to coarse, subrounded to angular. Sand is fine to medium grained, subrounded to angular. Sand 50–60%, gravel 30–40%, silt 10%.
82		2.7				
84						
86		2.3				
88						

GROUNDWATER TECHNOLOGY

Drilling Log

Monitoring Well UAU-MW5-D

Project ADEQ/ALSCo Owner Arizona Dept of Environmantal Quality
Location 720 W. Buchanan St., Phoenix, AZ Proj. No. 103260

Depth (ft.)	Well Completion	PID (ppm)	Sample ID / Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
88					SP	**Silty Gravelly Sand** (continued)
90		2.0			SW	**90 – 95 Feet: Gravelly Sand** Brown, wet, well to moderately well sorted. Gravel is fine, rounded to subangular. Sand is fine to medium grained, subangular to angular. Sand 80%, gravel 10%, silt <10%.
92						
94		2.8			SP	**95 – 100 Feet: Silty Gravelly Sand** Brown, wet to saturated, poorly sorted, loose. Gravel is fine to coarse, rounded to subangular. Sand is fine to coarse grained, roudned to angular. Sand 50%, gravel 30%, silt 20%.
96						
98						
100		1.4			SW	**100 – 110 Feet: Silty Gravelly Sand** Brown, wet, moderately well sorted, loose. Gravel is fine to coarse, rounded to subangular. Sand is fine to medium grained, subrounded to subangular. Sand 70%, gravel 20%, silt 10%.
102						
104						
106						
108						
110		8			SP/SM	**110 – 115 Feet: Gravelly Silty Sand** Reddish brown, loose to soft. Gravel is fine, subrounded to subangular. Sand is fine to medium grained, subangular to angular. Sand 70%, silt, 20%, gravel 10%.
112						
114		2.7				**115 – 120 Feet: Silty Gravelly Sand** Brown, wet, moderately well to poorly sorted, loose to soft. Gravel is fine, rounded to subangular. Sand is fine to medium grained, subrounded to angular. Sand 60%, gravel 20%, silt 20%.
116						
118						
120					SW	

GROUNDWATER TECHNOLOGY

Drilling Log

Monitoring Well UAU-MW5-D

Project ADEQ/ALSCo Owner Arizona Dept of Environmantal Quality
Location 720 W. Buchanan St., Phoenix, AZ Proj. No. 103260

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
120		1.3				SW	**120 – 125 Feet: Silty Gravelly Sand** Brown, wet, moderately well sorted, loose. Gravel is fine to coarse, subrounded to subangular. Sand is fine to coarse grained, subrounded to angular. Sand 60%, gravel 30%, silt 10%.
122							
124		1.0				SW/SM	**125 – 130 Feet: Silty Gravelly Sand** Brown, wet, moderately well sorted, loose to soft. Gravel is fine to coarse, subrounded to subangular. Sand is fine to coarse grained, subangular to angular. Sand 50%, gravel 30%, silt 20%.
126							
128							
130		1				SM	**130 -- 135 Feet: Silty Gravelly Sand** Brown, wet to saturated, moderately well sorted, loose to soft. Gravel is fine to coarse, subrounded to subangular. Sand is fine to coarse grained, subrounded to angular. Sand 50%, gravel 40%, silt 10%.
132							
134		1.2					**135 – 140 Feet: Silty Gravelly Sand** Brown, wet to saturated, moderately well sorted, loose. Gravel is fine, subrounded to subangular. Sand is fine to coarse grained, subrounded to angular. Sand 50%, gravel 30%, silt 20%.
136							
138							
140		1.3					**140 – 150 Feet: Gravelly Silty Sand** Brown, wet, well to moderately well sorted, loose. Gravel is fine, subrounded to subangular. Sand is fine to medium grained, subrounded to angular. Sand 65%, silt 25%, gravel <10%.
142							
144		1.1					
146							
148							
150		1.2				SW/SM	**150 – 155 Feet: Silty Gravelly Sand** Brown, moderately well to poorly sorted, loose. Gravel is fine to coarse, subrounded to angular. Sand is fine to coarse grained, subrounded to angular. Sand 65%, gravel 20%, silt 15%.
152							

GROUNDWATER TECHNOLOGY

Drilling Log

Monitoring Well UAU-MW5-D

Project ADEQ/ALSCo Owner Arizona Dept of Environmantal Quality
Location 720 W. Buchanan St., Phoenix, AZ Proj. No. 103260

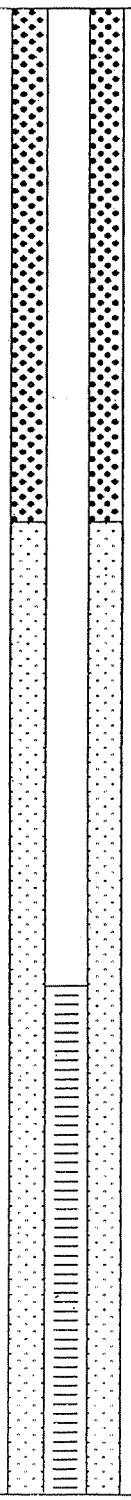
Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
152							
154						SW SM	
156		1.1				SW	**155 – 160 Feet: Silty Gravelly Sand** Brown, saturated, poorly sorted, loose. Gravel is fine to coarse, rounded to angular. Sand is fine to coarse grained, rounded to angular. Sand 60%, gravel 30%, silt 10%.
158							
160		1.7				SM	**160 – 165 Feet: Silty Sand** Brown, saturated, well to moderately well sorted, loose. Sand is fine to medium grained, subangular to angular. Sand 75%, silt 20%, gravel 5%.
162							
164							
166		1.1				SW	**165 – 180 Feet: Gravelly Sand** Brown, saturated, well to moderately well sorted, loose. Gravel is fine to coarse, rounded to angular. Sand is fine to coarse grained, subrounded to angular. Sand 70–75%, gravel 20%, silt 5–10%.
168							
170		1.5					
172							
174		1.0					
176							
178							
180		1.1				SM SP	**180 – 185 Feet: Gravelly Silty Sand** Brown, saturated, moderately well to poorly sorted, loose. Gravel is fine to coarse, rounded to subangular. Sand is fine to coarse grianed, subrounded to angular. Sand 60%, silt 20%, gravel 20%.
182							
184							

GROUNDWATER TECHNOLOGY

Drilling Log

Monitoring Well UAU-MW5-D

Project *ADEQ/ALSCo* Owner *Arizona Dept of Environmantal Quality*
Location *720 W. Buchanan St., Phoenix, AZ* Proj. No. *103260*

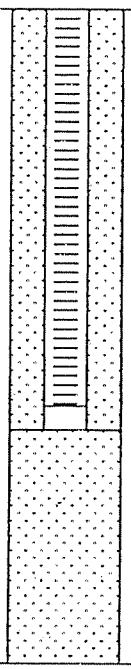
Depth (ft.)	Well Completion	PID (ppm)	Sample ID / Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
184					SM SP	
186		1.7				**185 – 190 Feet: Silty Gravelly Sand** Brown, saturated, moderately well to poorly sorted, loose. Gravel is fine to coarse, rounded to subangular. Sand is fine to coarse grained, subrounded to angular. Sand 70%, gravel 20%, silt 10%.
188					SW	
190		1.2				**190 – 195 Feet: Silty Sand** Tannish brown, saturated, well to moderately well sorted, loose. Gravel is fine, rounded to subangular. Sand is fine to medium grained, subangular to angular. Sand 50%, silt 40%, gravel 5%, clay ≤5%.
192					SM	
194						
196		1.4				**195 – 210 Feet: Silty Gravelly Sand** Brown, saturated, poorly sorted, loose. Gravel is fine to coarse, rounded to subangular. Sand is fine to coarse grained, subangular to angular. Sand 60%, gravel 30%, silt 10%.
198						
200		1.5				
202						
204						
206					SW	
208						
210						**210 – 224 Feet: Gravelly Sand** Light tan, saturated, moderately well sorted, semi-hard to hard. Gravel is fine to medium, subrounded to subangular. Sand is fine to coarse grained, subrounded to subangular. Sand 60–70%, gravel 20–30%, clay–silt ≤10%.
212						
214						
216						

GROUNDWATER TECHNOLOGY

Drilling Log

Monitoring Well UAU-MW5-D

Project ADEQ/ALSCo Owner Arizona Dept of Environmantal Quality
Location 720 W. Buchanan St., Phoenix, AZ Proj. No. 103260

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
216							**Gravelly Sand** (continued)
218							
220						SW	
222							
224							**224 – 229 Feet: Silty Clayey Sand** Light tan, moist, very well sorted, semi-hard to hard. Sand is fine to medium grained, subrounded to subangular. Water sealing off in hole below 224 feet. Thin layer of coarse, dry sand with low percentage of silt or clay from 225 to 226 feet. Sand 50%, clay 25–45%, silt 15–25%.
226						SC	
228							
230						SP	**229 – 230 Feet: Gravelly Sand** Light tan, moist to wet, well sorted, semi-hard. Gravel is fine, subrounded. Combined clay and silt are 10%. Sand is medium to coarse grained, subangular. Sand flowing into hole during drilling and after completed at 230 feet. Sand 80%, gravel 10%, clay-silt 10%.
232							**230 Feet: Total depth of well UAU-MW5-D**
234							
236							
238							
240							
242							
244							
246							
248							

Boring Log

Shaw™

Soil Boring **OU3-11C**

Project: Motorola 52nd Street Superfund Site - OU3 | Owner: USEPA
Location: Phoenix, Arizona | Proj. No.: 784820
Surface Elev.: 1078.5 ft. | Total Hole Depth: 230.0 ft. | North: | East:
Top of Casing: NA | Water Level Initial: ▽ 88.0 ft. | Static: ▼ 86.5 ft. | Diameter: 8 in.
Screen: Dia: NA | Length: NA | Type/Size: NA
Casing: Dia: NA | Length: NA | Type: NA
Fill Material: Bentonite Grout Backfill | Rig/Core: #1521/ 6-inch core barrel
Drill Co.: Boart Longyear | Method: Roto-sonic
Driller: Ron Cain | Log By: Ryan Pollyea | Date: 3/17/03 | Permit #: NA
Checked By: Don Bransford | License No.:

COMMENTS
Sample recovery = 100% unless otherwise specified on boring log.

Basin Fill encountered at 217 feet bgs.

OU3-11 Well Screen Intervals
OU3-11S: 70 - 120 feet bgs.
OU3-11M: 154 - 174 feet bgs.
OU3-11M2: 197 - 217 feet bgs.

Depth (ft.)	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Geologic Descriptions are Based on the USCS.	Elevation (ft.)
						Asphalt Surface	1078.5
0						12-inches asphalt.	1078
						Engineered fill: Silty clay. Appears to be lime-treated between 1 and 10 feet.	
2							1076
4							1074
6							1072
8							1070
10	0						1068
12							1066
14							1064
16						Well-graded GRAVEL with silt and sand; multi-color, brown, black, white and red; dry; 55% coarse gravel, maximum grain size to 3-inches diameter, rounded, granitic; 35% fine to coarse sand, rounded, arkosic; 10% fines, brown (7.5yr 4/4). Gravel includes cobbles to 4-inches maxiumum diameter between 16 and 45 feet.	1062
18							1060
20							1058
22					GW GM		1056
24	0						1054
26							1052
28							1050
30							

Continued Next Page

Boring Log

Shaw™

Soil Boring **OU3-11C**

Project *Motorola 52nd Street Superfund Site - OU3* Owner *USEPA*

Location *Phoenix, Arizona* Proj. No. *784820*

Depth (ft.)	PID (ppm)	Sample ID % Recovery	Blow Count Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Geologic Descriptions are Based on the USCS.	Elevation (ft.)
						Continued	
30							1048
32							1046
34	0						1044
36							1042
38							1040
40					GW GM		1038
42							1036
44	0					Gravel includes cobbles to 6-inches maximum diameter between 45 and 50 feet.	1034
46							1032
48							1030
50					ML	SILT; dark yellowish brown (10yr 4/6); moist; no dilatancy; no plasticity; dry.	1028
52							1026
54							1024
56	2.3				GC	Clayey GRAVEL with sand; multi-color, brown, black, white and red; well-graded; dry; 50% fine to coarse gravel, maximum grain size to 3-inches diameter, rounded, granitic; 35% fines, brown (7.5yr 5/3); 15% fine to coarse sand, rounded, arkosic.	1022
58							1020
60					GW GC	Well-graded GRAVEL with clay and sand; multi-color, brown, black and white; 55% fine to coarse gravel, maximum grain size to 3-inches diameter, granitic; 35% fine to coarse sand, rounded, arkosic; 10% fines, brown (5yr 5/3).	1018
62							1016
64	0						1014
66							1012
68							1010
70						*Continued Next Page*	

Boring Log

Shaw

Soil Boring **OU3-11C**

Project *Motorola 52nd Street Superfund Site - OU3* Owner *USEPA*

Location *Phoenix, Arizona* Proj. No. *784820*

Depth (ft.)	PID (ppm)	Sample ID % Recovery	Blow Count Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Geologic Descriptions are Based on the USCS.	Elevation (ft.)
						Continued	
70						Gravel is angular between 70 and 75 feet.	1008
72							1006
74							1004
76						Rounded gravel and cobbles to 5-inches maximum diameter between 75 and 90 feet.	1002
78							1000
	2.7						
80							998
82							996
84						67% core recovery between 83 and 86 feet.	994
86 ▼							992
88 ▽						Becomes wet at 83 feet.	990
90					GW GC		988
92							986
94							984
	0						
96							982
98							980
100							978
102							976
104							974
	0						
106							972
108							970
110							

Continued Next Page

Boring Log

Shaw

Soil Boring **OU3-11C**

Project *Motorola 52nd Street Superfund Site - OU3* Owner *USEPA*

Location *Phoenix, Arizona* Proj. No. *784820*

Depth (ft.)	PID (ppm)	Sample ID / % Recovery	Blow Count / Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Geologic Descriptions are Based on the USCS.	Elevation (ft.)
						Continued	
110					GW GC		968
112					GC	Clayey GRAVEL with sand; wet; 50% fine to coarse gravel; 35% fines, brown; 15% fine to coarse sand.	966
114					GW	Well-graded GRAVEL with sand; wet; 65% fine to coarse gravel; 35% fine to coarse sand.	964
116					GC	Clayey GRAVEL with sand; multi-color, brown, black, white, red; well-graded; wet; 50% fine to coarse gravel, maximum grain size to 3-inches diameter, rounded, granitic; 35% medium to coarse sand, rounded, arkosic; 15% fines, brown (7.5yr 4/2).	962
118							960
120	0						958
122							956
124							954
126							952
128							950
130	2.2						948
132					SW SM	Well-graded SAND with silt; multi-color, brown, black, white, red; wet; 80% medium to coarse sand, rounded, arkosic; 10% fine to coarse gravel, maximum grain size to 2-inches diameter; rounded, granitic; 10% fines, brown.	946
134							944
136							942
138					GC	Clayey GRAVEL with sand; multi-color, brown and white; wet; 50% fine to coarse gravel, maximum grain size to 3-inches diameter, rounded, granitic; 35% fine to coarse sand, rounded to subangular, arkosic; 15% fines, brown (7.4yr 4/2).	940
140							938
142	0						936
144							934
146						67% core recovery between 147 and 153 feet.	932
148							930
150						*Continued Next Page*	

Boring Log

Soil Boring **OU3-11C**

Project *Motorola 52nd Street Superfund Site - OU3* Owner *USEPA*

Location *Phoenix, Arizona* Proj. No. *784820*

Depth (ft.)	PID (ppm)	Sample ID % Recovery	Blow Count Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Geologic Descriptions are Based on the USCS.	Elevation (ft.)
						Continued	
150							928
152							926
154							924
156	7.7						922
158							920
160					GC		918
162							916
164	10.1						914
166							912
168							910
170	0						908
172					GP	Poorly graded GRAVEL; black; wet; 95% fine gravel; subangular; granitic; 5% fines.	906
174							904
176					GC	Clayey GRAVEL with sand; black and white, wet; well-graded; 50% fine to coarse gravel, maximum grain size to 3-inches diameter, rounded, granitic; 35% fine to medium sand, rounded, arkosic; 15% fines, brown (7.5yr 5/3).	902
178							900
180	0						898
182							896
184							894
186							892
188							890
190						*Continued Next Page*	

Boring Log

Shaw™

Soil Boring **OU3-11C**

Project *Motorola 52nd Street Superfund Site - OU3* Owner *USEPA*

Location *Phoenix, Arizona* Proj. No. *784820*

Depth (ft.)	PID (ppm)	Sample ID % Recovery	Blow Count Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Geologic Descriptions are Based on the USCS.	Elevation (ft.)
						Continued	
190	0				GC		888
192							886
194							884
196							882
198							880
200	0						878
202							876
204							874
206					SM	Silty SAND; multi-color, brown, black, white, red; wet; 65% medium sand, rounded, arkosic; 35% fines, brown (7.5yr 5/3).	872
208	0						870
210					ML	Sandy SILT; white and brown; wet; rapid dilatancy; 65% silt, brown (7.5yr 5/3); 35% fine sand, rounded, quartz.	868
212	0						866
214							864
216					SM	Silty SAND; wet; medium to coarse sand, rounded, arkosic.	862
218					CL	Lean CLAY; moist; slow dilatancy; low toughness; no reaction with HCl; medium plasticity; 100% fines. BASIN FILL CONTACT	860
220							858
222	0						856
224							854
226							852
228							850
230							

Continued Next Page

Boring Log

Soil Boring **OU3-11C**

Project *Motorola 52nd Street Superfund Site - OU3* Owner *USEPA*

Location *Phoenix, Arizona* Proj. No. *784820*

Depth (ft.)	PID (ppm)	Sample ID % Recovery	Blow Count Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Geologic Descriptions are Based on the USCS.	Elevation (ft.)
						Continued	
230						TOTAL DEPTH = 230 feet bgs.	848
232							846
234							844
236							842
238							840
240							838
242							836
244							834
246							832
248							830
250							828
252							826
254							824
256							822
258							820
260							818
262							816
264							814
266							812
268							810
270							

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
5			ASPHALT OVER ROAD BASE	0	14:00 3RD MAY 04
10		SW	COARSE GRAVELLY SAND, DRY, LT. BROWN	0	14:10
15					
20		SM	SILTY SAND W/TRACE CLAY, LT. BROWN, SL. MOIST	0	AUGER DRILLED TO 20', SURFACE CASING INSTALLED 4TH MAY 04
25					
30		SM	SILTY COARSE SAND, BROWN	0	09:00
35					
40		SM	SILTY COARSE SAND, BROWN	0	09:07
45					
50		SW	GRAVELLY COARSE SAND, BROWN	0	09:20
55					
60		SW	GRAVELLY COARSE SAND	0	09:28
65					
70		SW	GRAVELLY COARSE SAND	0	09:39
75					

PROJ.#:03103154-11	DRILL DATE: 05-03/04-04
LOGGED BY: CHARMAN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER:	
RIG TYPE:SPEEDSTAR	DIAMETER: 9 7/8"
DRILLER: WDC	TOTAL DEPTH: 320'
DRILLING METHOD: MUD ROTARY	

TERRANEXT

FIELD BOREHOLE LOG
AVB 129-02
ROOSEVELT & 79TH AVENUE
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
80		CL	FINE GRAVELLY CLAY	0	09:45
85					
90		CL	FINE GRAVELLY CLAY, BROWN	0	09:50
95					
100		CL	FINE GRAVELLY CLAY, BROWN	0	09:58
105					
110		CL	FINE GRAVELLY CLAY, BROWN	0	10:06
115					
120		CL	BROWN CLAY	0	10:10
125					
130		CL	BROWN CLAY	0	10:18
135					
140		CL	GRAVELLY CLAY	0	10:25
145					
150		CL	GRAVELLY CLAY	0	10:32

PROJ.#:03103154-11 DRILL DATE: 05-03/04-04
LOGGED BY: CHARMAN
PROJECT MANAGER: A. GORDON
NOTES:
DEPTH TO WATER:
RIG TYPE: SPEEDSTAR DIAMETER: 9 7/8"
DRILLER: WDC TOTAL DEPTH:320'
DRILLING METHOD: MUD ROTARY

TERRANEXT

FIELD BOREHOLE LOG
AVB 129-02
ROOSEVELT & 79TH AVENUE
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
155					
160		CL	GRAVELLY CLAY, BROWN	0	10:40
165					
170		GC	CLAYEY FINE TO COARSE GRAVEL	0	10:50
175					
180		GW	COARSE SANDY GRAVEL		10:58
185					
190		GC	CLAYEY GRAVEL	0	11:10
195					
200		GC	CLAYEY GRAVEL	0	11:20
205					
210		GC	CLAYEY GRAVEL	0	11:40
215					
220		GC	CLAYEY GRAVEL	0	11:48
225					

PROJ.#:03103154-11	DRILL DATE: 05-03/04-04
LOGGED BY: CHARMAN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER:	
RIG TYPE:SPEEDSTAR	DIAMETER: 9 7/8"
DRILLER: WDC	TOTAL DEPTH: 320'
DRILLING METHOD: MUD ROTARY	

TERRANEXT

FIELD BOREHOLE LOG
AVB 129-02
ROOSEVELT & 79TH AVENUE
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
230		GC	CLAYEY GRAVEL	0	11:59
235					
240		GC	CLAYEY GRAVEL	0	12:08
245					
250		CL	BROWN GRAVELLY CLAY	0	13:30
255					
260		CL	BROWN GRAVELLY CLAY	0	13:37
265					
270		CL	BROWN GRAVELLY CLAY	0	13:48
275					
280		CL	SILTY SANDY CLAY, TAN/LT. BROWN	0	13:56
285					
290		CL	SILTY SANDY CLAY, LT. BROWN/TAN	0	14:09
295					
300		CL	SILTY SANDY CLAY, LT. BROWN, TAN	0	14:14

PROJ.#:03103154-11	DRILL DATE: 05-03/04-04
LOGGED BY: CHARMAN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER:	
RIG TYPE:SPEEDSTAR	DIAMETER: 9 7/8"
DRILLER: WDC	TOTAL DEPTH:320'
DRILLING METHOD: MUD ROTARY	

TERRANEXT

FIELD BOREHOLE LOG
AVB 129-02
ROOSEVELT & 79TH AVENUE
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
310		CL	LT. BROWN/TAN CLAY		14:24
315					
320		CL	FINE GRAVELLY CLAY, LT. BROWN/TAN		14:41
			TD = 320'		
325					
330					
335					
340					
345					
350					
355					
360					
365					
370					
375					
380					

PROJ.#:03103154-11	DRILL DATE: 05-03/04-04
LOGGED BY: CHARMAN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER:	
RIG TYPE: SPEEDSTAR	DIAMETER: 9 7/8"
DRILLER: WDC	TOTAL DEPTH: 320'
DRILLING METHOD: MUD ROTARY	

TERRANEXT

FIELD BOREHOLE LOG
AVB 129-02
ROOSEVELT & 79TH AVENUE
PHOENIX, ARIZONA

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	TERRANEXT		
WELL ID	AVB129-02		
FIELD	PHOENIX		
COUNTY	MARICOPA	STATE	ARIZONA

TYPE OF LOGS: E-LOGS - GAMMA
MORE:

LOCATION
ADWR- 55-202282

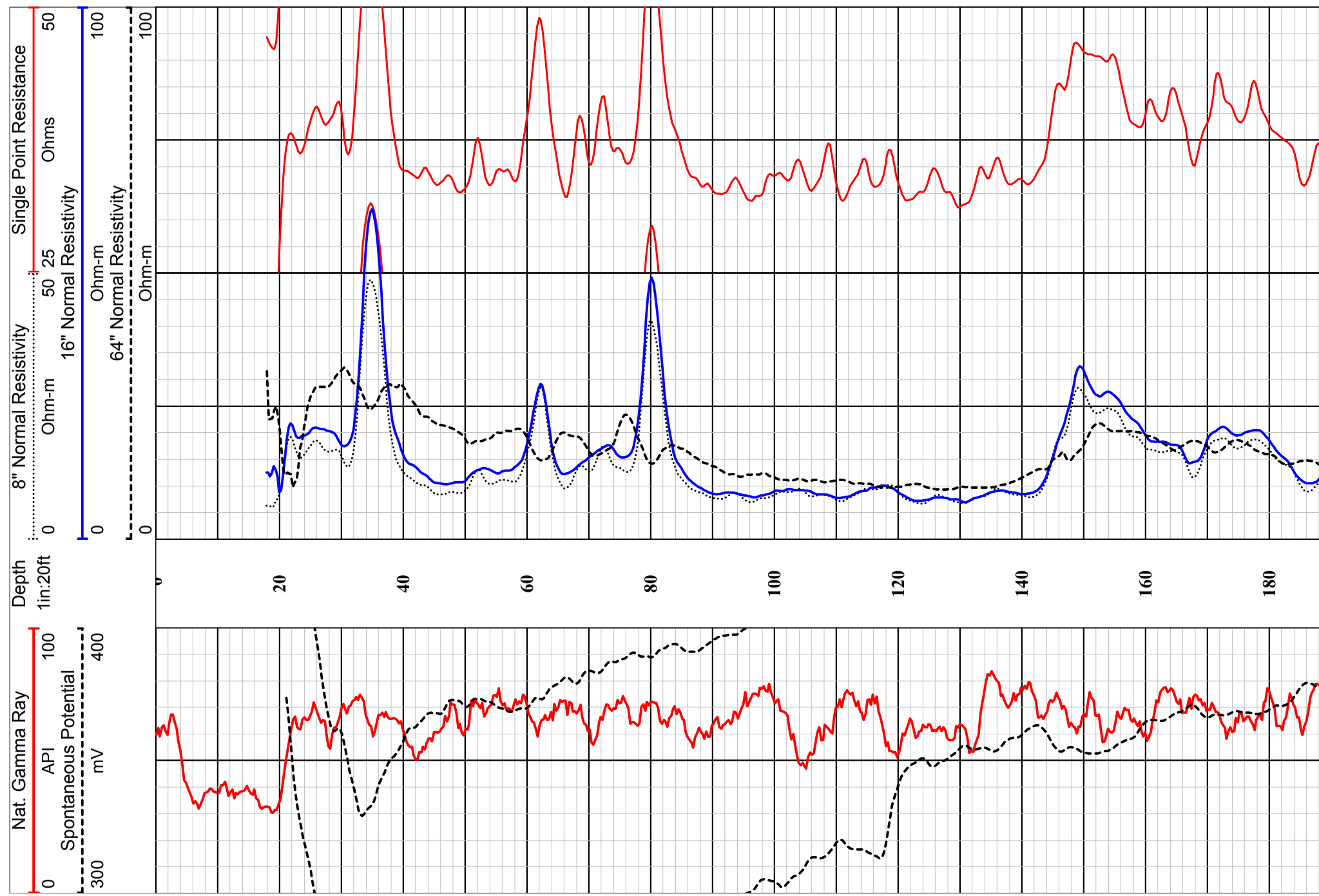
SEC 2 TWP 1N RGE 1E

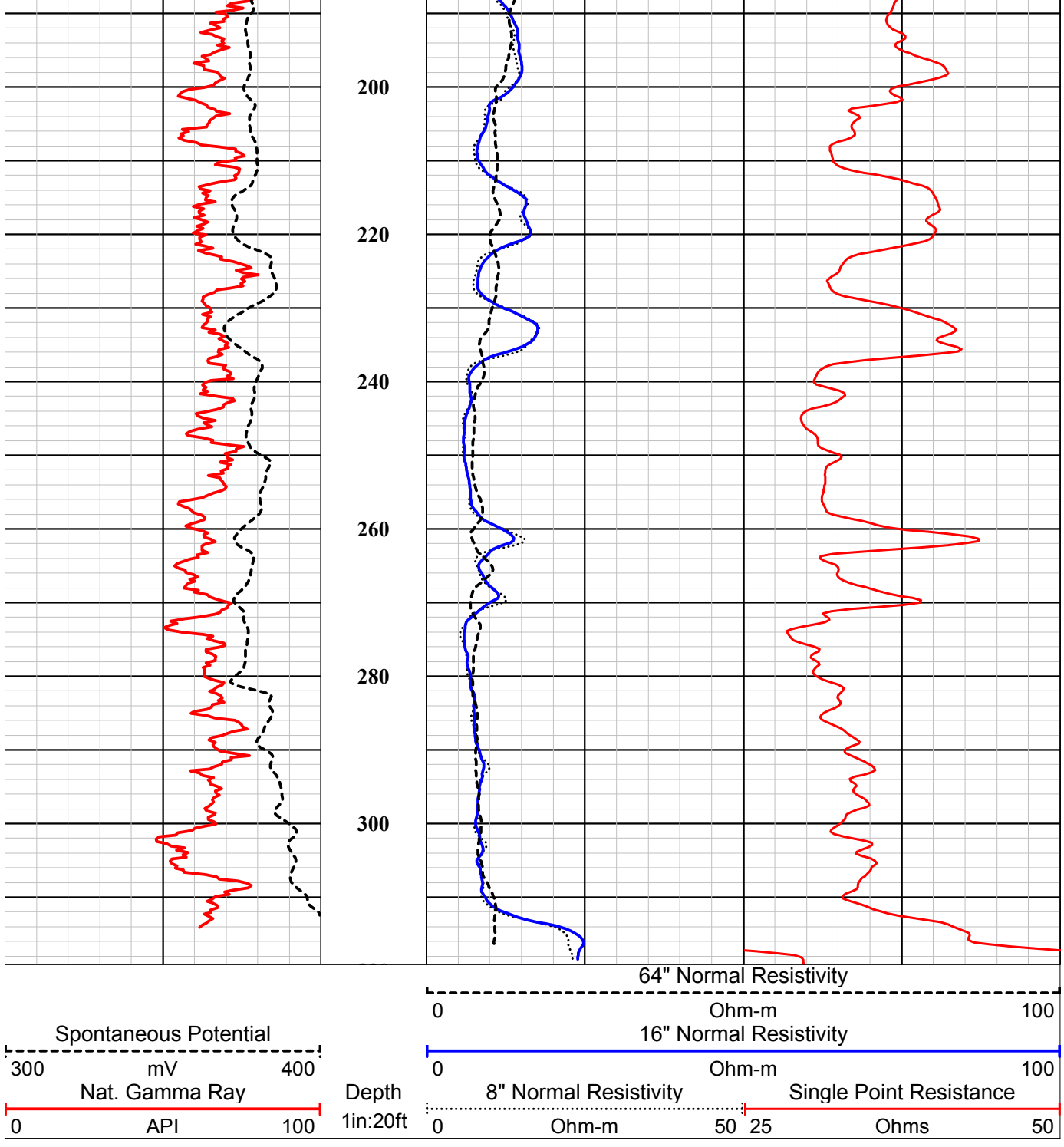
OTHER SERVICES
NEUTRON
CALIPER

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM			G.L.

DATE	5-5-04	TYPE FLUID IN HOLE	FRESH MUD
RUN No	1	SALINITY	
TYPE LOG	E-LOGS -GAMMA	DENSITY	
DEPTH-DRILLER	320 FT	LEVEL	FULL
DEPTH-LOGGER	319 FT	MAX. REC. TEMP.	
BTM LOGGED INTERVAL	319 FT		
TOP LOGGED INTERVAL	SURFACE		
OPERATING RIG TIME			
RECORDED BY	K. MITCHELL		
WITNESSED BY	TERRANEXT		

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	12"	SURFACE	20 FT	12"		SURFACE	20 FT
2	9 7/8"	20 FT	TOTAL DEPTH				
3							




200
220
240
260
280
300
64" Normal Resistivity
0
Ohm-m
100
Spontaneous Potential
16" Normal Resistivity
300
mV
400
0
Ohm-m
100
Nat. Gamma Ray
Depth
8" Normal Resistivity
Single Point Resistance
0
API
100
1in:20ft
0
Ohm-m
50
25
Ohms
50

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	TERRANEXT		
WELL ID	AVB129-02		
FIELD	PHOENIX		
COUNTY	MARICOPA	STATE	ARIZONA

TYPE OF LOGS: GAMMA-NEUTRON-CAL

MORE:

OTHER SERVICES

E-LOGS

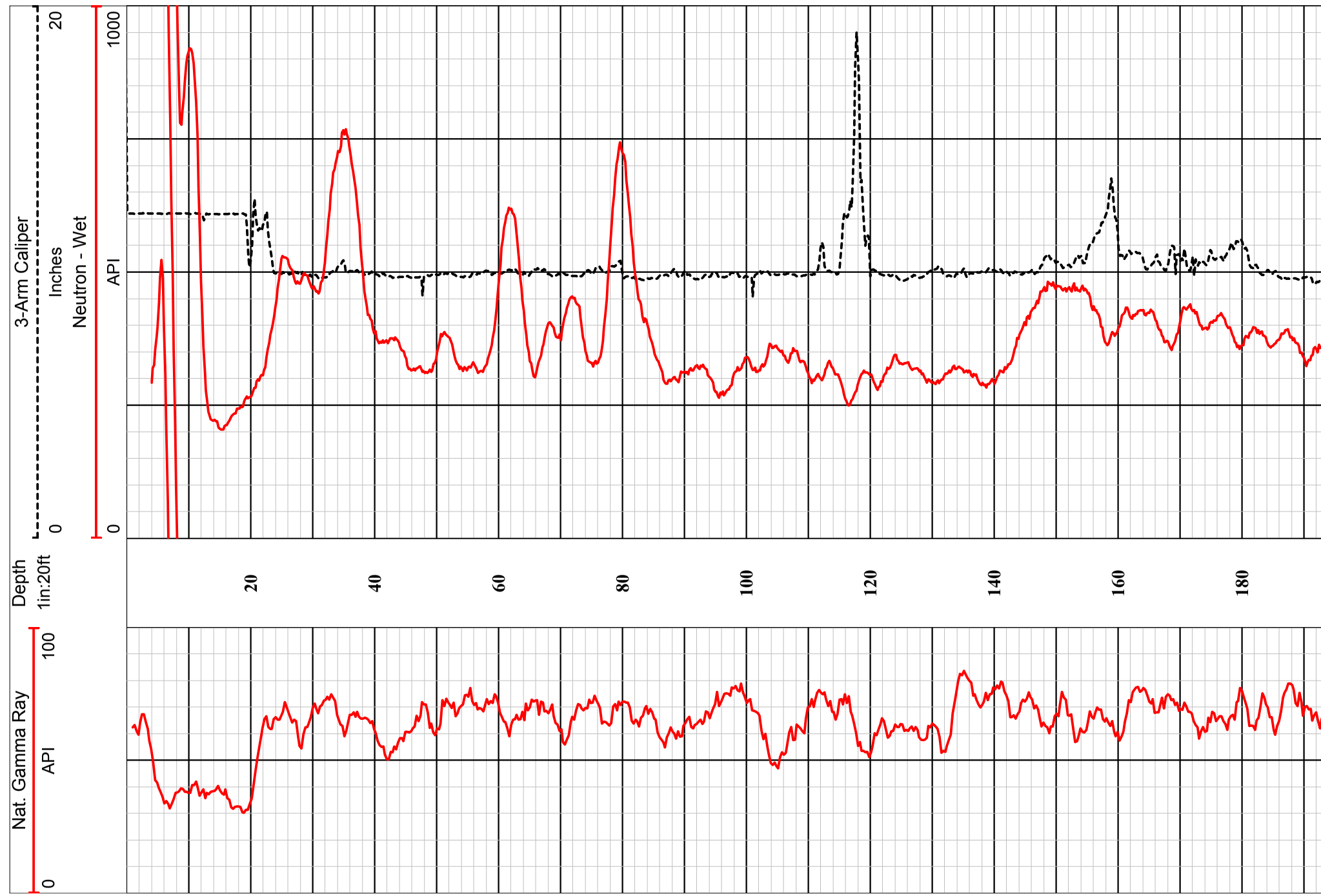
LOCATION ADWR-55-202282

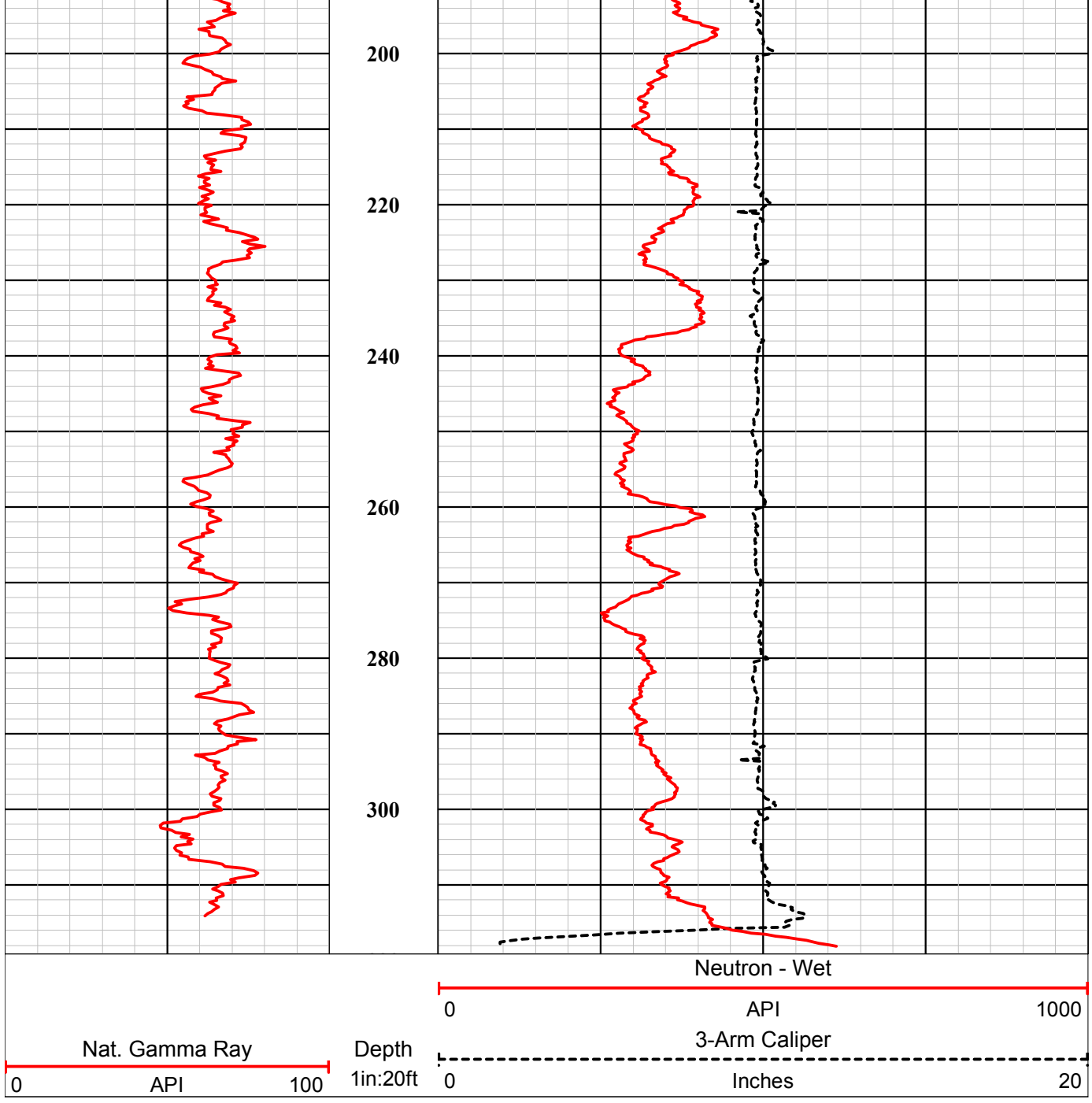
SEC 2 TWP 1N RGE 1E

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM			G.L.

DATE	5-5-04	TYPE FLUID IN HOLE	FRESH MUD
RUN No	1	SALINITY	
TYPE LOG	GAMMMA-NEUT-CAL	DENSITY	
DEPTH-DRILLER	320 FT	LEVEL	FULL
DEPTH-LOGGER	319 FT	MAX. REC. TEMP.	
BTM LOGGED INTERVAL	319 FT		
TOP LOGGED INTERVAL	SURFACE		
OPERATING RIG TIME			
RECORDED BY	K. MITCHELL		
WITNESSED BY	TERRANEXT		

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	12"	SURFACE	20 FT	12"		SURFACE	20 FT
2	9 7/8"	20 FT	TOTAL DEPTH				
3							




200
220
240
260
280
300
Neutron - Wet
0
API
1000
Nat. Gamma Ray
0
API
100
Depth
1in:20ft
3-Arm Caliper
0
Inches
20

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
5		CL	MED. BROWN CLAY, TRACE SILTY OCCASIONAL GRAVEL, MOIST	0.0	SOME FILL MATERIAL
10		CL	LT. BRN, GRAVELY, SANDY CLAY NON-PLASTIC		
15		SW	GRAVELLY SAND MINOR SILT, CLAY <20%		
20		SC	CLAYEY, GRAVELLY SAND MODERATELY PLASTIC		
25		SC	COARSE SANDY CLAY, LT. BRN <40% SAND MED. PLASTICITY		
30		SW	COARSE SILTY SAND MED. PLASTICITY	0.0	
33		CL	SILTY CLAY, MED. PLASTICITY		
35		CL	SANDY, SILTY CLAY (<30% SAND LOW PLASTICITY)		
40		SW	SILTY COARSE SAND, MED. BRN MINOR CLAY		
45		GC	SILTY, CLAYEY SAND, MINOR GRAVEL MED. PLASTICITY		
50		SW	GRAVELLY SAND, SUB ANGULAR		
55		CL	GRAVELLY, SANDY CLAY		
60		SW	GRAVELLY COARSE SAND		
65		CL	SILTY CLAY		
70		CL	FINE SANDY CLAY, MED. BRN.	0.0	
75		CL	MICACEOUS SILTY CLAY MOD. PLASTICITY		

PROJ.#: E03103102-25	DRILL DATE: 01/03/02
LOGGED BY: J. NAMLICK	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 121'	
RIG TYPE: GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH: 380'
DRILLING METHOD: MUD ROTARY	

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB 91-02
73RD AVE / ROOSEVELT
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
80		CL	MICACEOUS SILTY CLAY MOD. PLASTICITY		
85		SW	CLAYEY COARSE SAND, MED. BROWN, SUB ANGULAR		
90		SW	CLAYEY COARSE SAND		
95		CL	SILTY, SANDY CLAY <20% SAND		
100		CL	SILTY CLAY		
105		CL	SILTY CLAY		
110		CL	SILTY CLAY		
115		CL	SILTY CLAY		
120		CL	SILTY CLAY		
125		CL	SANDY, GRAVELLY CLAY COARSE FRACTION <20%		
130		CL	SILTY, SANDY CLAY		
135		CL	SILTY, SANDY CLAY		
140		CL	CLAYEY COARSE SAND, MED. BRN. MOD. PLASTIC CLAY		
145		SP	CLAYEY, GRAVELLY SAND SUB ANGULAR		
150		SP	SILTY, GRAVELLY COARSE SAND		

PROJ.#:E03103102-25	DRILL DATE: 01/03/02
LOGGED BY: J. NAMLICK	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 121'	
RIG TYPE: GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH: 380'
DRILLING METHOD: MUD ROTARY	

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB 91-02
73RD AVE / ROOSEVELT
PHOENIX, ARIZONA

D:\CANVAS\MASTER\BORINGLOG.CNV

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
155		CL	SILTY, FINE SANDY CLAY LOW PLASTICITY		
160		CL	SILTY, FINE SANDY CLAY LOW PLASICITY		
165		CL	SILTY, FINE SANDY CLAY, LOW PLASICITY 16:50		
170		SC	SILTY, CLAYEY, COARSE SAND		
175		GC	SILTY COARSE SANDY CLAY MINOR GRAVEL <15%		
180		CL	COARSE SANDY CLAY		
185		CL	COARSE SANDY CLAY MINOR GRAVEL <15%		
190		CL	COARSE SANDY CLAY	0.0	
195		CL	COARSE SANDY CLAY MED. BROWN		
200		CL	SILTY SANDY CLAY		
205		CL	SILTY CLAY MED. PLASTICITY		
210		CL	COARSE SANDY CLAY		
215		CL	SILTY CLAY, MED. BRN. MOD. PLASTICITY		
220		CL	COARSE SANDY CLAY	0.0	
225		GW	COARSE, SANDY GRAVEL ANGULAR		

PROJ.#:E03103102-25	DRILL DATE: 01/03/02
LOGGED BY: J. NAMLICK	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 121'	
RIG TYPE:GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH: 380'
DRILLING METHOD: MUD ROTARY	

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB 91-02
73RD AVE / ROOSEVELT
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
230		GW	COARSE, SANDY GRAVEL ANGULAR	0.0	
235		GW	COARSE, SANDY GRAVEL ANGULAR		
240		GW	COARSE, SANDY GRAVEL ANGULAR W/MINOR CLAY <15%		
245		GC	CLAYEY SANDY GRAVEL		
250		CL	SILTY, COARSE SANDY CLAY (SAND <30%) LOW-MED. PLASTICITY		
255		CL	SILTY, SANDY CLAY		
260		CL	SILTY, SANDY CLAY		
265		CL	SILTY, SANDY CLAY		
270		SC	CLAYEY, SILTY SAND		
275		SC	CLAYEY, SILTY SANDY		
280		CL	SILTY, SANDY CLAY		
285		CL	SILTY, SANDY CLAY	0.0	
290		SC	SILTY, CLAYEY COARSE SAND(SAND 40-50%)		
295		SC	SILTY, CLAYEY COARSE SAND(SAND 40-50%)		
300		CL	SILTY, COARSE SANDY CLAY		

PROJ.#:E03103102-25	DRILL DATE: 01/03/02
LOGGED BY: J. NAMLICK	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 121'	
RIG TYPE:GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH: 380'
DRILLING METHOD: MUD ROTARY	

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB 91-02
73RD AVE / ROOSEVELT
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
305		CL	SILTY, COARSE SANDY CLAY		
310		CL	SILTY CLAY (MINOR SAND <20%)		
315		CL	SILTY CLAY (MINOR SAND <20%)		
320		CL	SILTY SANDY CLAY		
325		CL	SILTY, SANDY CLAY (MINOR SAND <30%)	0.0	
330		CL	SILTY, SANDY CLAY		
335		CL	SILTY, FINE SANDY CLAY		
340		CL	SILTY, FINE, SANDY CLAY		
345		CL	SILTY, SANDY CLAY	0.0	
350		CL	SILTY SANDY CLAY		
355		CL	SILTY SANDY CLAY (SAND <20%)		
360		CL	SILTY SANDY CLAY (SAND <20%)	0.0	
365		CL	SILTY, SANDY CLAY MED. BROWN		
370		CL	SILTY, FINE SANDY CLAY		
375		CL	SILTY CLAY (<10% SAND)		

PROJ.#:E03103102-25 | DRILL DATE: 01/03/02
LOGGED BY: J. NAMLICK
PROJECT MANAGER: A. GORDON
NOTES:
DEPTH TO WATER: 121'
RIG TYPE: GD15W | DIAMETER: 10"
DRILLER: STEWART | TOTAL DEPTH: 380'
DRILLING METHOD: MUD ROTARY

BE&K / TerraNext

FIELD BOREHOLE LOG
AVB 91-02
73RD AVE/ ROOSEVELT
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
380		CL	SILTY CLAY (<10% SAND)	0.0	

PROJ.#:E03103102-25	DRILL DATE: 01/03/02
LOGGED BY: J. NAMLICK	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 121'	
RIG TYPE: GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH: 380'
DRILLING METHOD: MUD ROTARY	

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB 91-02
73RD AVE / ROOSEVELT
PHOENIX, ARIZONA

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Bakersfield,California 93313
(800) 445-9914
www.welenco.com

ROBERTSON GEOLOGGING TECHNOLOGY

ELECTRIC - TEMPERATURE - GAMMA RAY LOG

AVB 91-02

COMPANY	BE&K TERRANEXT	OTHER SERVICES	
WELL	AVB 91-02		
FIELD	TOLLESON	NEUTRON	
COUNTRY	U.S.	XY CALIPER	
STATE	AZ		
COUNTY	MARICOPA		
LAT.:	33 27.52 N		
LONG.:	112 12.96 W		

Perm. Datum	G.L.	Elev	1010	KB	0.00
Log. Datum	G.L.			DF	0.00
Drill Datum	G.L.			GL	1010.00

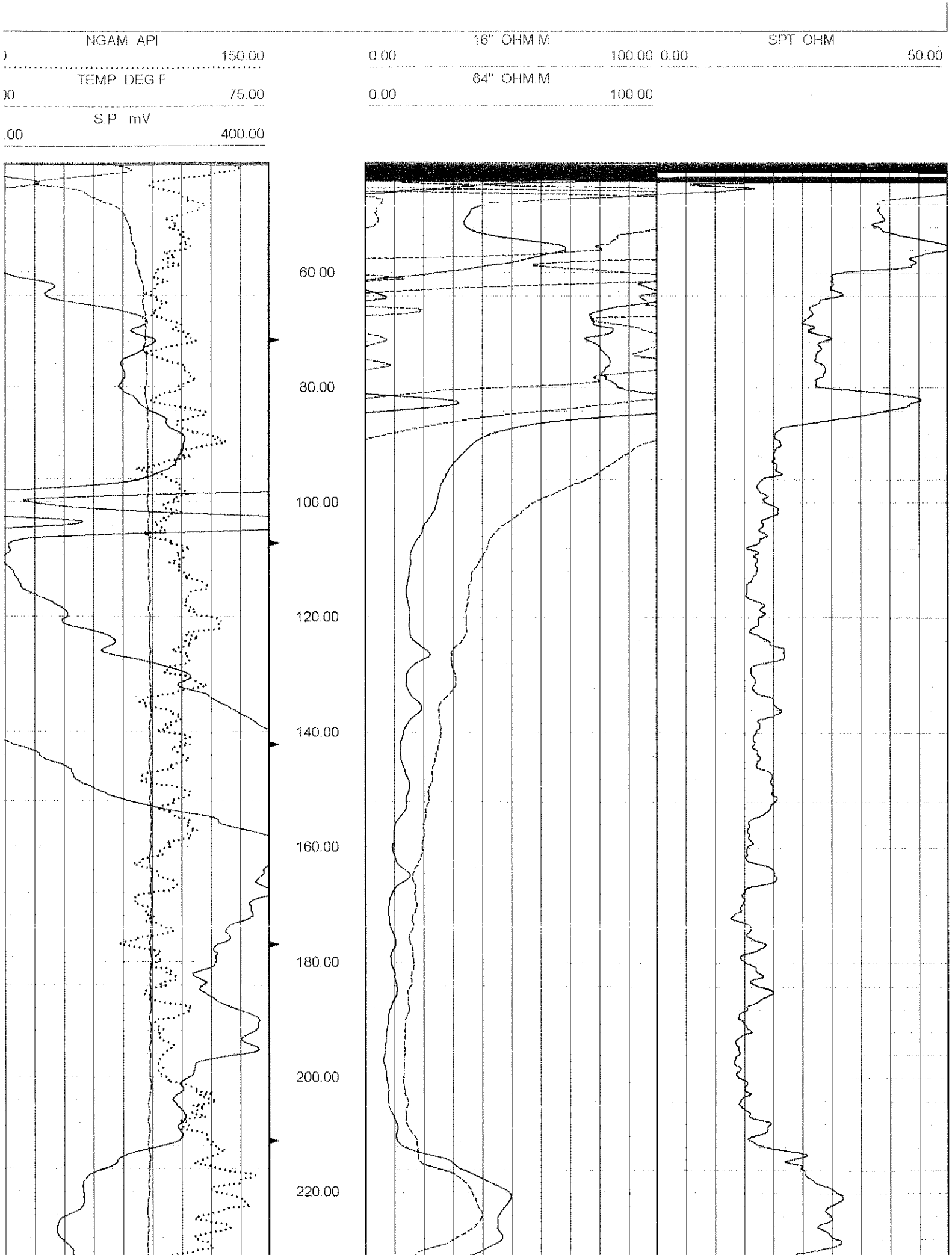
DATE	12-30-2001	0	0
RUN#	1	1	1
TYPE OF LOG	ELOG		
DEPTH DRILLER	380.00	0.00	0.00
DEPTH LOGGER	380.00	0.00	0.00
LOG DEEPEST	379.00	0.00	0.00
LOG SHALLOW	40.00	0.00	0.00
FLUID IN HOLE	BENTONITE		
SALINITY			
DENSITY			
LEVEL	0		
MAX TEMP °C	0.00	0.00	0.00
RIG TIME	.5 HR		
RECORDED BY	CRAIG CORBELL		
WITNESSED BY	J. NAMLICK		

RUN#	BIT RECORD			CASING RECORD			
	BIT	FROM	TO	BIT	WEIGHT	FROM	TO
1	9.88	148.00	381.00	12.75	0.00	0.00	148.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00

REMARKS (C:\DansLogs\35047\35047e.hed)

JTN: 35047

Sec: Rm:7.4 @ 75 Deg F
Twp: Rmf:7.5 @ 75 Deg F
Rge:
Elev., Lat. and Lon. determined using recreational GPS unit.
Location:73 rd AVE and Roosevelt
Driller: Stewart Bros. Drilling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S.P mV
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100.00
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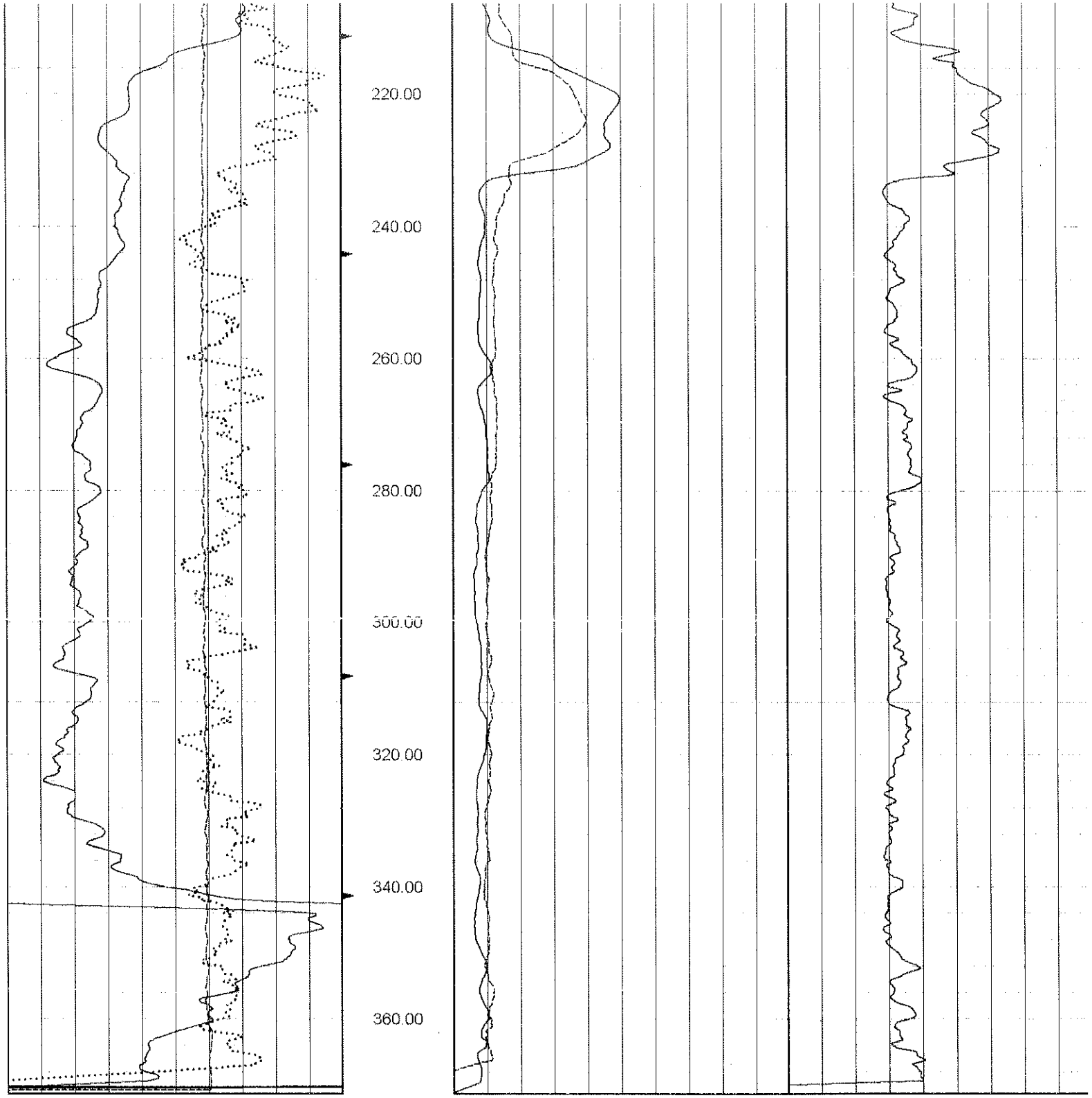
220.00
240.00
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ROBERTSON GEOLOGGING TECHNOLOGY

NEUTRON LOG

AVB 91-02

COMPANY	BE&K TERRANEXT
WELL	AVB 91-02
FIELD	TOLLESON
COUNTRY	U.S.
STATE	AZ
COUNTY	MARICOPA
LAT.:	33 27.52 N
LONG.:	112 12.96 W

OTHER SERVICES

ELOG
XY CALIPER

Perm. Datum	G.L.	Elev	1010	KB	0.00
Log. Datum	G.L.			DF	0.00
Drill Datum	G.L.			GL	1010.00

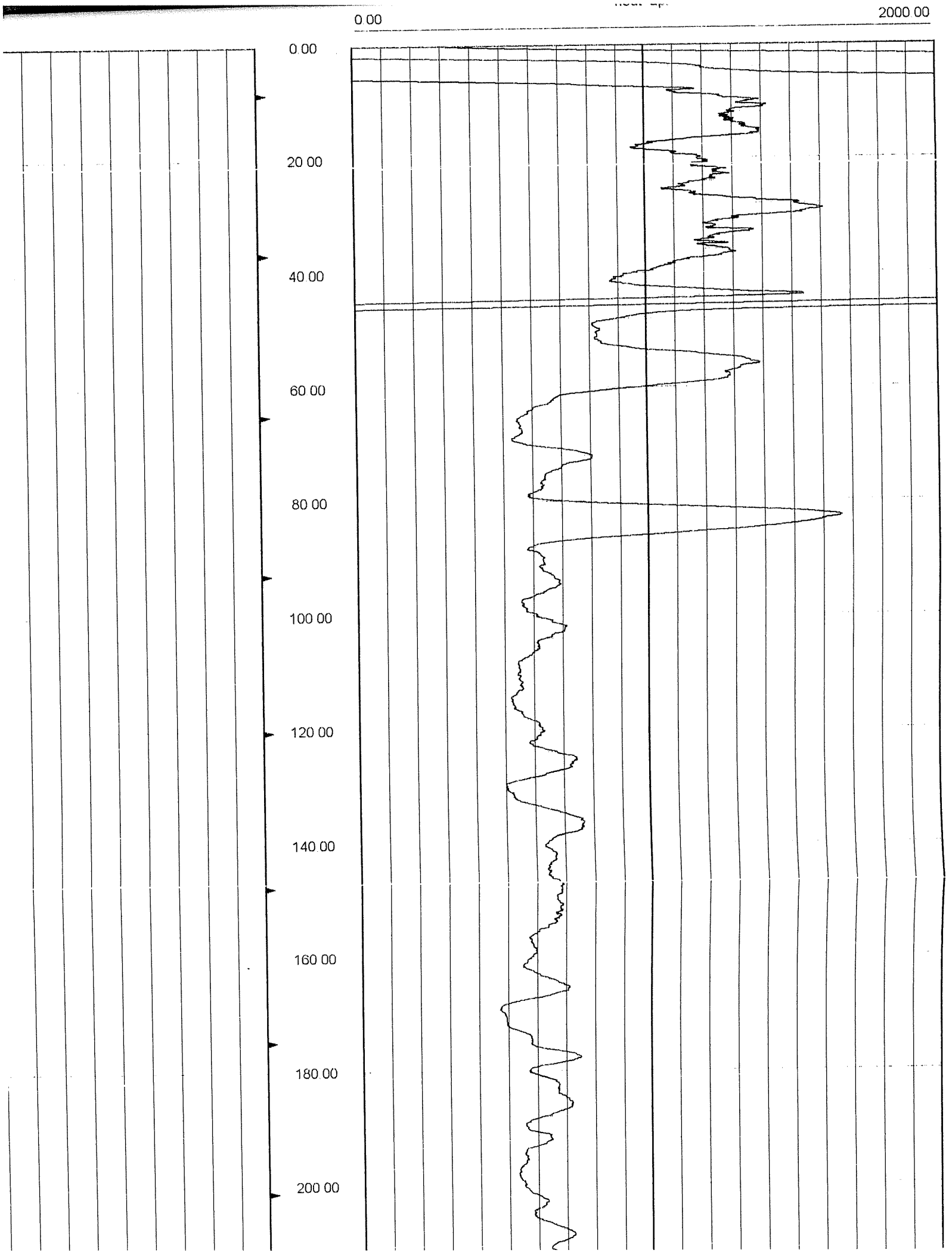
DATE	12-30-2001	0	0
RUN#	1	1	1
TYPE OF LOG	NEUTRON		
DEPTH DRILLER	380.00	0.00	0.00
DEPTH LOGGER	380.00	0.00	0.00
LOG DEEPEST	371.00	0.00	0.00
LOG SHALLOW	0.00	0.00	0.00
FLUID IN HOLE	BENTONITE		
SALINITY			
DENSITY			
LEVEL	0		
MAX TEMP °C	0.00	0.00	0.00
RIG TIME	.5 HR		
RECORDED BY	CRAIG CORBELL		
WITNESSED BY	J. NAMLICK		

RUN#	BIT RECORD			CASING RECORD			
	BIT	FROM	TO	BIT	WEIGHT	FROM	TO
1	9.88	148.00	381.00	12.75	0.00	0.00	148.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00

REMARKS (C:\DansLogs\35047\35047N.hed)

JTN: 35047

Sec: Rm:7.4 @ 75 Deg F
Twp: Rmf:7.5 @ 75 Deg F
Rge:
Elev., Lat. and Lon. determined using recreational GPS unit.
Location:73 rd AVE and Roosevelt
Driller: Stewart Bros. Drilling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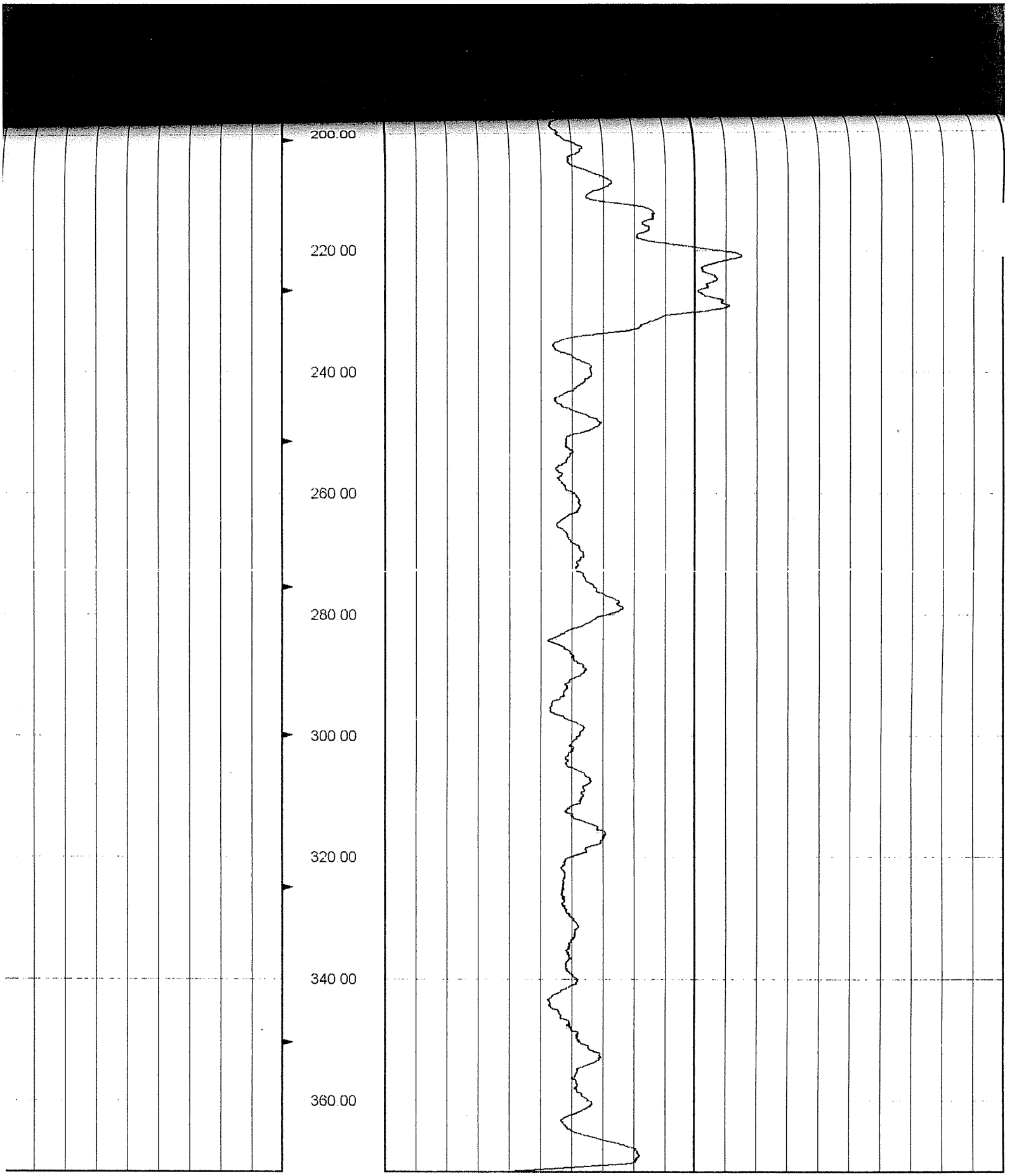
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240.00
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280.00
300.00
320.00
340.00
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ROBERTSON GEOLOGGING TECHNOLOGY

X Y - CALIPER LOG

AVB 91-02

COMPANY	BE&K TERRANEXT
WELL	AVB 91-02
FIELD	TOLLESON
COUNTRY	U.S.
STATE	AZ
COUNTY	MARICOPA
LAT.:	33 27.52 N
LONG.:	112 12.96 W

OTHER SERVICES

ELOG
NEUTRON

Perm. Datum	G.L.	Elev	1010	KB	0.00
Log. Datum	G.L.			DF	0.00
Drill Datum	G.L.			GL	1010.00

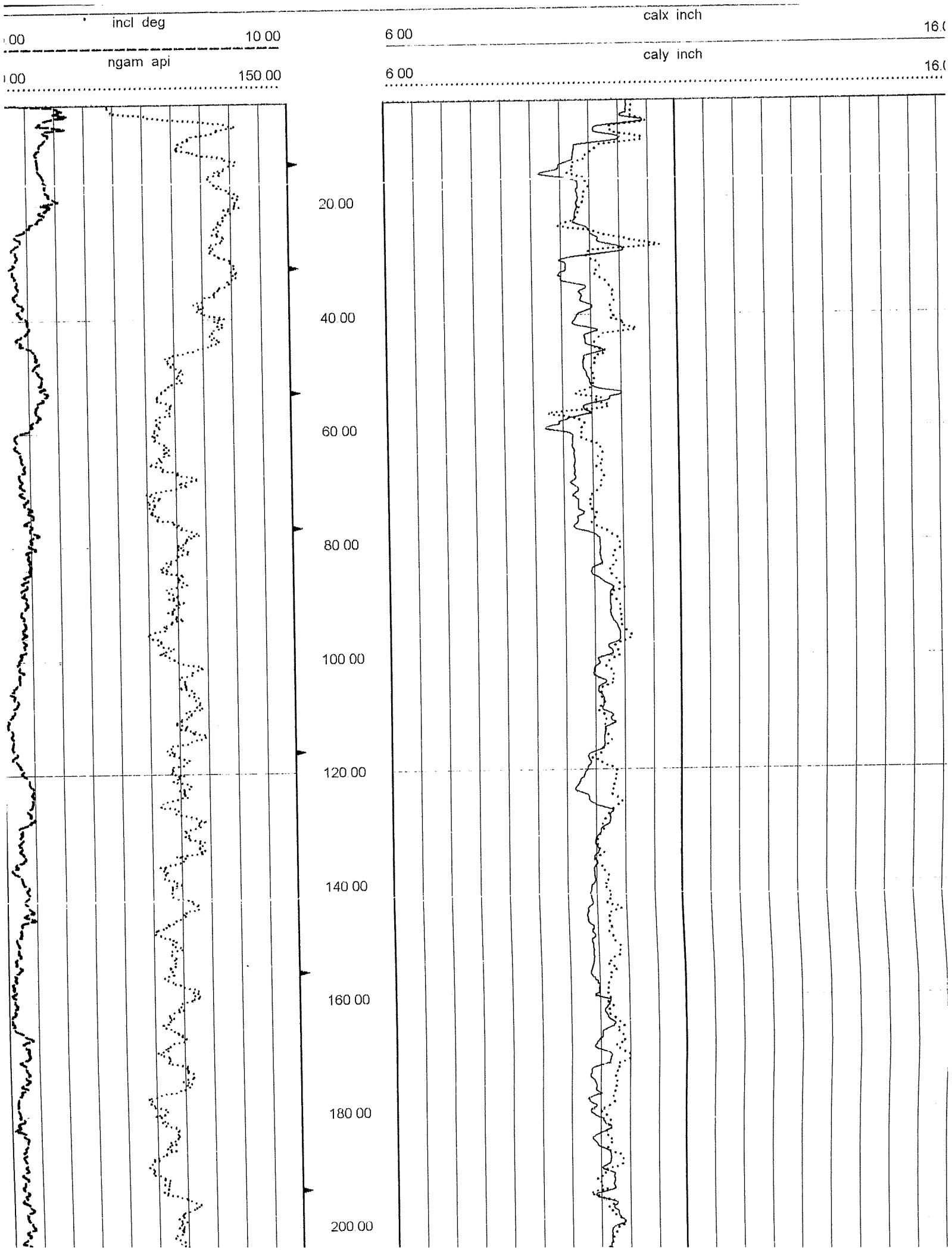
DATE	12-30-201	0	0
RUN#	1	1	1
TYPE OF LOG	X Y CALIPER		
DEPTH DRILLER	380.00	0.00	0.00
DEPTH LOGGER	380.00	0.00	0.00
LOG DEEPEST	379.00	0.00	0.00
LOG SHALLOW	2.00	0.00	0.00
FLUID IN HOLE	BENTONITE		
SALINITY			
DENSITY			
LEVEL	0		
MAX TEMP °C	0.00	0.00	0.00
RIG TIME	.5 HR		
RECORDED BY	CRAIG CORBELL		
WITNESSED BY	J. NAMLICK		

RUN#	BIT RECORD			CASING RECORD			
	BIT	FROM	TO	BIT	WEIGHT	FROM	TO
1	9.88	148.00	381.00	12.75	0.00	0.00	148.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00

REMARKS (C:\DansLogs\35047\35047C.hed)

JTN: 35047

Sec: Rm:7.4 @ 75 Deg F
Twp: Rmf:7.5 @ 75 Deg F
Rge:
Elev., Lat. and Lon. determined using recreational GPS unit.
Location:73 rd AVE and Roosevelt
Driller: Stewart Bros. Drilling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ngam api
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calx inch
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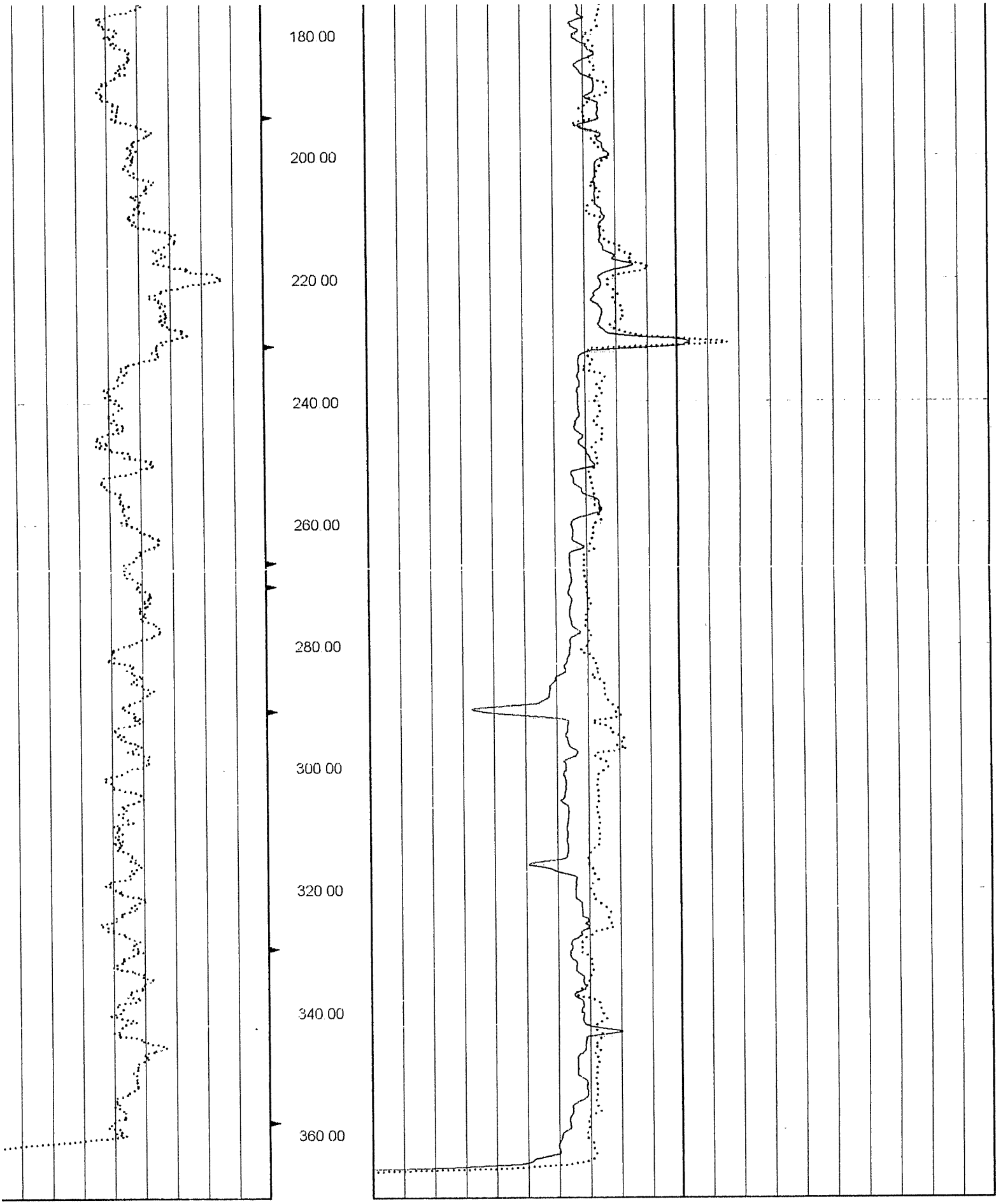

180.00
200.00
220.00
240.00
260.00
280.00
300.00
320.00
340.00
360.00

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
5		SM	SILTY FINE SAND		
10		GP	SANDY GRAVEL <3/8" SUB ANGULAR		
15		CL	SILTY CLAY, MED. BROWN MOD. PLASTICITY		
20		CL	SILTY CLAY, MED. BROWN MOD. PLASTICITY	0.0	
25		CL	SILTY CLAY, MED. BROWN MOD. PLASTICITY (S <10%)		
30		CL	FINE SANDY, SILTY CLAY (S <10%)		
35		CL	FINE SANDY SILTY CLAY (S <10 - 20%)		
40		SW	COARSE SAND (<1/4") SUB ANGULAR		
45		SM	SILTY, CLAYEY SAND		
50		CL	SILTY CLAY, MED. BROWN		
55		CL	SILTY FINE SANDY CLAY (S <40%)		
60		CL	SILTY FINE SANDY CLAY MINOR GRAVEL <5%		
65		SW	COARSE SAND		
70		ML	FINE SANDY SILT (S <30%)		
75		ML	FINE SANDY SILT (S <30%)		

PROJ.#:03103102-25 DRILL DATE: 01/29/02
LOGGED BY: JMN
PROJECT MANAGER: A. GORDON
NOTES:
DEPTH TO WATER: 116.7 (1/27/02)
RIG TYPE:GD15W DIAMETER:10"
DRILLER: STEWART TOTAL DEPTH: 368'
DRILLING METHOD: MUD ROTARY

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB 96-02
63RD AVE/MCKINLEY
PHOENIX,ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
80		CL	FINE SANDY SILTY CLAY (S <20%)		
85		SC	CLAYEY SAND (CLAY <30%) MOD. PLASTICITY	0.0	
90		CL	SANDY SILTY CLAY (SAND <30% FINE TO MED. GRAINED)		
95		CL	SANDY SILTY CLAY (SAND <30% FINE TO MED. GRAINED)		
100		SP	GRAVELLY SAND (G <10%)		
105		SP	COARSE SAND		
110		SP	COARSE SAND		
115		SP	GRAVELLY SAND (<3/8) (G< 30%)		
120		CL	MED. SANDY, SILTY CLAY (SAND <20%)		
125		CL	MED. SANDY SILTY CLAY (SAND <20%)		
130		SC	CLAYEY COARSE SAND (C <20%) (MINOR GRAVEL 5%)		
135		SW	GRAVELLY SAND (G <1/2" = <30%)		
140		GW	SANDY GRAVEL (G <1/2" >60%)		
145		GW	SANDY GRAVEL <1"		
150		GW	SANDY GRAVEL <3/8" ANG.	0.0	

PROJ.#:E03103102-25	DRILL DATE: 1/29/02
LOGGED BY: JMN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 116.7 (1/27/02)	
RIG TYPE:GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH: 368'
DRILLING METHOD: MUD ROTARY	

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB 96-02
63RD AVE / MCKINLEY
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
155		GW	SANDY GRAVEL <3/8" ANG.		
160		SW	COARSE GRAVEL (<5% 3/8 GRAVEL)		HOLE SLOUGHING IN W/ FLUID LOSS
165		GW	SANDY GRAVEL (<3/8" SAND <50%)		HOLE SLOUGHING IN W/ FLUID LOSS
170		GW	SANDY GRAVEL <1/2" (SAND <50%)		HOLE SLOUGHING IN W/ FLUID LOSS
175		GW	SANDY GRAVEL <1/2" (SAND <50%)		FLUID LOSS
180		GW	SANDY GRAVEL <1/2" (SAND <50%)	0.0	
185		GW	SANDY GRAVEL (<3/4" SAND <50/50)		
190		SC	CLAYEY SILTY SAND (FINES <40%)		
195		SC	CLAYEY SILTY SAND (FINES <40%)		
200		GC	CLAYEY SANDY GRAVEL (<1/2" C <20%)		
205		SC	CLAYEY SAND (<1/2" C <20%)		
210		GC	CLAYEY SANDY GRAVEL (<1/2")		
215		SC	CLAYEY SILTY SAND		
220		GM	SILTY SANDY GRAVEL (S <30%)		
225		SM	CLAYEY, SILTY COARSE SAND (FINES <40%)		

PROJ.#:E03103120-25	DRILL DATE:1/29/02
LOGGED BY: JMN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 116.7 (1/27/02)	
RIG TYPE: GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH:368'
DRILLING METHOD: MUD ROTARY	

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB 96-02
63RD AVE / MCKINLEY
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
230		SM	CLAYEY, SILTY COARSE SAND (FINES <40%)		
235		SM	CLAYEY, SILTY COARSE SAND (FINES <40%)		
240		SM	SILTY COARSE SAND (FINES <40%)		
245		SM	SILTY COARSE SAND (SILT < 30%)		
250		SM	SILTY COARSE SAND (FINES <20%)		
255		SM	SILTY COARSE SAND (FINES <20%)		
260		SW	GRAVELLY SAND (G <30% <3/8")		MINOR FLUID LOSS
265		SM	CLAYEY SILTY COARSE SAND (FINES <%)		
270		SP	CLAY / SILT GRAVELLY SAND (FINES <20%) (GRAVEL <3/8" <30%)		
275		SM	CLAYEY SILTY COARSE SAND (FINES <20%) <1/4"		
280		SM	CLAYEY SILTY COARSE SAND INCREASING SILT / CLAY TO 40-50%		
285		ML	CLAYEY SILT (MINOR FINE / MED. SAND <20%)		
290		ML	CLAYEY SILT (MINOR FINE / MED. SAND <20%)		
295		CL	SILTY CLAY		
300		CL	SILTY CLAY (MINOR SAND <10%)		

PROJ.#:E03103102-25 | DRILL DATE: 01/29/02
LOGGED BY: JMN
PROJECT MANAGER: A.GORDON
NOTES:
DEPTH TO WATER: 116.7' (01/27/02)
RIG TYPE: GD15W | DIAMETER: 10"
DRILLER: STEWART | TOTAL DEPTH: 368'
DRILLING METHOD: MUD ROTARY

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB 96-02
63RD AVE / MCKINLEY
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
305		CL	SILTY CLAY, MED. BROWN		
310		CL	SILTY CLAY, MED. BROWN		
315		CL	SILTY CLAY, MED. BROWN MINOR FINE SAND <20-30%		
320		ML	SANDY CLAYEY SILT (INCREASING SAND <30-40%)		
325		SW	SILTY (MED.) SAND MINOR CLAY <10%		
330		SW	SILTY SAND (MED. - FINE)		
335		SW	SAND (MINOR SILT) <1/4"		
340		SW	SILTY SAND (MINOR CLAY <10%) <3/16"		
345		SW	GRAVELLY SAND <3/8"		
350		GW	SANDY GRAVEL <3/8" MINOR 1/2"		
355		GW	SANDY GRAVEL <3/8" MINOR 1/2"		
360		GW	SANDY GRAVEL <1/2"		
365		GW	SILTY SANDY GRAVEL <1/2" (SILT <20%) MINOR CLAY		
370					
375					

PROJ.#:E03103102-25	DRILL DATE: 01/29/02
LOGGED BY: JMN	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 116.7' (01/27/02)	
RIG TYPE: GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH: 368'
DRILLING METHOD: MUD ROTARY	

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB 96-02
63RD AVE/MCKINLEY
PHOENIX, ARIZONA

welenco
5201 Woodmere Drive
Bakersfield California 93313
(800) 445-9914
www.welenco.com

NEUTRON LOG

AVB 96-02

COMPANY	BE&K TERRANEXT
WELL	AVB 96-02
FIELD	PHOENIX
COUNTRY	U.S.
STATE	AZ
COUNTY	MARICOPA
LAT.:	33 27.87 N
LONG.:	112 11.63 W

OTHER SERVICES

X Y CALIPER
ELOG

Perm. Da..	G.L.	Elev	1077	KB	0.00
Log. Datum	G.L.			DF	0.00
Drill Datum	G.L.			GL	1077.00

DATE	01/25/2002	0	0
RUN#	1	1	1
TYPE OF LOG	NEUTRON		
DEPTH DRILLER	368.00	0.00	0.00
DEPTH LOGGER	361.00	0.00	0.00
LOG DEEPEST	360.00	0.00	0.00
LOG SHALLOW	0.00	0.00	0.00
FLUID IN HOLE	BENTONITE		
SALINITY			
DENSITY			
LEVEL	FULL		
MAX TEMP °C	0.00	0.00	0.00
RIG TIME	.5 HR		
RECORDED BY	WILLIAM SMITH		
WITNESSED BY	J. NAMLICK		

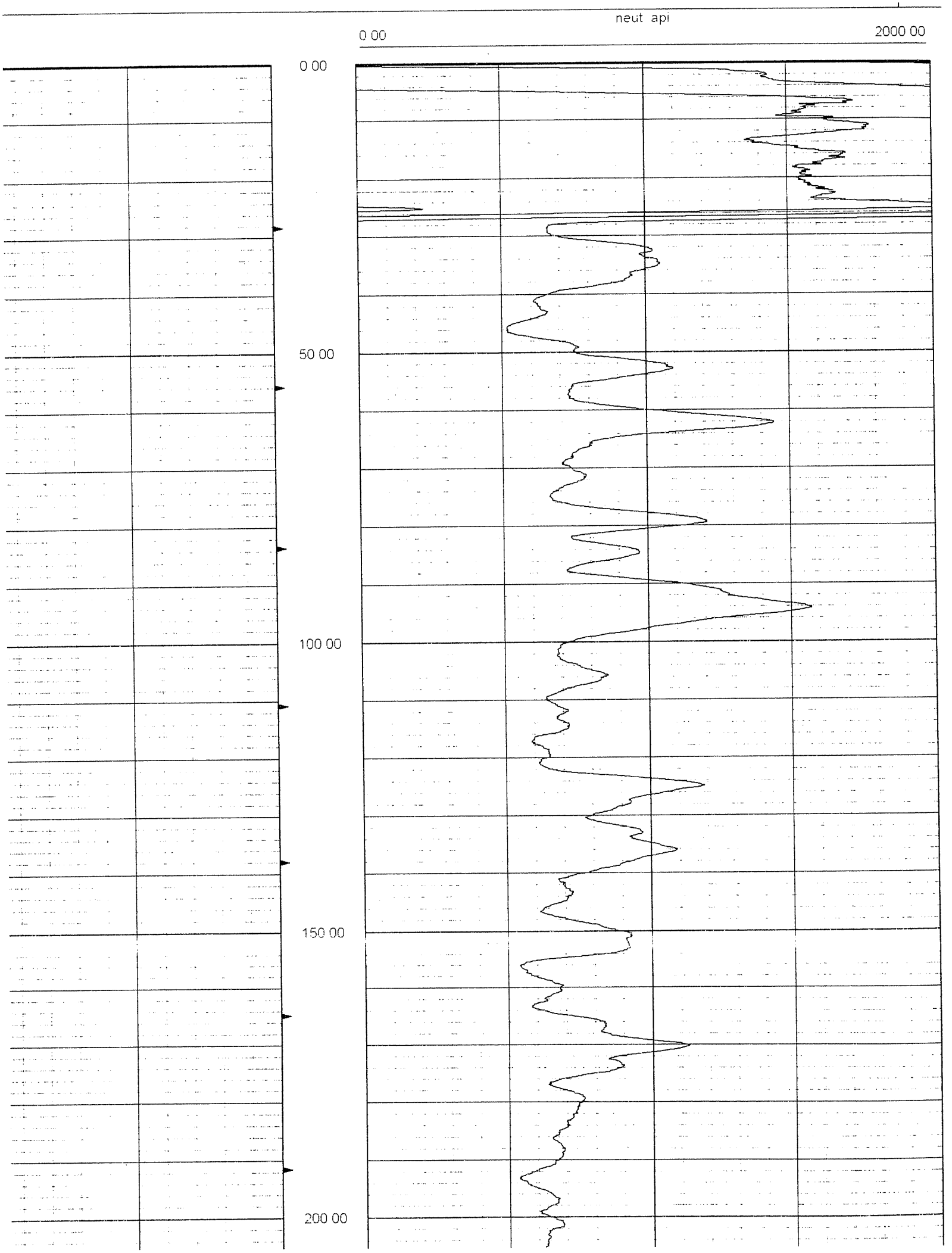
RUN#	BIT RECORD SIZE	FROM	TO	CASING RECORD SIZE	WEIGHT	FROM	TO
1	9.88	0.00	368.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00

ROBERTSON GEOLOGGING TECHNOLOGY

REMARKS (D:\Video Reports\Bill\logs\35805\35805N.hed)

JTN: 35805

Sec: Rm: 5.1 @ 75 Deg F
Twp: Rmf: 5.2 @ 75 Deg F
Rge:
Elev., Lat. and Lon. determined using recreational GPS unit.
Location: 63rd Ave. and McKinley
Driller: Stewart Brothers Drilling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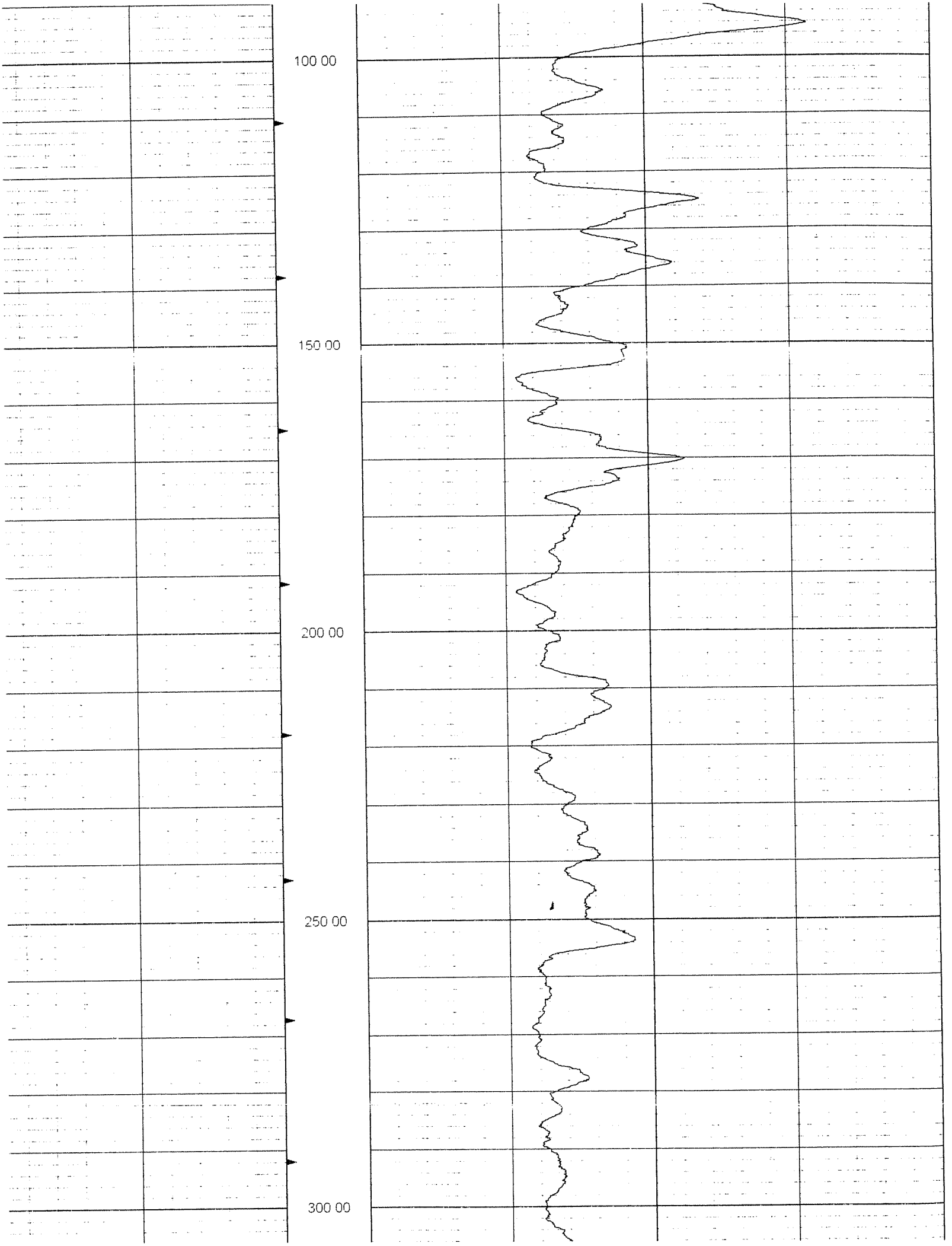
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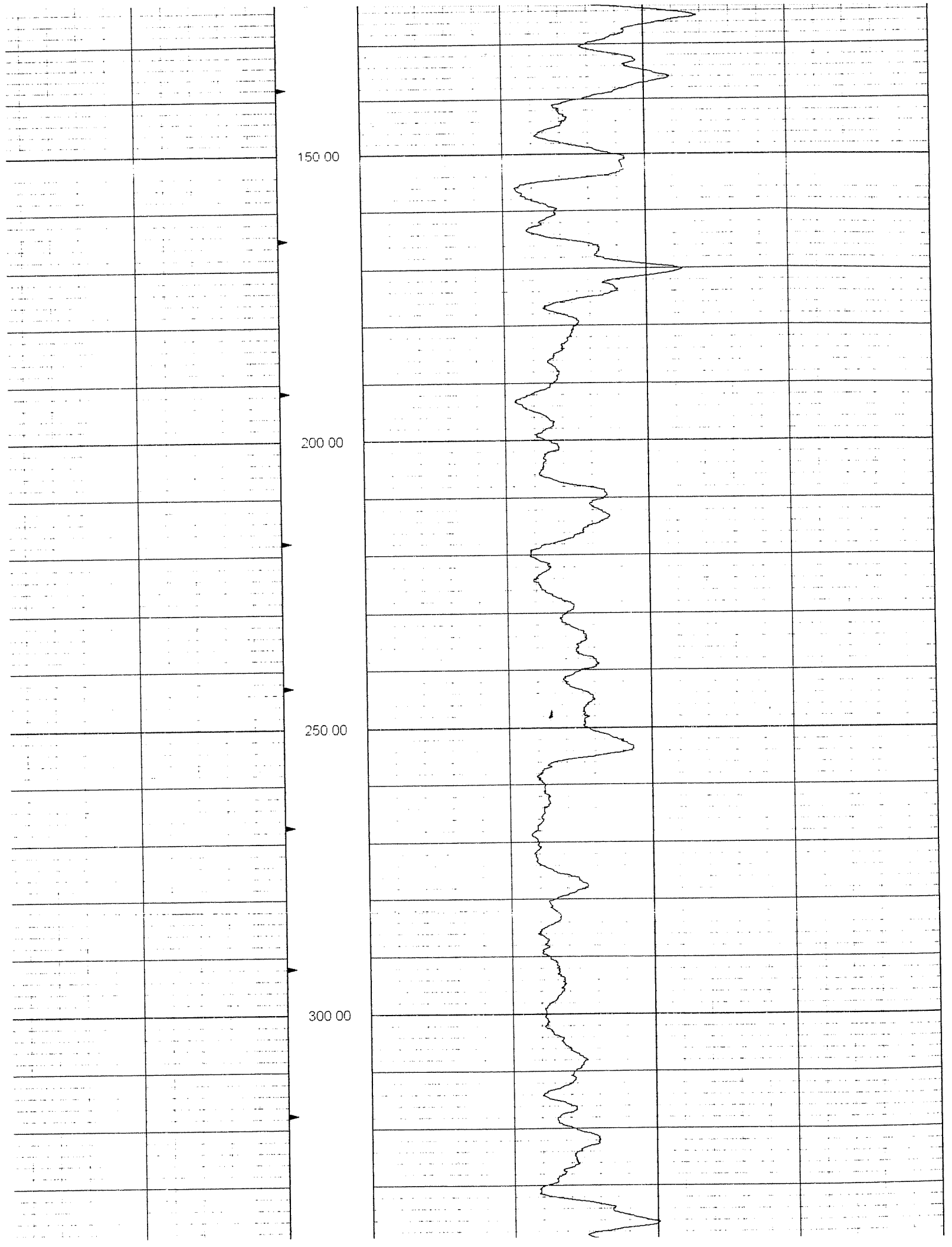
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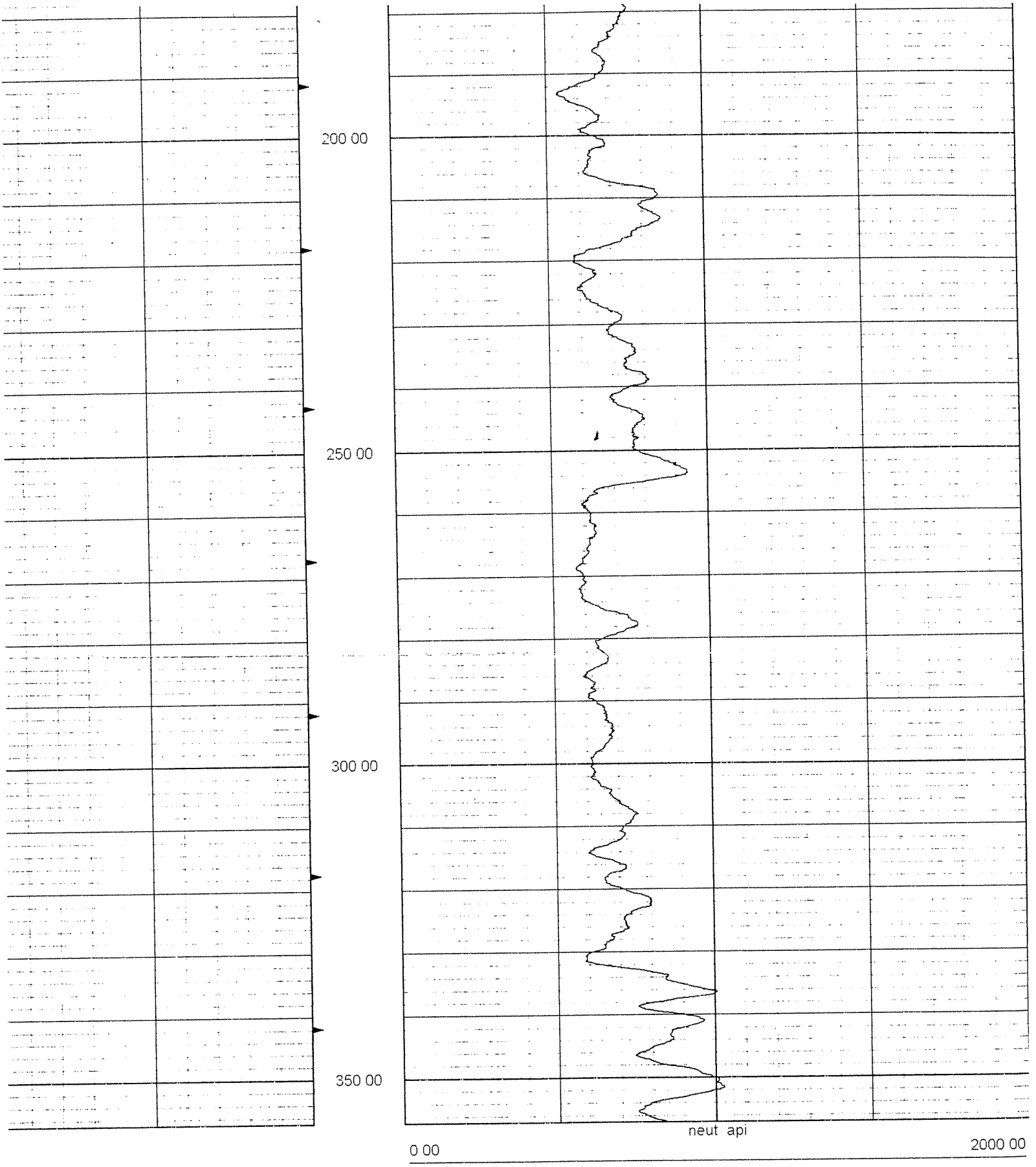

Depth = - 800 ft Time = 25 January 2002 15 55 53 Filename = "C \WINLOGGER\DATA\35805N LOG"

welenco
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Bakersfield California 93313
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ELECTRIC- GAMMA RAY - TEMPERATURE LOG

AVB 96-02

COMPANY	BE&K TERRANEXT	OTHER SERVICES	
WELL	AVB 96-02		
FIELD	PHOENIX	NEUTRON	
COUNTRY	U.S.	X Y CALIPER	
STATE	AZ		
COUNTY	MARICOPA		
LAT.:	33 27.87 N		
LONG.:	112 11.63 W		

Perm. Da..	G.L.	Elev	1077	KB	0.00
Log. Datum	G.L.			DF	0.00
Drill Datum	G.L.			GL	1077.00

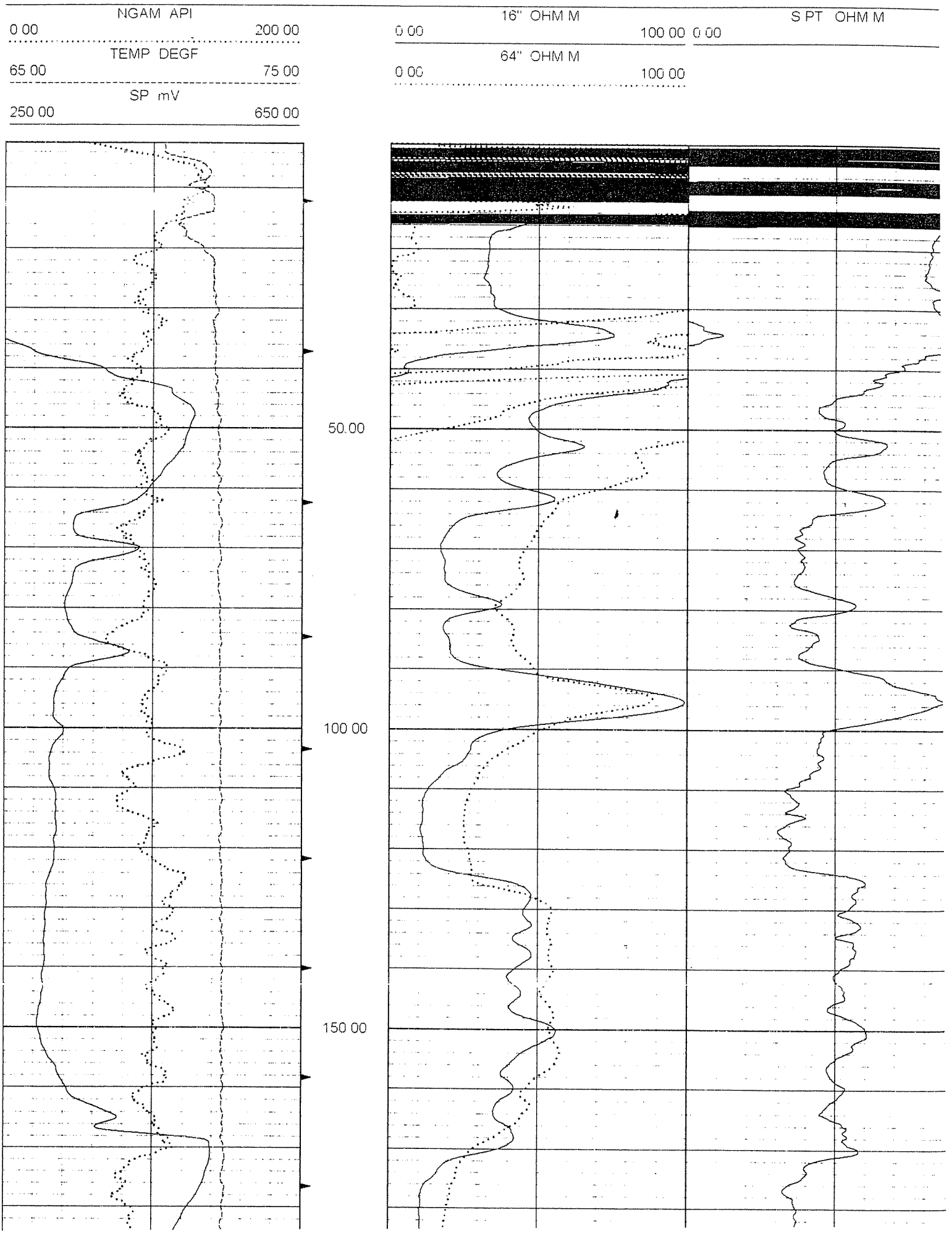
DATE	01/25/2002	0	0
RUN#	1	1	1
TYPE OF LOG	ELOG		
DEPTH DRILLER	368.00	0.00	0.00
DEPTH LOGGER	367.00	0.00	0.00
LOG DEEPEST	366.00	0.00	0.00
LOG SHALLOW	0.00	0.00	0.00
FLUID IN HOLE	BENTONITE		
SALINITY			
DENSITY			
LEVEL	FULL		
MAX TEMP °C	0.00	0.00	0.00
RIG TIME	1 HR		
RECORDED BY	WILLIAM SMITH		
WITNESSED BY	J. NAMLICK		

RUN#	BIT RECORD			CASING RECORD			
	SIZE	FROM	TO	SIZE	WEIGHT	FROM	TO
1	9.88	0.00	368.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00

REMARKS (D:\Video Reports\Bill\logs\35805\35805E2.hed)

JTN: 35805

Sec: Rm: 5.1 @ 75 Deg F
Twp: Rmf: 5.2 @ 75 Deg F
Rge:
Elev., Lat. and Lon. determined using recreational GPS unit.
Location: 63rd Ave. and McKinley, Sunridge Park
Driller:Stewart Brothers Drilling
Spontaneous Potential shift due to possible interference from electric utility lines.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SP mV
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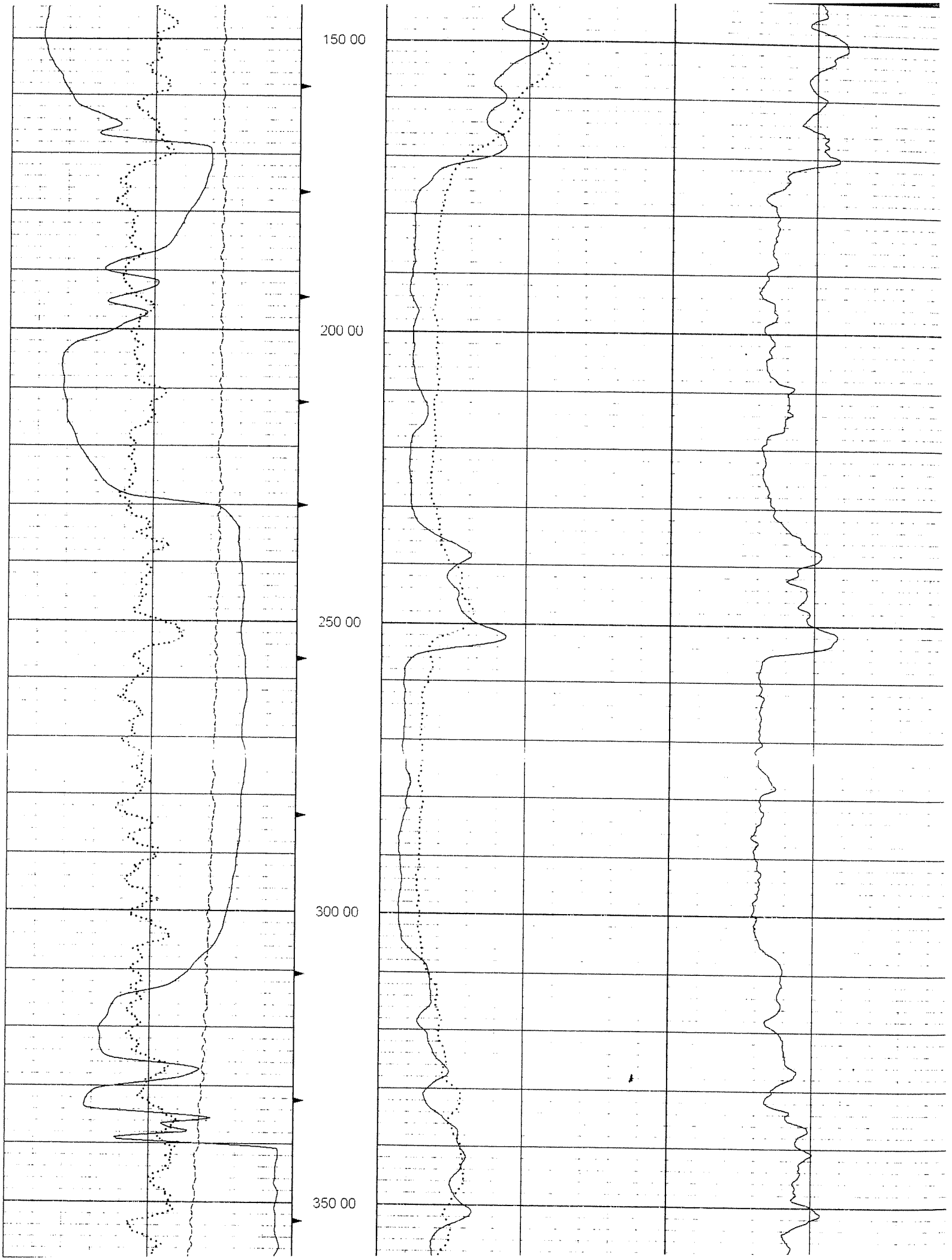
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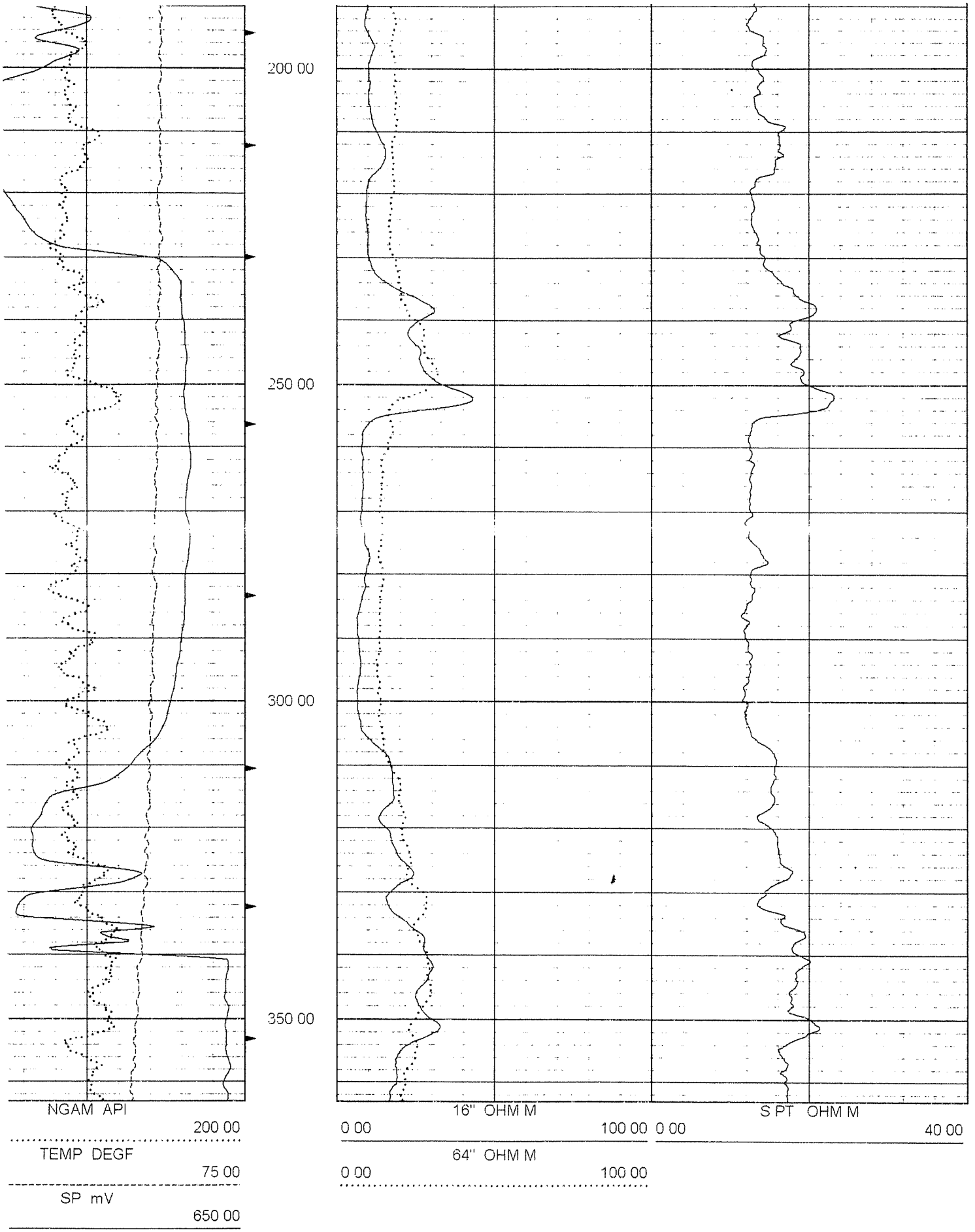

4 00 ft Time = 25 January 2002 14 18 29 Filename = "C \WINLOGGER\DATA\35805E2 LOG"

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X Y CALIPER LOG

AVB 96-02

COMPANY	BE&K TERRANEXT
WELL	AVB 96-02
FIELD	PHOENIX
COUNTRY	U.S.
STATE	AZ
COUNTY	MARICOPA
LAT.:	33 27.87 N
LONG.:	112 11.63 W

OTHER SERVICES

NEUTRON
ELOG

Perm. Da..	G.L.	Elev	1077	KB	0.00
Log. Datum	G.L.			DF	0.00
Drill Datum	G.L.			GL	1077.00

DATE	01/25/2002	0	0
RUN#	1	1	1
TYPE OF LOG	CALIPER		
DEPTH DRILLER	368.00	0.00	0.00
DEPTH LOGGER	362.00	0.00	0.00
LOG DEEPEST	361.00	0.00	0.00
LOG SHALLOW	0.00	0.00	0.00
FLUID IN HOLE	BENTONITE		
SALINITY			
DENSITY			
LEVEL	FULL		
MAX TEMP °C	0.00	0.00	0.00
RIG TIME	1 HR		
RECORDED BY	WILLIAM SMITH		
WITNESSED BY	J. NAMLICK		

RUN#	BIT RECORD			CASING RECORD			
	SIZE	FROM	TO	SIZE	WEIGHT	FROM	TO
1	9.88	0.00	368.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00

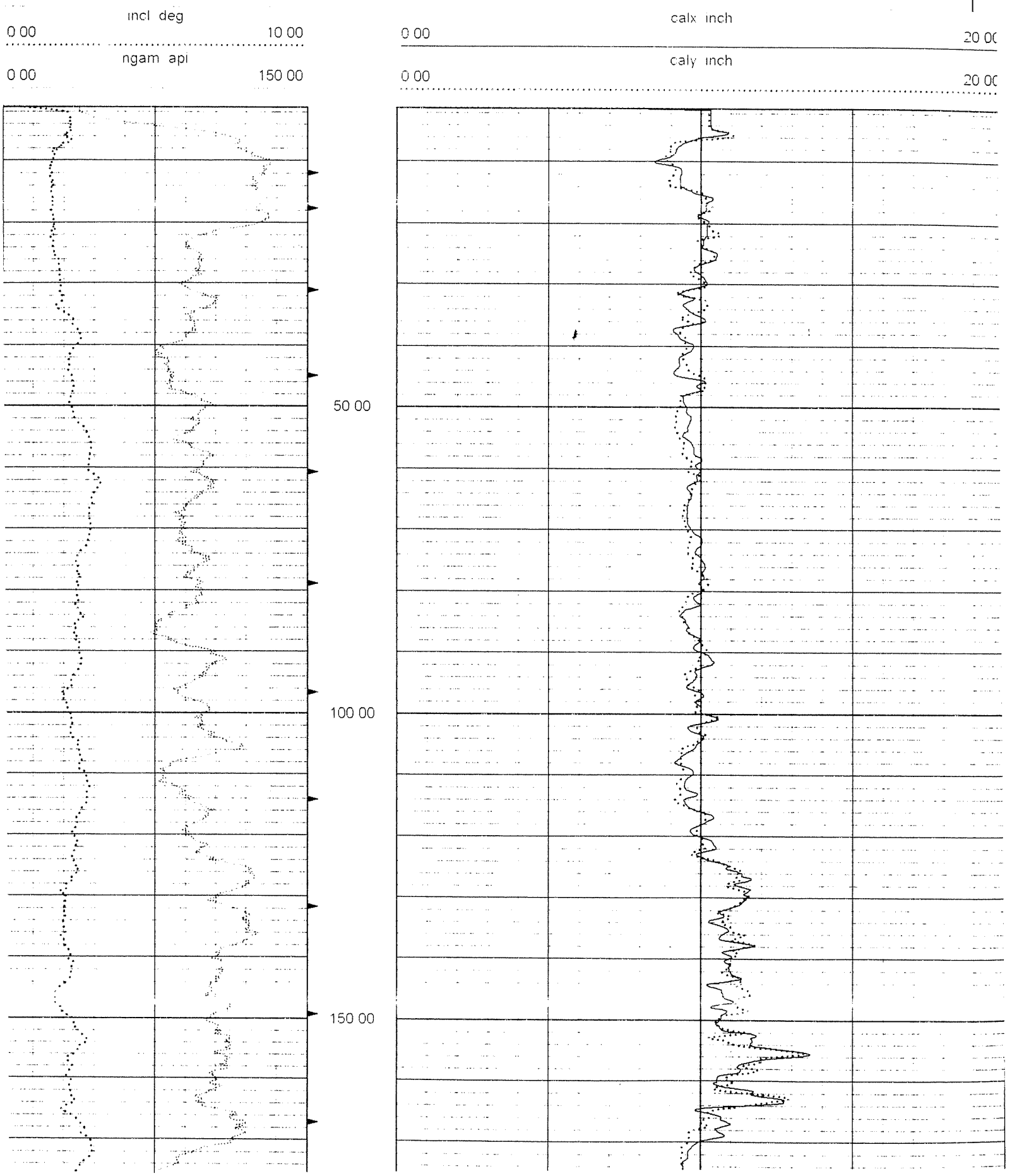
REMARKS (D:\Video Reports\Bill\logs\35805\35805C.hed)

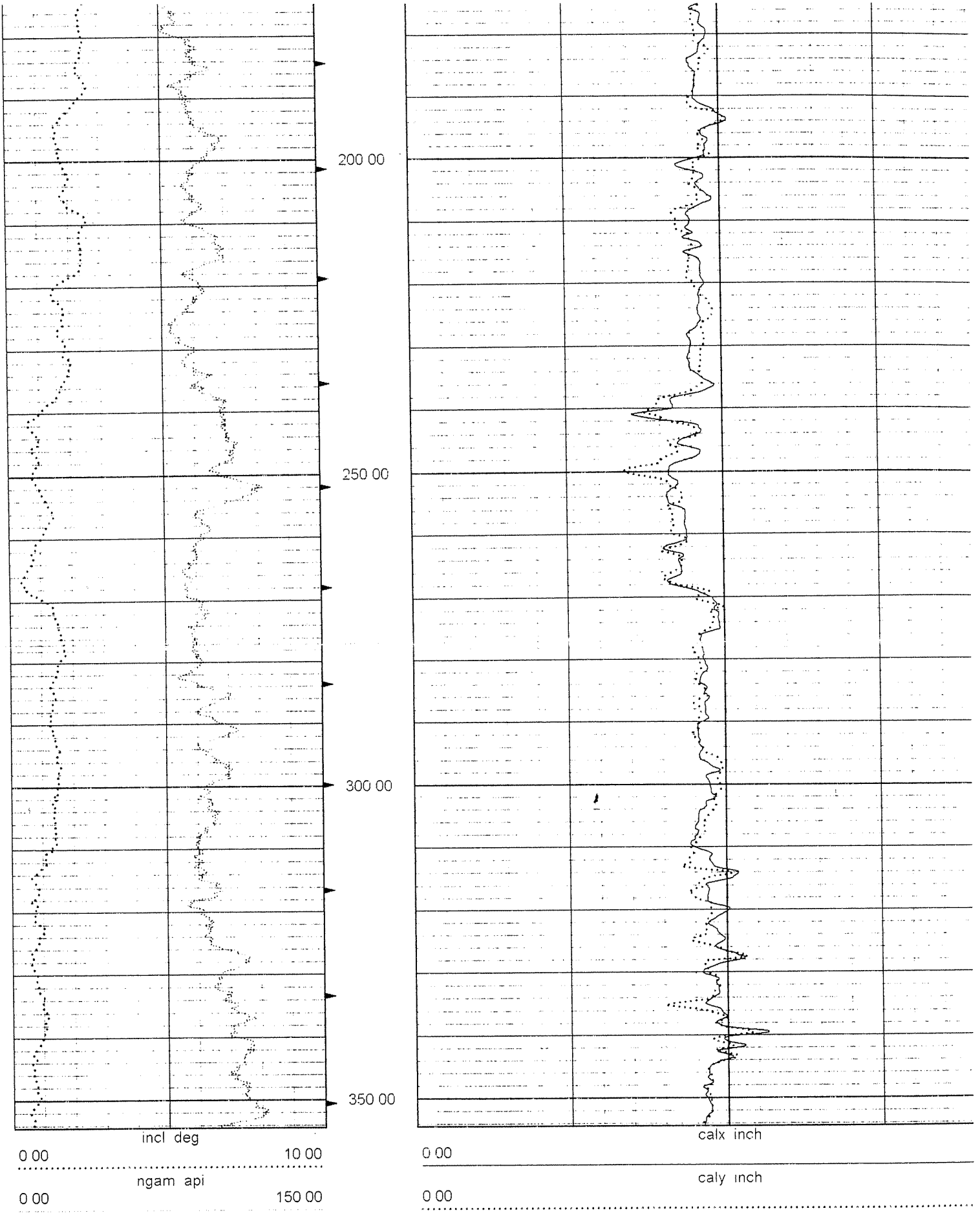
JTN: 35805

Sec: Rm: 5.1 @ 75 Deg F
Twp: Rmf: 5.2 @ 75 Deg F
Rge:
Elev., Lat. and Lon. determined using recreational GPS unit.
Location:63 Ave and McKinley
Driller:Stewart Bros. Drilling

5805C.hed)

GPS unit.





Depth = 1 2500 ft Time = 25 January 2002 15 14 13 Filename = "C \WINLOGGER\DATA\35805C LOG"

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
5		ML	SILTY SAND		
10		GP	SANDY GRAVEL SUB ANGULAR <1"		
15		SP	GRAVELLY COARSE SAND (GRAVEL <10%)		
20		SP	GRAVELLY COARSE SAND (GRAVEL <10%) <1"		
25		CL	SILTY CLAY, MED. BROWN		
30		CL	SILTY CLAY, MED. BROWN		
35		CL	SILTY CLAY MOD. PLASTICITY		
40		CL	SILTY CLAY		
45		CL	SANDY, SILTY CLAY (SAND <20%)		
50		GP	SANDY GRAVEL (<3/8") SAND <40%	0.0	
55		GC	CLAYEY SANDY GRAVEL (CLAY 30%, SAND 30%, GRAVEL 40%)		
60		CL	COARSE SANDY CLAY (SAND <10%)		
65		SC	CLAYEY, GRAVELLY SAND (C-30%, G-20%) GRAVEL <3/8"		
70		CL	SANDY SILTY CLAY (SAND <20%)		
75		CL	SILTY CLAY MED. BROWN MOD PLASTICITY		

PROJ.#:E03 103102-25	DRILL DATE: 01/15/02
LOGGED BY: J. NAMLICK	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 119.9'	
RIG TYPE: GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH: 350'
DRILLING METHOD: MUD ROTARY	

BE&K/Terranext

FIELD BOREHOLE LOG
AVB 92-02B
53RD AVENUE / ROOSEVELT
PHOENIX, ARIZONA

D:\CANVAS\MASTER\BORINGLOG.CNV

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
80		CL	SILTY CLAY MINOR SAND <5% GRAVEL <5%		
85		CL	SANDY SILTY CLAY (SAND <5%)		
90		GP	SANDY GRAVEL, SUB ANGULAR <1" (1/2-1" FRACTION <10%, 1/4-1/2" < 40%)		
95		GP	SANDY GRAVEL, SUB ANGULAR <1" (1/2-1" FRACTION <10%, 1/4-1/2" < 50%)		
100		SW	COARSE SAND W/MINOR GRAVEL (<10% <3/8")		
105		SW	GRAVELLY SAND (<3/8" GRAVEL <20%)		
110		SW	GRAVELLY SAND(<3/8" GRAVEL <20%)		
115		CL	SANDY SILTY CLAY (SAND <30%) MED. BROWN		
120		CL	SANDY SILTY CLAY (SAND <30%)		
125		SC	CLAYEY, GRAVELLY SAND(CLAY <30%)		
130		CL	SANDY CLAY (SAND<30%)		
135		GP	SANDY GRAVEL <3/8"		
140		GP	COARSE SANDY GRAVEL <1/2"		
145		GP	SANDY GRAVEL <3/4" ANGULAR (S <30%)		
150		SW	COARSE SAND (MINOR GRAVEL <3/8 <10%)		

PROJ.#:E03103102-25	DRILL DATE: 01/15/02
LOGGED BY: J. NAMLICK	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 119.9'	
RIG TYPE:GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH: 350'
DRILLING METHOD: MUD ROTARY	

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB92-02B
53RD AVE / ROOSEVELT
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
155		SP	GRAVELLY SAND (<5/8")		
160		SW	COARSE SAND (MINOR GRAVEL <5%)		
165		CL	SANDY CLAY (SAND <40%)		
170		CL	SANDY CLAY (SAND <40%)		
175		CL	SANDY CLAY (SAND <40%)	0.0	
180		CL	SANDY CLAY (SAND <40%)		
185		CL	SANDY CLAY, (SAND<10%) MED. BRN		
190		GP	SANDY GRAVEL <3/4"		
195		GP	SANDY GRAVEL <3/4"		
200		GP	SANDY GRAVEL <3/4"		
205		GP	SANDY GRAVEL <1/2"		
210		GP	SANDY GRAVEL <1/2"		
215		GP	SANDY GRAVEL <1/2"		
220		GP	SANDY GRAVEL <1/2"		
225		GP	SANDY GRAVEL <3/8"		

PROJ.#:E03103102-25	DRILL DATE: 01/15/02
LOGGED BY: J. NAMLICK	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 119.9'	
RIG TYPE:GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH: 350'
DRILLING METHOD: MUD ROTARY	

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB 92-02B
53RD AVENUE / ROOSEVELT
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
230		GP	SANDY GRAVEL <1/2" ANGULAR	0.0	
235		GP	SANDY GRAVEL <1/2" ANGULAR		
240		GP	GRAVELLY SAND <3/8 (GRAVEL <40%)		
245		GP	SANDY GRAVEL <1/2"		
250		GP	SANDY GRAVEL <3/4"		
255		GC	SANDY GRAVEL <3/4, MINOR CLAY <5%		
260		GC	CLAYEY SANDY GRAVEL <1/2" (CLAY <10%)	0.0	
265		GP	SANDY GRAVEL <1/2" (MAJOR FRACTION 1/4-3/8" 50%)		
270		GP	SANDY GRAVEL <3/8"		
275		GP	SANDY GRAVEL <1/2"		
280		GP	SANDY GRAVEL <1/2"		
285		GP	SANDY GRAVEL <3/8"	0.0	
290		GW	GRAVEL <1/2"		
295		GC	SANDY, CLAYEY GRAVEL <1" (SAND <10%, CLAY <25%)		
300		CL	SILTY CLAY (MINOR SAND)		

PROJ.#:E03103102-25	DRILL DATE: 01/15/02
LOGGED BY: J. NAMLICK	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 119.9'	
RIG TYPE: GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH: 350'
DRILLING METHOD: MUD ROTARY	

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB 92-02B
53RD AVENUE /ROOSEVELT
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
305		CL	SANDY SILTY CLAY (SAND <10% - 20%)		
310		CL	SILTY CLAY		
315		CL	SILTY CLAY, MINOR SAND <10%	0.0	
320		CL	SILTY CLAY, MINOR SAND <10%		
325		CL	SILTY CLAY, MED BROWN		
330		CL	SILTY CLAY, MED BROWN	0.0	
335		CL	SILTY CLAY		
340		CL	SILTY CLAY, MINOR SAND <10%		
345		CL	SILTY CLAY (SAND <20%)		
350		CL	SILTY CLAY		
355					
360					
365					
370					
375					

PROJ.#:E03103102-25 DRILL DATE: 01/15/02
LOGGED BY: J. NAMLICK
PROJECT MANAGER: A. GORDON
NOTES:
DEPTH TO WATER: 119.9'
RIG TYPE:GD15W DIAMETER: 10"
DRILLER: STEWART TOTAL DEPTH: 350'
DRILLING METHOD: MUD ROTARY

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB 92-02B
53RD AVENUE/ROOSEVELT
PHOENIX, ARIZONA

welenco
5201 Woodmere Drive
Bakersfield, California 93313
(800) 445-9914
www.welenco.com

ROBERTSON GEOLOGGING TECHNOLOGY

NEUTRON LOG

AVB 92-02

COMPANY	B E & K TERRANEXT
WELL	AVB 92-02
FIELD	PHOENIX
COUNTRY	U.S.
STATE	AZ
COUNTY	MARICOPA
LAT.:	33 27.53 N
LONG.:	112 10.38 W

OTHER SERVICES
X-Y CALIPER
ELOG

Perm. Datum	G.L.	Elev	1042	KB	0.00
Log. Datum	G.L.			DF	0.00
Drill Datum	G.L.			GL	1042.00

DATE	1/20/2002	0	0
RUN#	1	1	1
TYPE OF LOG	NEUTRON		
DEPTH DRILLER	350.00	0.00	0.00
DEPTH LOGGER	349.00	0.00	0.00
LOG DEEPEST	349.00	0.00	0.00
LOG SHALLOW	0.00	0.00	0.00
FLUID IN HOLE	BENTONITE		
SALINITY			
DENSITY			
LEVEL	FULL		
MAX TEMP °C	75.70	0.00	0.00
RIG TIME	.75 HR.	HR	
RECORDED BY	DAN IHDE		
WITNESSED BY	JOE NAMLICK		

RUN#	BIT RECORD BIT	FROM	TO	CASING RECORD SIZE	WEIGHT	FROM	TO
1	9.88	0.00	350.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00

REMARKS (C:\Dans\35078\35078n.hed)

JTN 35078

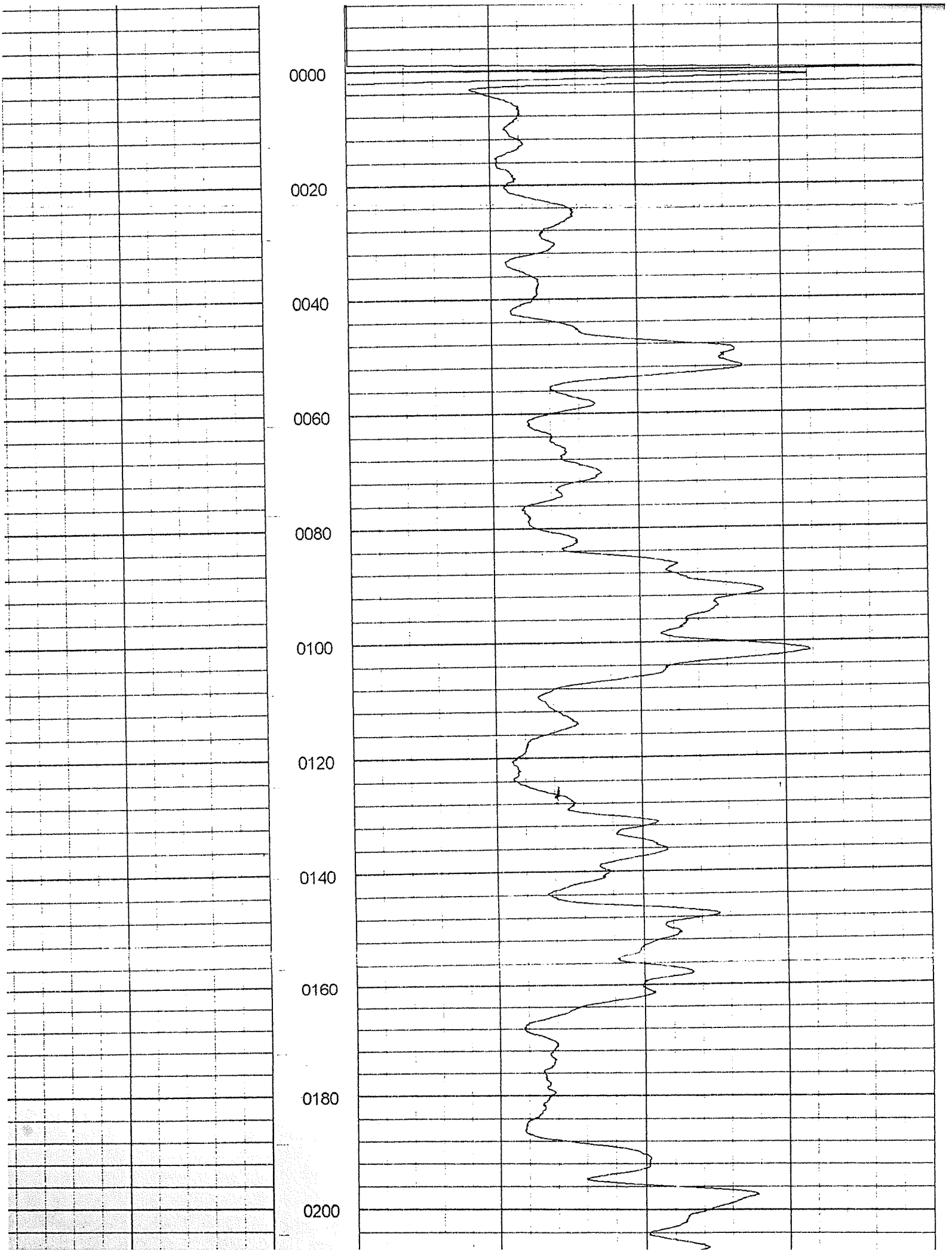
Sec
Twp
Rge
Source 71-1-119.3 Curie
Location: Roosevelt and 53rd Ave., Phoenix
Lat and Lon and Elev. determined using a recreational GPS
Driller: Stewart Brothers Drilling Inc.

Rm 4.5 @ 75F
Rmf 4.4 @ 75F

Depth = 0.00 ft Time = 20 January 2002 11:57:32 Filename = "C:\WINLOGGER\DATA\35078n.LOG"

neut api

0.00 2000.00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0020
0040
0060
0080
0100
0120
0140
0160
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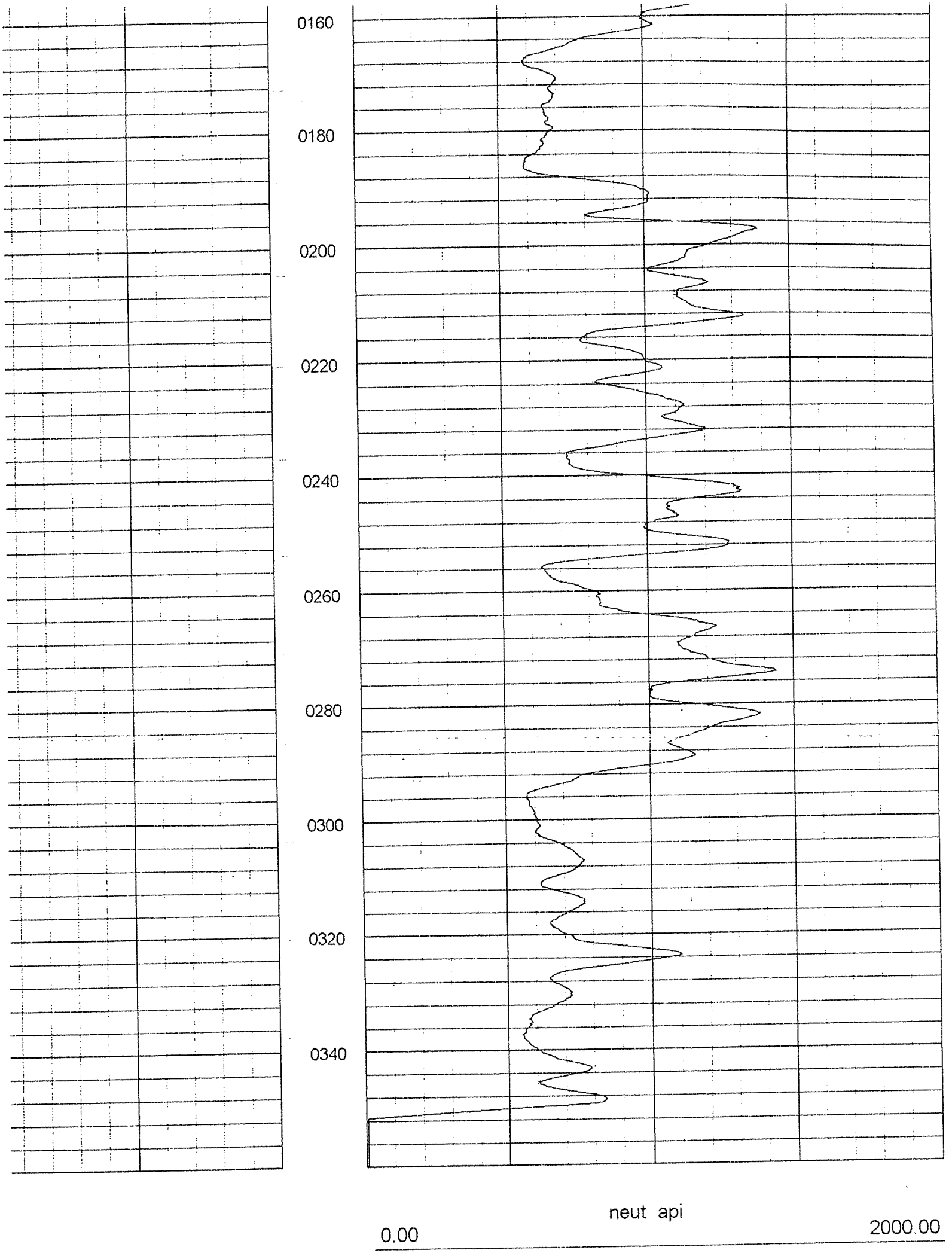
0200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0320
0340
neut api
0.00
2000.00

ROBERTSON GEOLOGGING TECHNOLOGY

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www.welenco.com

ELECTRIC - TEMPERATURE - GAMMA RAY LOG

AVB 92-02

OTHER SERVICES
X-Y CALIPER
NEUTRON

COMPANY	B E & K TERRANEXT
WELL	AVB 92-02
FIELD	PHOENIX
COUNTRY	U S
STATE	AZ
COUNTY	MARICOPA
LAT	333 27.53 N
LONG	112 10.38 W

Perm. Datum	G.L	Elev	1042	KB	0.00
Log Datum	G.L			DF	0.00
Drill Datum	G.L			GL	1042.00

DATE	1/20/2002	0	0
RUN#	1	2	1
TYPE OF LOG	ELOG		
DEPTH DRILLER	350.00	0.00	0.00
DEPTH LOGGER	349.00	0.00	0.00
LOG DEEPEST	348.00	0.00	0.00
LOG SHALLOW	0.00	0.00	0.00
FLUID IN HOLE	BENTONITE		
SALINITY			
DENSITY			
LEVEL	FULL		
MAX TEMP °C	75.70	0.00	0.00
RIG TIME	75 HR.	HR	
RECORDED BY	DAN IHDE		
WITNESSED BY	JOE NAMLICK		

RUN#	BIT RECORD BIT	FROM	TO	CASING RECORD SIZE	WEIGHT	FROM	TO
1	9.88	0.00	350.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00

REMARKS (C:\Dans\35078\35078e hed)

JTN-35078

Sec
Twp
Rge

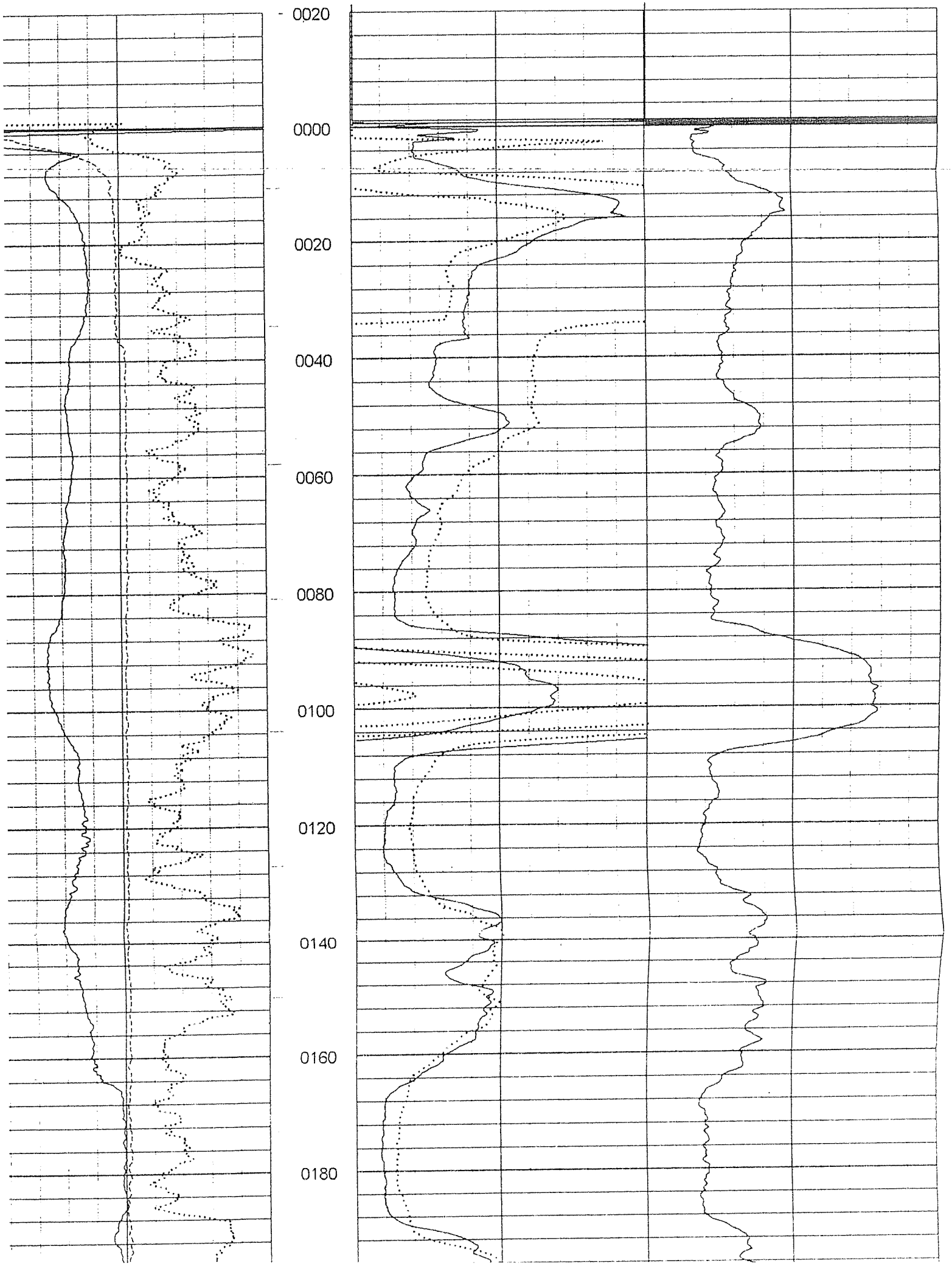
Rm 4.5 @ 75F
Rmf 4.4 @ 75F

Location: Roosevelt and 53rd Ave., Phoenix
Lat and Lon and Elev determined using a recreational GPS.
Driller: Stewart Brothers Drilling Inc

Depth = 0.00 ft Time = 20 January 2002 10:58:55 Filename = "C:\WINLOGGER\DATA\35078e LOG"

SP mV	64" OHM.M	S.PT. OHM.M
100.00 0.00	0.00 100.00	50.00

TEMP DEGF	16" OHM.M	NGAM API
70.00 80.00	0.00 100.00	0.00 150.00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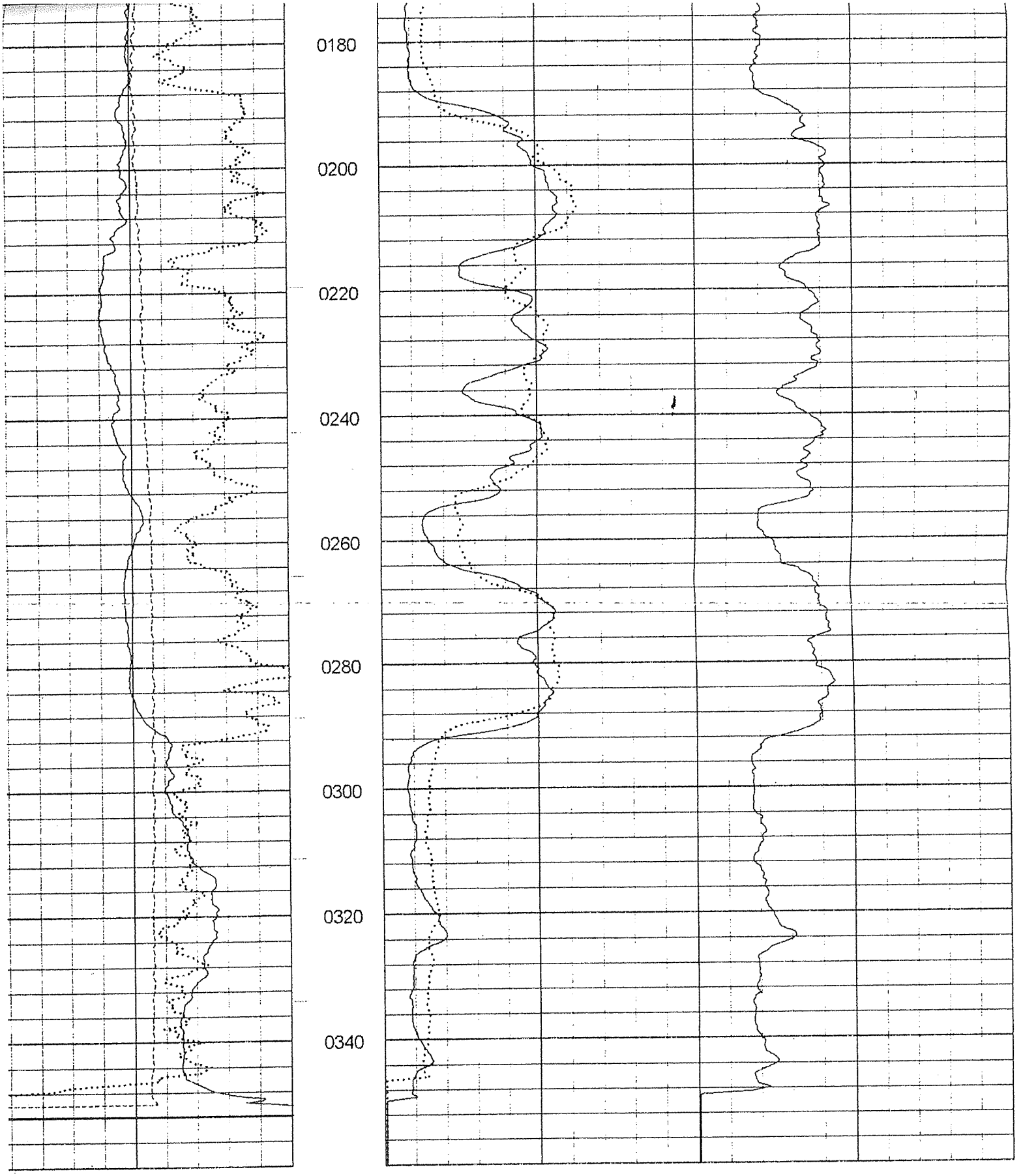

SP mV

00.00 0.00

TEMP DEGF

).00 80.00

NGAM API

00 150.00

64" OHM.M

0.00 100.00

16" OHM.M

0.00 100.00

S.PT. OHM.M

0.00 50.00

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X Y CALIPER LOG

AVB 92-02

OTHER SERVICES
NEUTRON
ELOG

COMPANY	B E & K TERRANEXT
WELL	AVB 92-02
FIELD	PHOENIX
COUNTRY	U S
STATE	AZ
COUNTY	MARICOPA
LAT	33 27 53 N
LONG	112 10.38 W

Perm. Datum	G L	Elev	1042	KB	0 00
Log. Datum	G L			DF	0 00
Drill Datum	G L			GL	1042 00

DATE	1/20/2002	0	0
RUN#	1	1	1
TYPE OF LOG	X Y CALIPER		
DEPTH DRILLER	350.00	0 00	0 00
DEPTH LOGGER	350.00	0 00	0 00
LOG DEEPEST	349.00	0 00	0 00
LOG SHALLOW	0.00	0 00	0 00
FLUID IN HOLE	BENTONITE		
SALINITY			
DENSITY			
LEVEL	FULL		
MAX TEMP C	75 70	0 00	0 00
RIG TIME	75 HR	HR	
RECORDED BY	DAN IHDE		
WITNESSED BY	JOE NAMLICK		

RUN#	BIT RECORD BIT	FROM	TO	SIZE	CASING RECORD WEIGHT	FROM	TO
1	9.88	0.00	350 00	0.00	0.00	0.00	0.00
1	0 00	0.00	0.00	0.00	0.00	0.00	0.00

MARKS (C \Dans\35078\35078c hed)

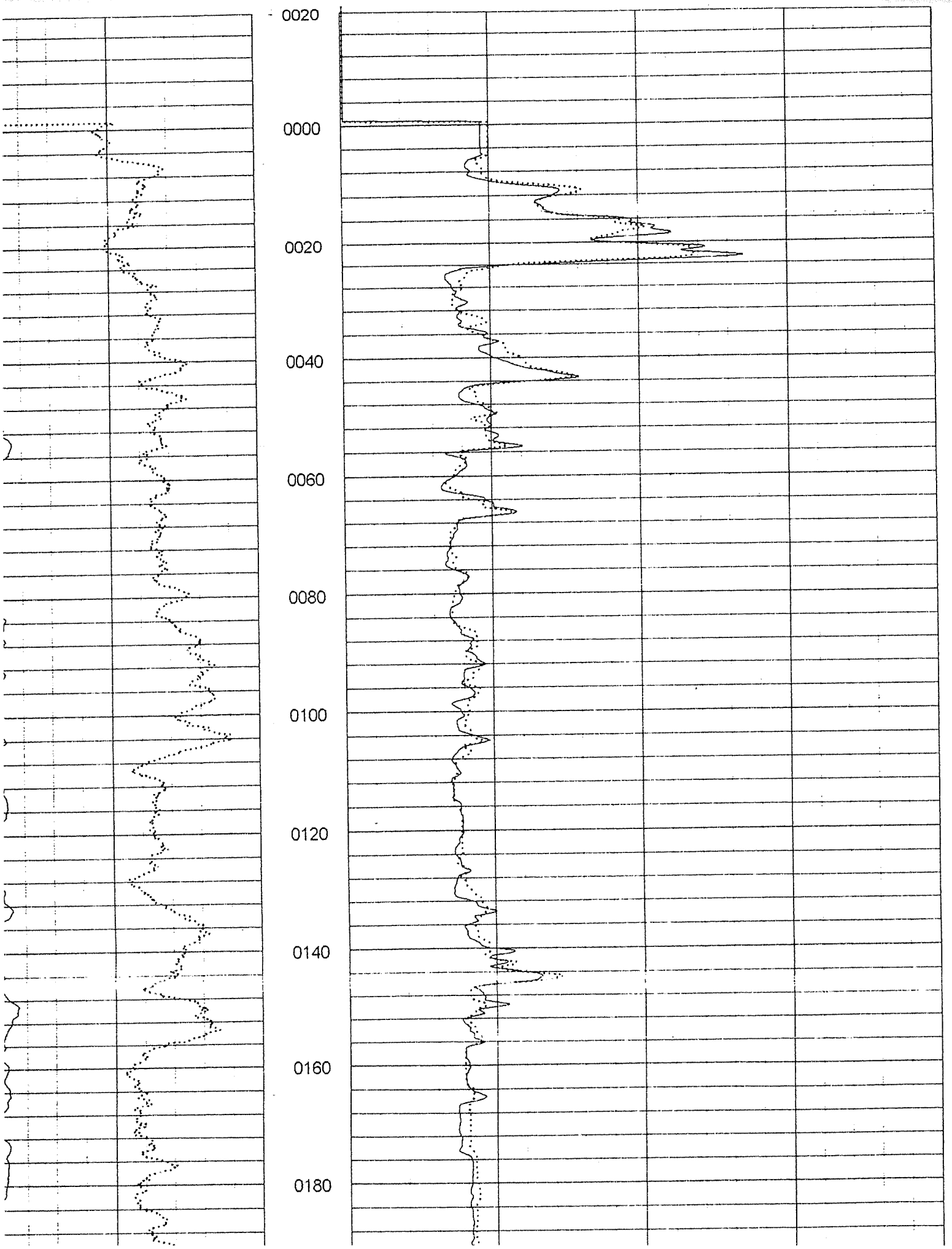
J 35078

Rm 4 5 @ 75F
Rmf 4 4 @ 75F

cation Roosevelt and 53rd Ave Phoenix
and Lon and Elev determined using a recreational GPS
ller Stewart Brothers Drilling Inc

pth = 0 00 ft Time = 20 January 2002 12 46 00 Filename = "C \WINLOGGER\DATA\35078c LOG"

ngam	api	150.00	6.00	caly	Inch	26.00
incl	deg	10.00	6.00	calx	Inch	26.00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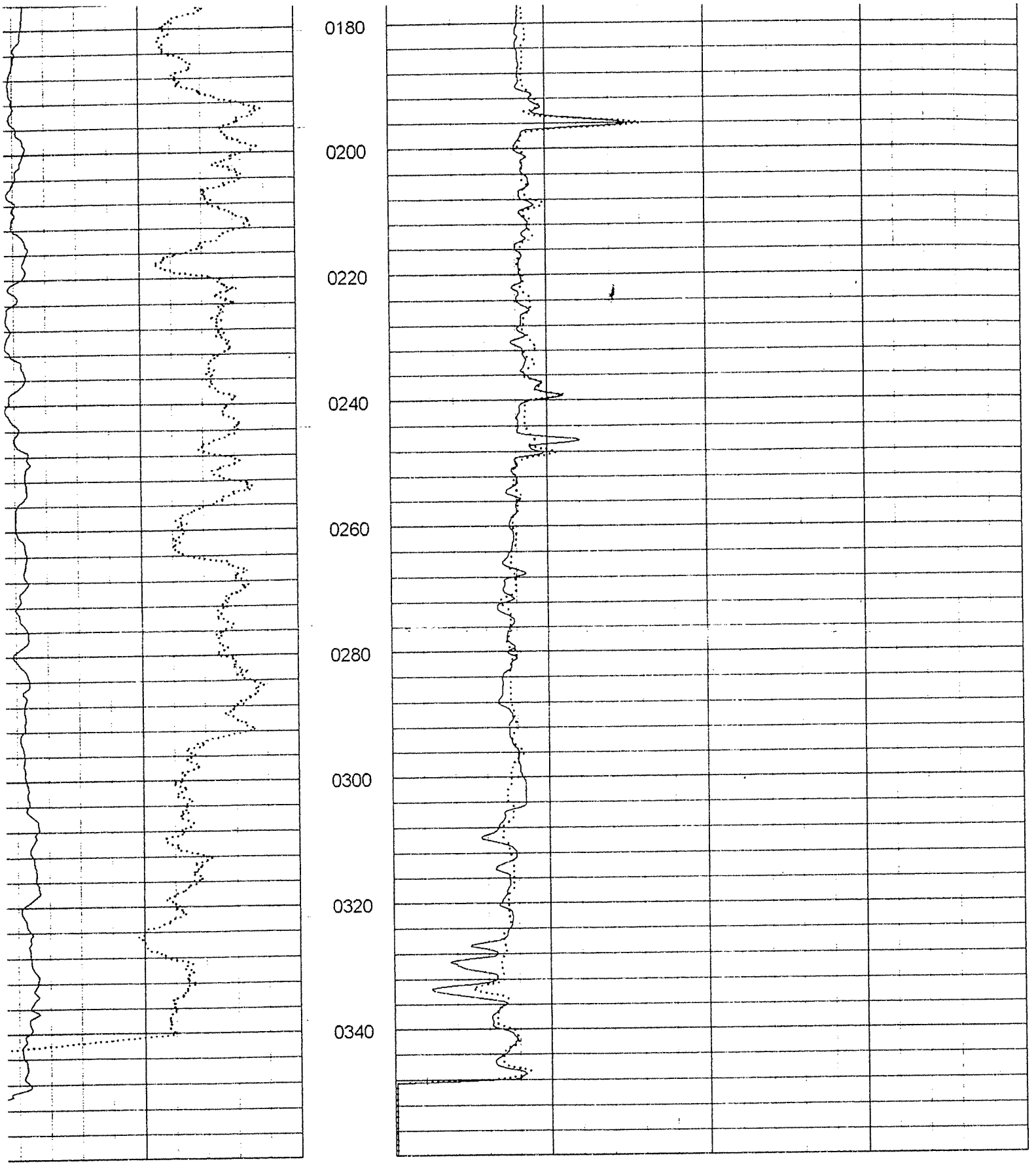

ngam api

).00 150.00

incl deg

).00 10.00

caly Inch

6.00 26.00

calx Inch

6.00 26.00

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
5		SC	SANDY GRAVEL		
10		GW	SANDY GRAVEL <0.25"	0.0	
15		GW	SANDY GRAVEL <0.5" (MINOR SILTY CLAY <10%)		
20		CL	SANDY, SILTY CLAY MED. BROWN (SAND <10%)		
25		CL	SILTY CLAY, MED. BROWN MOD. PLASTICITY		
30		CL	SILTY CLAY, MED. BROWN MOD. PLASTICITY		
35		GC	SILTY, CLAYEY SANDY GRAVEL		
40		CL	SILTY SANDY CLAY (MINOR GRAVEL <15%)		
45		SC	SILTY, CLAYEY COARSE SAND		
50		SC	SILTY, CLAYEY COARSE SAND		
55		SW	COARSE SAND		
60		CL	FINE SANDY SILTY CLAY		
65		CL	SANDY SILTY CLAY		
70		SC	SILTY CLAYEY SAND		
75		CL	SANDY, SILTY CLAY, MED. BROWN		

PROJ.#:E03103102-25	DRILL DATE: 01/03/02
LOGGED BY: J. NAMLICK	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 117'-8'	
RIG TYPE: GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH: 378'
DRILLING METHOD: MUD ROTARY	

BE&K/TerraNext

FIELD BOREHOLE LOG

AVB 94-02

43RD AVENUE/ROOSEVELT

PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
80		SC	SILTY, CLAYEY SAND MED BROWN		
85		GW	SILTY, SANDY GRAVEL <1/4"		
90		GW	SILTY SANDY GRAVEL <1/2"		
95		CL	SILTY, COARSE SANDY CLAY		
100		SW	GRAVELLY COARSE ANGULAR SAND <1/2"	0.0	
105		SW	GRAVELLY COARSE ANGULAR SAND <1/4"		
110		CL	SILTY CLAY, MINOR SAND		
115		CL	SILTY CLAY MED. BROWN		
120		CL	SILTY CLAY, MINOR SAND, MED. BROWN MOD. PLASTICITY	0.0	
125		CL	SILTY CLAY, MINOR SAND, MED. BROWN MOD. PLASTICITY		
130		CL	SILTY SANDY CLAY	0.0	
135		GW	COARSE SANDY GRAVEL ANGULAR		
140		GW	COARSE SANDY GRAVEL ANGULAR		
145		GW	COARSE SANDY GRAVEL ANGULAR		
150		GW	COARSE SANDY GRAVEL		

PROJ.#:E03103102-25	DRILL DATE: 01/03/02
LOGGED BY: J. NAMLICK	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 117'-8'	
RIG TYPE:GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH: 378"
DRILLING METHOD: MUD ROTARY	

BE&K/TerraNext

FIELD BOREHOLE LOG

AVB 94-02

43RD AVENUE / ROOSEVELT

PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
155		GW	COARSE SANDY GRAVEL		
160		GW	COARSE SANDY GRAVEL		
165		GW	COARSE SANDY GRAVEL		
170		GW	COARSE SANDY GRAVEL <1"		ADDING WATER
175		GW	COARSE SANDY GRAVEL <1"		
180		GW	COARSE SANDY GRAVEL <0.5"		
185		GW	COARSE ANGULAR SANDY GRAVEL <0.5"	0.0	
190		GW	COARSE SANDY GRAVEL <0.5"		
195		GC	CLAYEY, ANGULAR SANDY GRAVEL		
200		CL	SILTY SANDY GRAVELLY CLAY MOD PLASTIC		
205		CL	GRAVELLY, SANDY CLAY		
210		CL	SILTY SANDY, GRAVELLY CLAY		
215		CL	SILTY SANDY, GRAVELLY CLAY		
220		GW	COARSE SANDY GRAVEL <0.5"		
225		GW	COARSE, ANGULAR SANDY GRAVEL <0.5"		

PROJ.#:E03103102-25	DRILL DATE: 01/03/02
LOGGED BY: J. NAMLICK	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 117'-8'	
RIG TYPE: GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH: 378'
DRILLING METHOD: MUD ROTARY	

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB 94-02
43RD AVENUE /ROOSEVELT
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
230		SW	COARSE SAND <1/4" ANGULAR		
235		GW	COARSE SANDY GRAVEL <0.5" ANGULAR		
240		SW	COARSE SAND, MINOR GRAVEL <15% ANGULAR		
245		GW	COARSE SANDY GRAVEL <0.5"	0.0	
250		GW	COARSE SANDY GRAVEL		
255		GW	COARSE SANDY GRAVEL ANGULAR		
260		SW	COARSE SAND, (MINOR GRAVEL <10%)		
265		SW	COARSE SAND, (MINOR GRAVEL <10%)		
270		GW	COARSE SANDY GRAVEL		
275		GW	COARSE SANDY GRAVEL	0.0	
280		SW	GRAVELLY COARSE SAND		
285		SW	GRAVELLY COARSE SAND		
290		SC	CLAYEY GRAVELLY SAND MOD. PLASTICITY		
295		SC	CLAYEY COARSE SAND		
300		CL	SANDY CLAY MED. BROWN		

PROJ.#:E03103102-25	DRILL DATE: 01/03/02
LOGGED BY: J. NAMLICK	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 117'-8'	
RIG TYPE: GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH: 378'
DRILLING METHOD: MUD ROTARY	

BE&K / TerraNext

FIELD BOREHOLE LOG

AVB 94-02

43RD AVENUE / ROOSEVELT

PHOENIX, ARIZONA

DEPTH	SOIL SYMBOLS	USCS	SOIL DESCRIPTION	PID ppm	COMMENTS
305		CL	SANDY CLAY, MED. BRN. MOD. PLASTICITY	0.0	
310		SC	CLAYEY COARSE SAND		
315		CL	COARSE SANDY CLAY		
320		SW	COARSE SAND, ANGULAR		
325		SW	COARSE SAND, ANGULAR		
330		GP	COARSE GRAVEL, ANGULAR		
335		GP	COARSE GRAVEL, ANGULAR		
340		GW	COARSE SANDY GRAVEL <1" (MINOR CLAY)		
345		GW	COARSE SANDY GRAVEL <1" (MINOR CLAY)		
350		GW	COARSE SANDY GRAVEL <1" (MINOR CLAY)		
355		GW	COARSE SANDY GRAVEL <1" ANGULAR		
360		GC	CLAYEY, SANDY GRAVEL <0.5" (MINOR CLAY <10%)	0.0	
365		GC	CLAYEY SANDY GRAVEL <0.5"		
370		GC	CLAYEY SANDY GRAVEL <30% CLAY		
375		SC	CLAYEY COARSE SAND (CLAY <30%)		

PROJ.#:E03103102-25	DRILL DATE: 01/03/02
LOGGED BY: J. NAMLICK	
PROJECT MANAGER: A. GORDON	
NOTES:	
DEPTH TO WATER: 117'-8'	
RIG TYPE: GD15W	DIAMETER: 10"
DRILLER: STEWART	TOTAL DEPTH: 378'
DRILLING METHOD: MUD ROTARY	

BE&K/TerraNext

FIELD BOREHOLE LOG
AVB 94-02
43RD AVE / ROOSEVELT
PHOENIX, ARIZONA

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Bakersfield,California 93313
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NEUTRON LOG

AVB 94-02

COMPANY	BE&K TERRANEXT
WELL	AVB 94-02
FIELD	PHOENIX
COUNTRY	U.S.
STATE	AZ
COUNTY	MARICOPA
LAT	33 27.57 N
LONG	112 09.28 W

OTHER SERVICES
X Y CALIPER
ELOG

Perm. Datum	G L.	Elev	1111	KB	0.00
Log. Datum	G L.			DF	0.00
Drill Datum	G.L.			GL	1111.00

DATE	1/5/2002	0	0
RUN#	1	1	1
TYPE OF LOG	X Y CALIPER		
DEPTH DRILLER	380.00	0.00	0.00
DEPTH LOGGER	374.00	0.00	0.00
LOG DEEPEST	373.00	0.00	0.00
LOG SHALLOW	0.00	0.00	0.00
FLUID IN HOLE	BENTONITE		
SALINITY			
DENSITY			
LEVEL	64		
MAX TEMP °C	68.30	0.00	0.00
RIG TIME	.5 HR		
RECORDED BY	WILLIAM SMITH		
WITNESSED BY	J. NAMLICK		

RUN#	BIT RECORD			CASING RECORD			
	BIT	FROM	TO	SIZE	WEIGHT	FROM	TO
1	9.88	0.00	380.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00

REMARKS (D:\Video Reports\Dan\RobertsonLogs\35019\35019N hed)

JTN: 35019

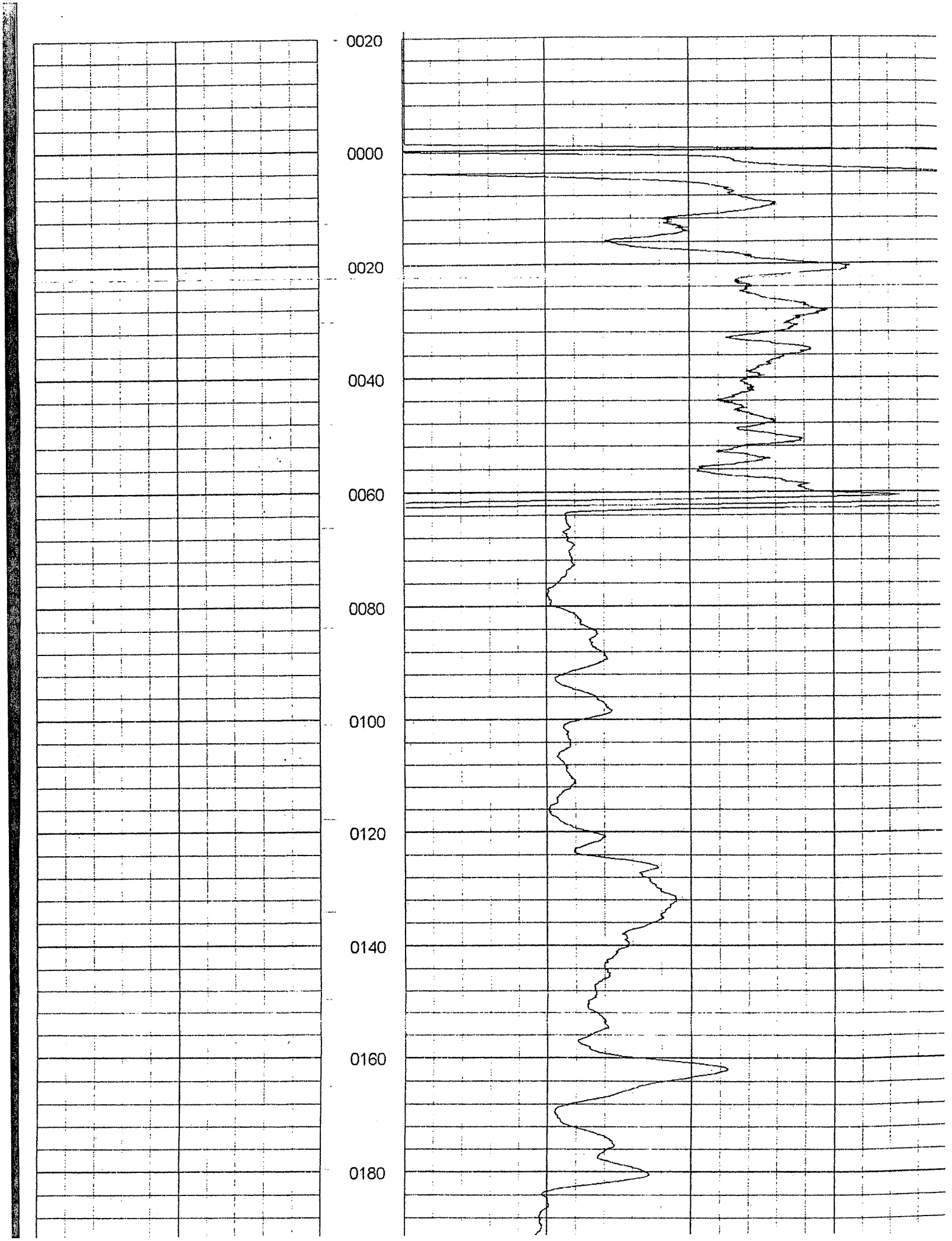
Sec.
Twp
Rge
Elev., Lat. and Lon. determined using recreational GPS unit
Location Roosevelt west of 43rd, Phoenix.
Driller Stewart Bros. Drilling

Rm: 7.4 @ 75 Deg F
Rmf: 7.5 @ 75 Deg F

Depth = -0.050 ft Time = 05 January 2002 13:41:26 Filename = "C:\WINLOGGER\DATA\35019N.LOG"

neut api

0.00 2000.00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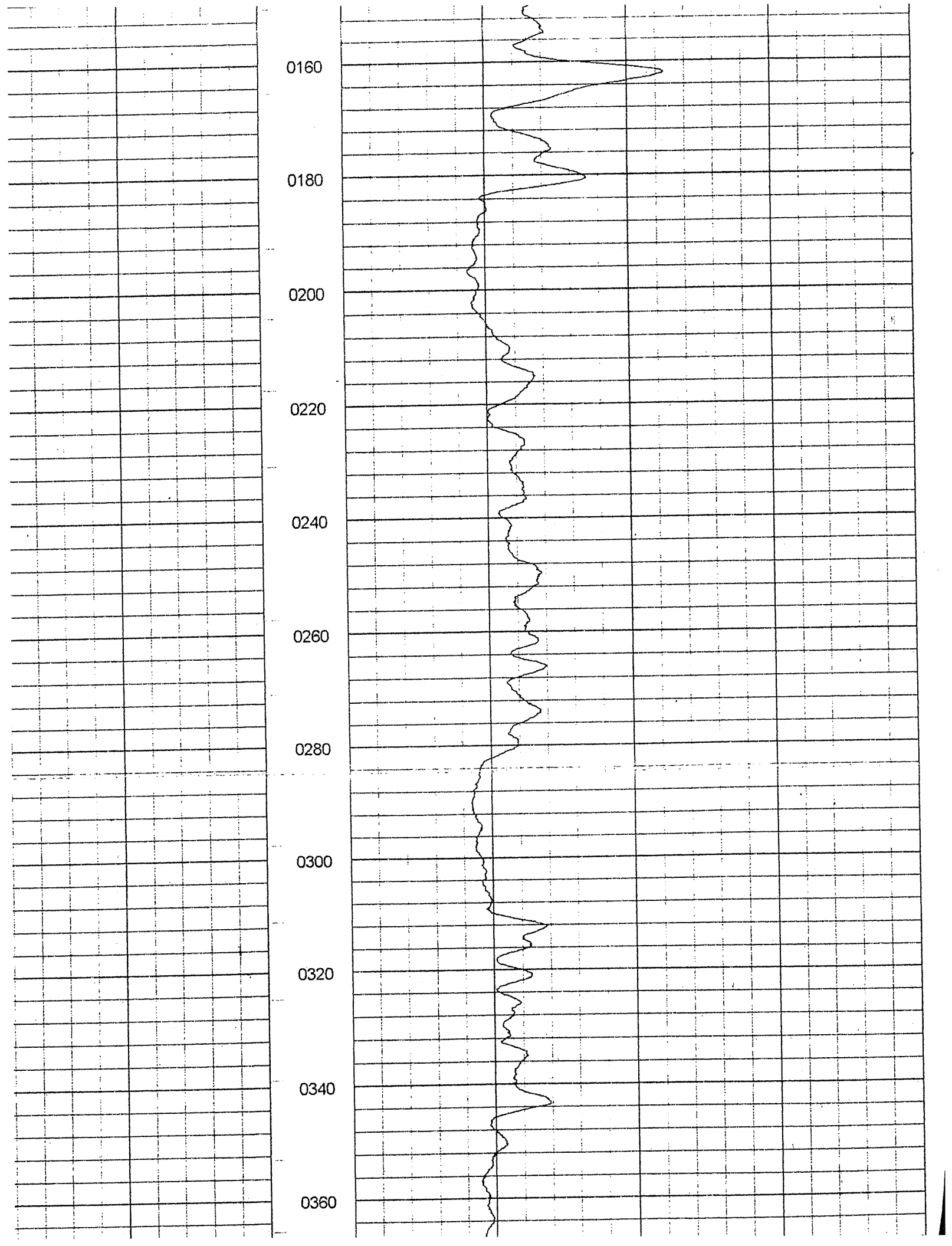
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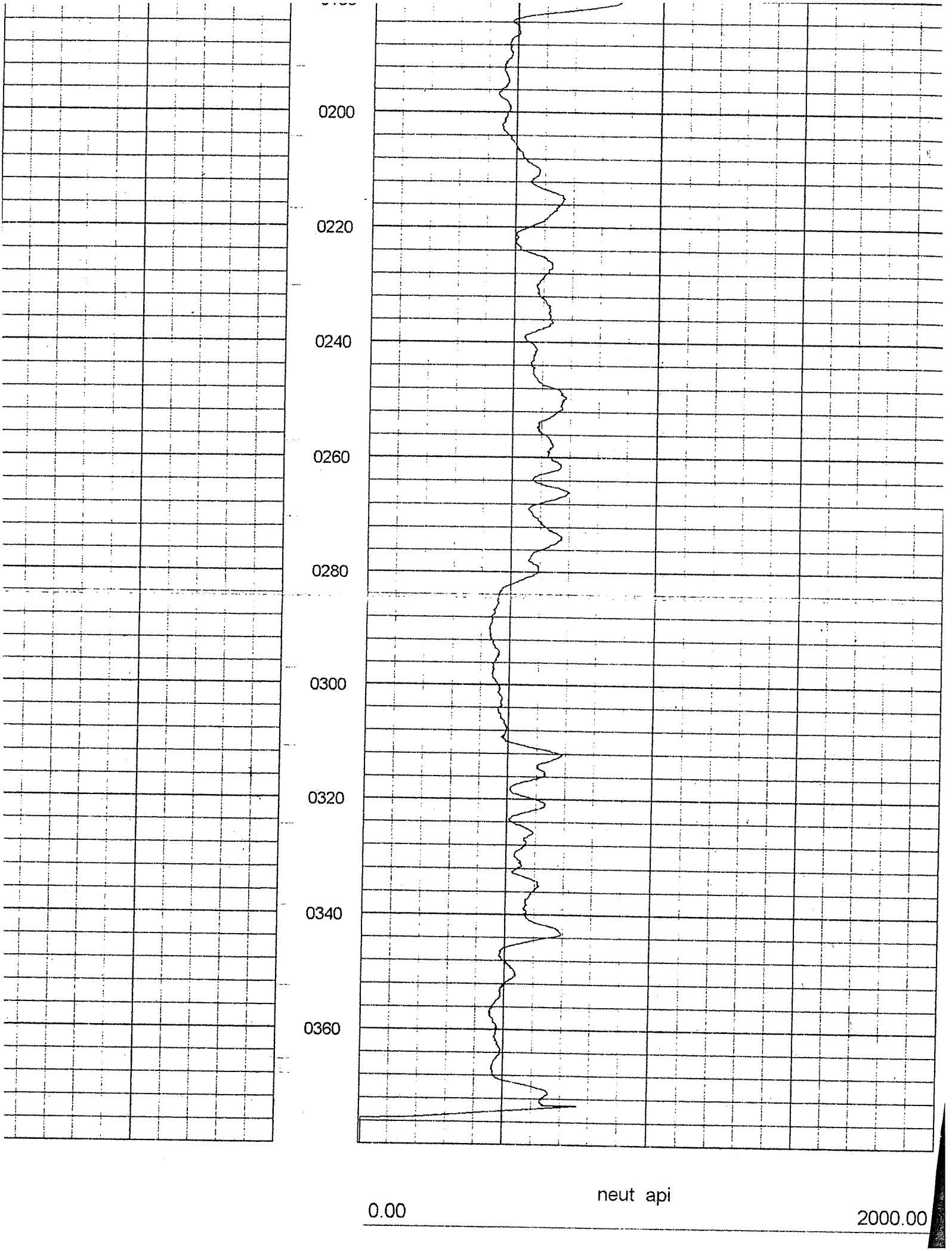
0200
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0260
0280
0300
0320
0340
0360
neut api
0.00
2000.00

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Bakersfield,California 93313
(800) 445-9914
www.welenco.com

ELECTRIC - GAMMA RAY - TEMPERATURE LOG

AVB 94-02

COMPANY	BE&K TERRANEXT
WELL	AVB 94-02
FIELD	PHOENIX
COUNTRY	U S
STATE	AZ
COUNTY	MARICOPA
LAT	33 27 57 N
LONG.	112 09.28 W

OTHER SERVICES
X Y CALIPER
NEUTRON

Perm. Datum	G.L.	Elev	1111	KB	0 00
Log Datum	G.L.			DF	0.00
Drill Datum	G.L			GL	1111.00

DATE	1/5/2002	0	0
RUN#	1	1	1
TYPE OF LOG	ELOG		
DEPTH DRILLER	380 00	0 00	0 00
DEPTH LOGGER	377.00	0.00	0.00
LOG DEEPEST	376.00	0.00	0.00
LOG SHALLOW	0.00	0.00	0.00
FLUID IN HOLE	BENTONITE		
SALINITY			
DENSITY			
LEVEL	64		
MAX TEMP °C	68 30	0.00	0.00
RIG TIME	5 HR		
RECORDED BY	WILLIAM SMITH		
WITNESSED BY	J. NAMLICK		

RUN#	BIT RECORD BIT	FROM	TO	SIZE	CASING RECORD WEIGHT	FROM	TO
1	9.88	0.00	380.00	0 00	0.00	0.00	0 00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0 00	0 00

REMARKS (D:\Video Reports\Dan\RobertsonLogs\35019\35019E hed)

TN 35019

ec: Rm 7 4 @ 75 Deg F
wp Rmf 7 5 @ 75 Deg F
ge
lev , Lat and Lon determined using recreational GPS unit
ocation Roosevelt west of 43rd. Phoenix.
riller Stewart Bros Drilling

epth = - 1 00 ft Time = 05 January 2002 12 58 02 Filename = "C:\WINLOGGER\DATA\35019.LOG"

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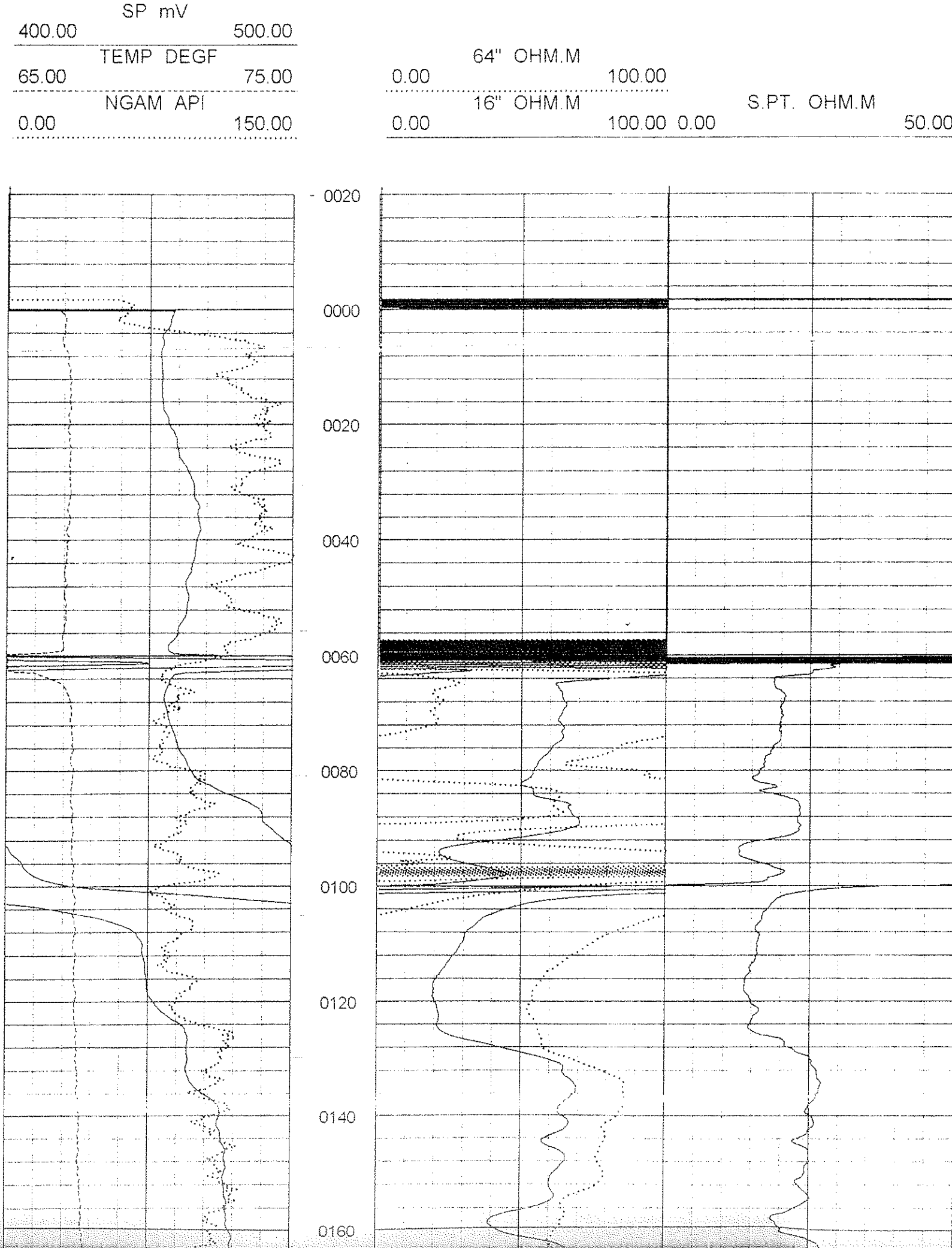
	TEMP DEGF	75.00	
0.00	64" OHM.M		100.00
	NGAM API		


SP mV
400.00
500.00
TEMP DEGF
65.00
75.00
NGAM API
0.00
150.00
64" OHM.M
0.00
100.00
16" OHM.M
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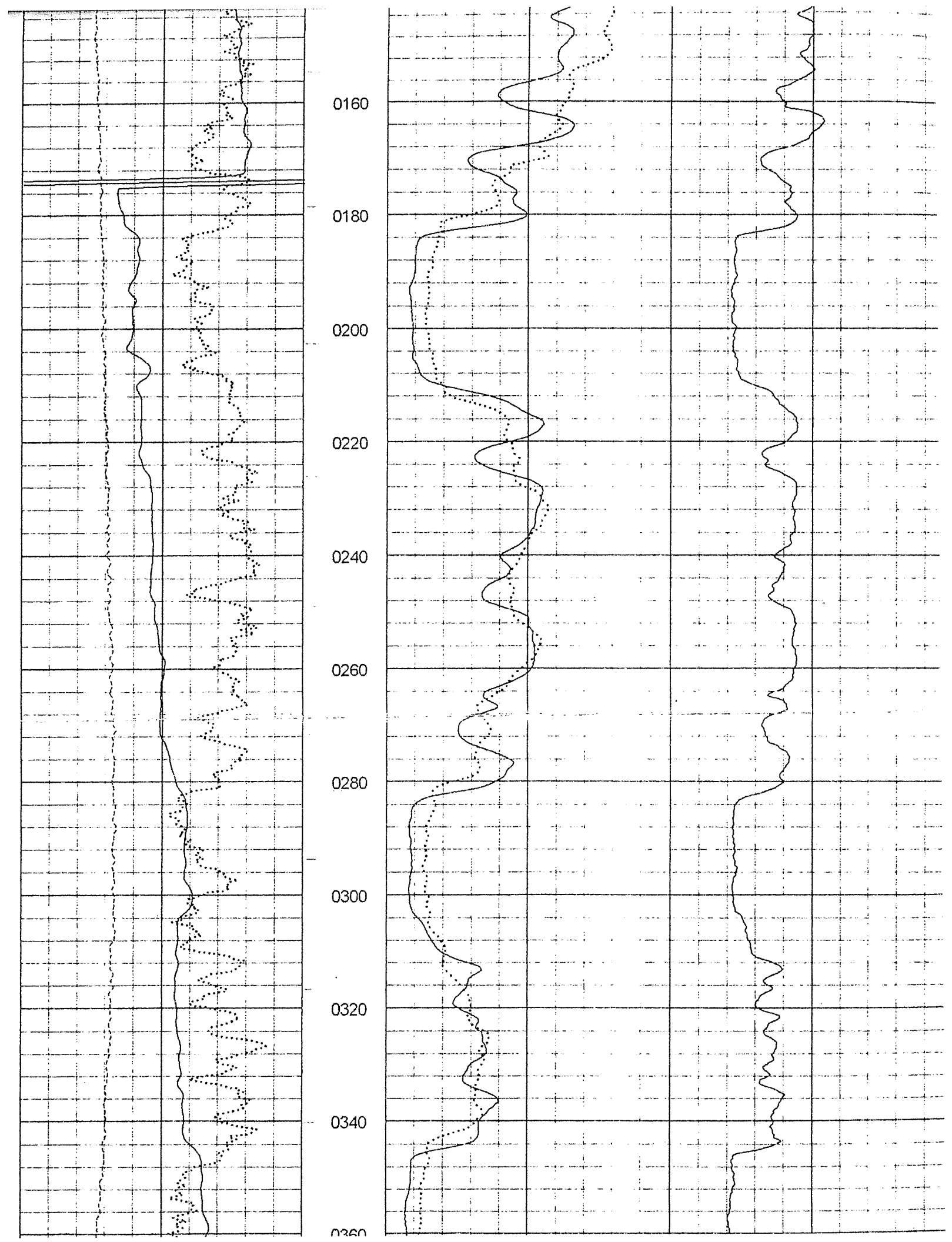
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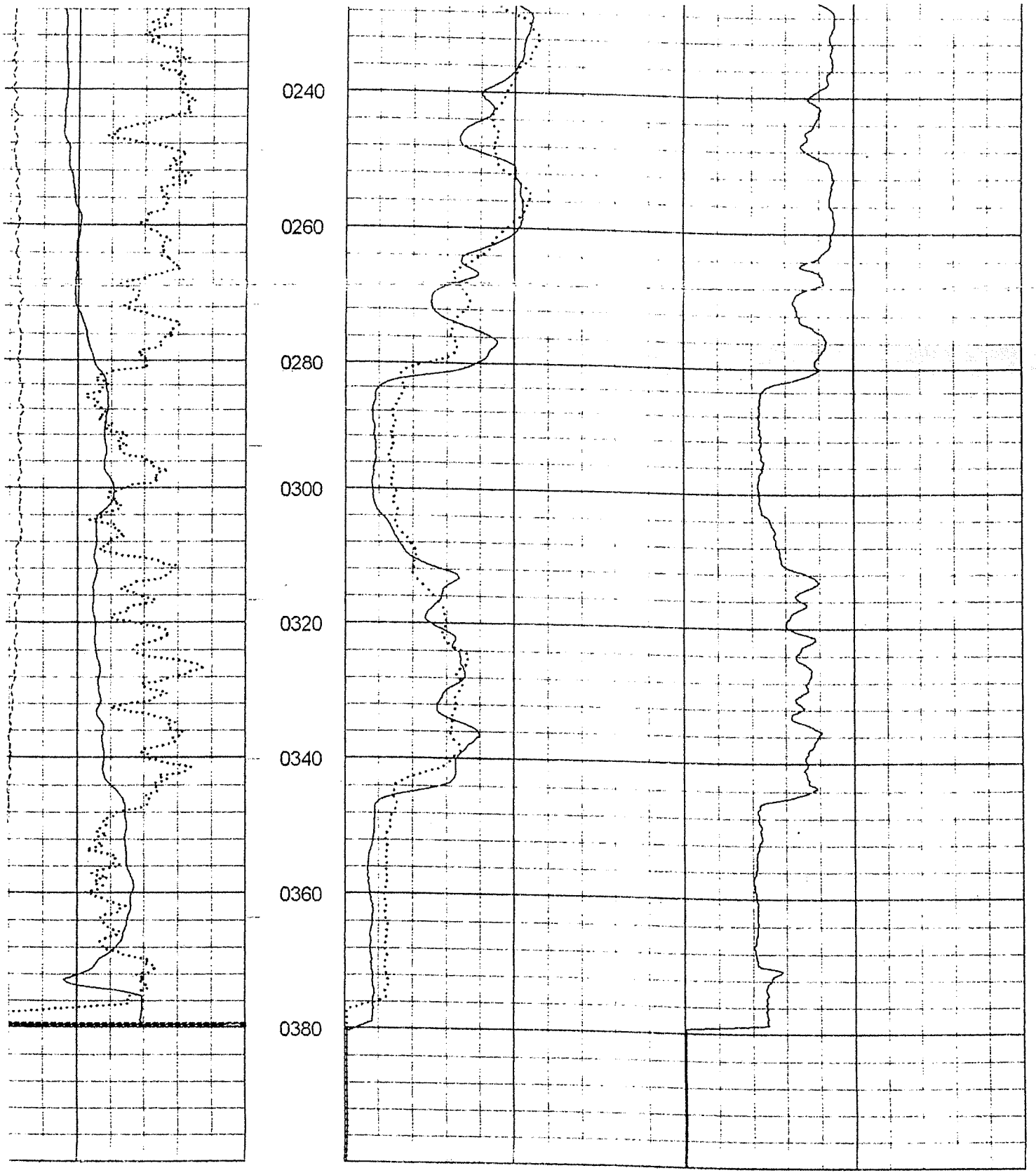

SP mV
500.00

TEMP DEGF
75.00

NGAM API
150.00

64" OHM.M
0.00 100.00

16" OHM.M
0.00 100.00

S.PT. OHM.M
0.00 50.00

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Bakersfield,California 93313
(800) 445-9914
www.welenco.com

X Y - CALIPER

AVB 94-02

COMPANY	BE&K TERRANEXT
WELL	AVB 94-02
FIELD	PHOENIX
COUNTRY	U.S.
STATE	AZ
COUNTY	MARICOPA
LAT	33 27.57 N
LONG	112 09.28 W

OTHER SERVICES
NEUTRON
ELOG

Perm. Datum	G.L.	Elev	1111	KB	0.00
Log. Datum	G.L			DF	0.00
Drill Datum	G.L			GL	1111.00

DATE	1/5/2002	0	0
RUN#	1	1	1
TYPE OF LOG	X Y CALIPER		
DEPTH DRILLER	380.00	0.00	0.00
DEPTH LOGGER	371.00	0.00	0.00
LOG DEEPEST	370.00	0.00	0.00
LOG SHALLOW	0.00	0.00	0.00
FLUID IN HOLE	BENTONITE		
SALINITY			
DENSITY			
LEVEL	64		
MAX TEMP °C	68.30	0.00	0.00
RIG TIME	.5 HR		
RECORDED BY	WILLIAM SMITH		
WITNESSED BY	J. NAMLICK		

RUN#	BIT RECORD BIT	FROM	TO	CASING RECORD SIZE	WEIGHT	FROM	TO
1	9.88	0.00	380.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00

REMARKS (D:\Video Reports\Dan\RobertsonLogs\35019\35019C hed)

JTN: 35019

Sec:
Twp:
Rge:
Rm 7.4 @ 75 Deg F
Rmf 7.5 @ 75 Deg F
Elev., Lat. and Lon. determined using recreational GPS unit
Location: Roosevelt west of 43rd, Phoenix.
Driller: Stewart Bros. Drilling

Depth = 0 3500 ft Time = 05 January 2002 14 26 29 Filename = "C:\WINLOGGER\DATA\35019C.LOG"

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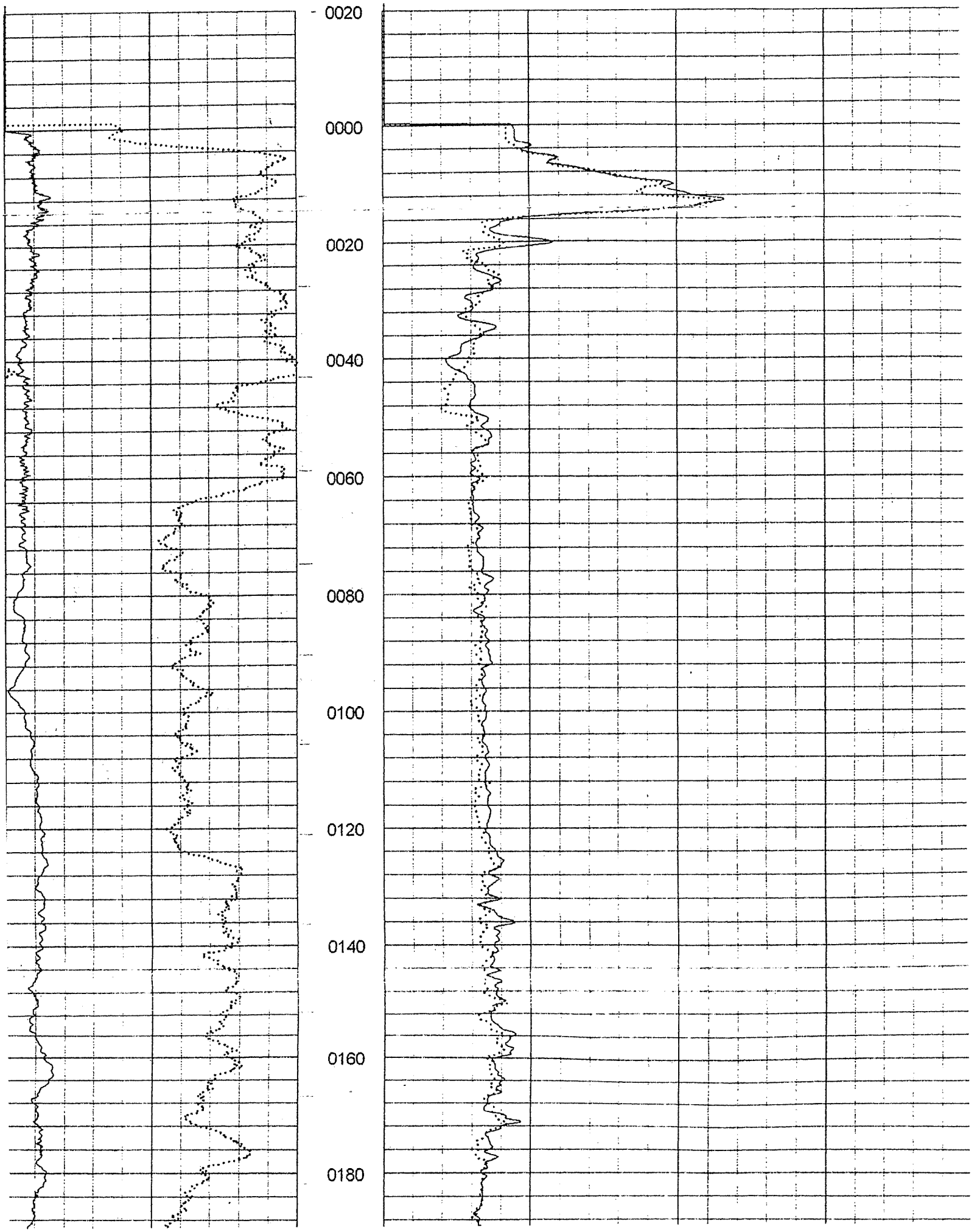
0.00	incl deg	10.00	6.00	caly inch	26.0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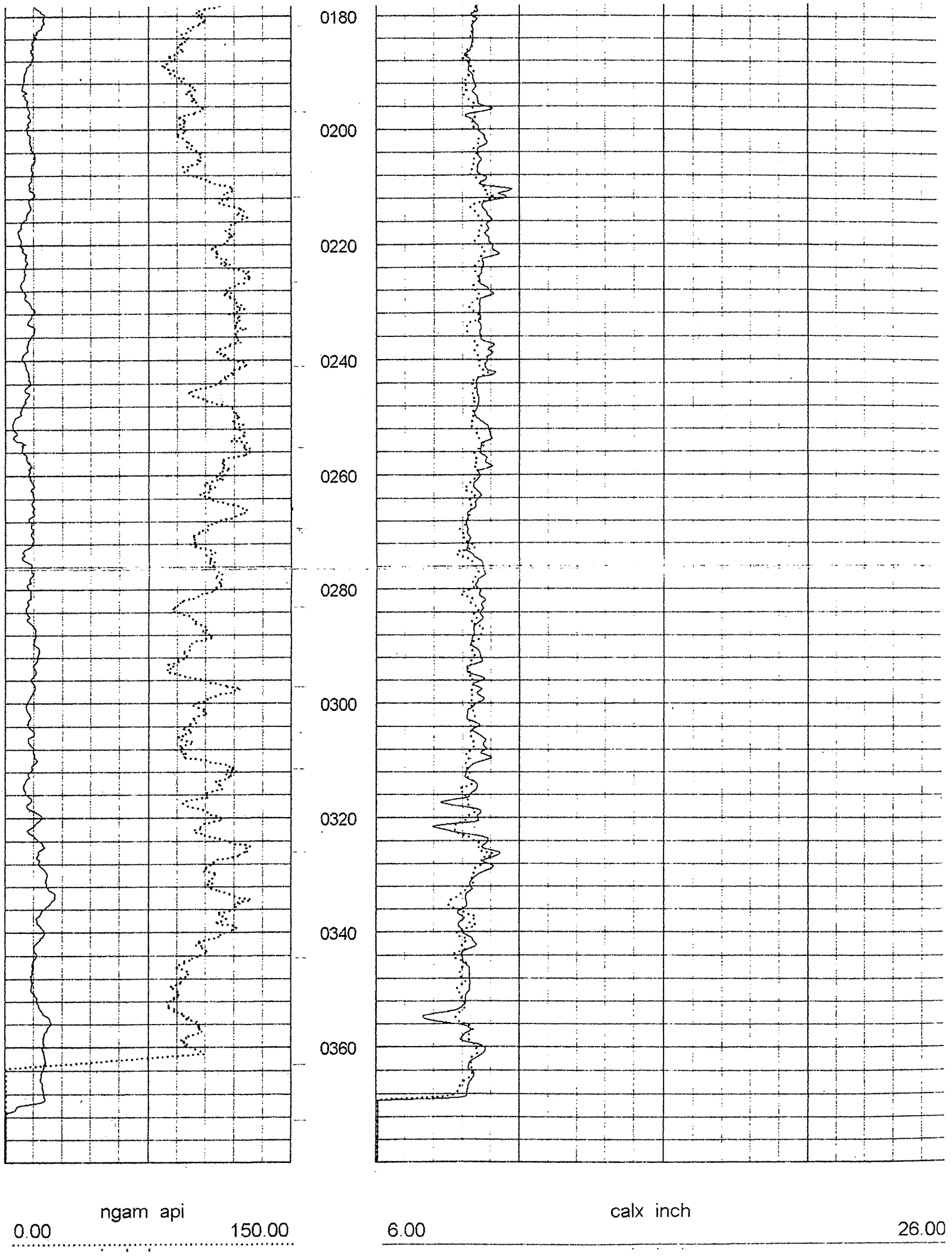
0180
0200
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0300
0320
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ngam api
0.00
150.00
calx inch
6.00
26.00

AV895-02

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds penetrated. If artesian, indicate depth at which encountered, and depth to which it rose in well.

RECEIVED OCT 31 1960 STATE LAND DEPT.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	2'	sandy soil.
2'	6'	black tight soil
6'	47'	clay, some showing of sand.
47'	55',	clay.
55'	178',	clay and boulders.
178'	188',	sand and gravel.
188'	205',	cemented sand and gravel.
205'	240'	sandy clay and gravel.
250'	270',	loose sand, gravel and boulders.
270'	305',	sand clay and boulders.
305'	317',	tight clay and gravel.
317'	345',	sand gravel and boulders.
345'	400',	clay with sand and gravel stratas.
		First hit water at approximately 170 feet

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller M. E. Hanney
Name

4150 E. Washington, Phoenix, Arizona.
Address

Date October 12, 1960

BORING LOG

Project:	WQARF Central Phoenix Plume		Boring No: P-1
Date Started: 08-28-98		Drilled by: THF Drilling	Ground El: --
Date Completed: 09-22-98		Logged by: S. Kaminski	Total Depth: 703 feet

depth (ft)	Drill Method* Type (No.)	Remarks	Soil and Rock Description
0	Borehole advanced using auger drilling method	Conductor casing installed to 20'	Asphalt and Gravel Base 6"
			Silty Sand (SM): Brown with some clay; fine-to medium-grained; damp.
10			Clayey Silt (ML): Brown; with little sand; damp.
			Sandy Silt (ML): Reddish brown; with little clay; fine to medium sand increase in clay with depth; damp.
20			Sandy Clay (CL): Brown; with some silt; damp.
			Gravel (GW): Fine-grained rounded to subrounded gravels of various colors.
30			Sandy Clay (CL): Reddish brown; with some silt; interbeds with varying degrees Sand/Silt/Clay; coarse, subrounded sand present in cuttings.
40	Borehole advanced using mud rotary drilling method	Conversion to conventional mud rotary drilling method with a 10" bit at 38'. Classification of soils based on chip samples retained on strainer roughly equivalent to a #20 or #30 sieve.	
50			
			Gravel (GW): Various colors; rough drilling; subrounded to rounded gravels and cobble fragments.
60			
			Sand/Silt/Clay: Interbedded in varying degree; coarse subrounded sand appears constantly in cuttings.
70			
			Gravel (GW): Various colors; rough drilling; subrounded to rounded.
80			

The information presented on the boring log represents subsurface soil and rock conditions at the specific location and time designated. Changes between soil types may be transitional and approximate. This information was developed to aid in preparing this report. Other parties are fully responsible for their interpretations and conclusions.

* SEE NOTES AND LEGEND

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.

BORING LOG

Project:	WQARF Central Phoenix Plume		Boring No: P-1
Date Started:	08-28-98	Drilled by: THF Drilling	Ground El: --
Date Completed:	09-22-98	Logged by: S. Kaminski	Total Depth: 703 feet

depth (ft)	Drill Method* Type (No.)	Remarks	Soil and Rock Description
80			Sand/Silt/Clay interbedded in varying degrees; coarse; subrounded sand present in cuttings.
			Gravel (GW): Rough drilling with strong calcification.
90			Silty Clay (CL): Reddish brown; with some fine to coarse sand.
100		End of Day (08-31-98) End of day (09-01-98)	
110			Sandy Gravel (GW): Rough drilling. Sandy Clay (CL): Reddish brown with some silt.
120			Clayey Sand (SC): Tan to light brown; with caliche fragments; caliche is moderately to lightly indurated.
130			Sandy Clay (CL): Light brown.
			Clayey Silt (ML): Reddish brown; with sand.
140			Gravel (GW): Various colors.
			Clayey Sand (SC): Various colors.
150			Gravel (GW): Light brown; with caliche.
160			

The information presented on the boring log represents subsurface soil and rock conditions at the specific location and time designated. Changes between soil types may be transitional and approximate. This information was developed to aid in preparing this report. Other parties are fully responsible for their interpretations and conclusions.

* SEE NOTES AND LEGEND

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.

BORING LOG

Project:	WQARF Central Phoenix Plume		Boring No: P-1
Date Started:	08-28-98	Drilled by: THF Drilling	Ground El: --
Date Completed:	09-22-98	Logged by: S. Kaminski	Total Depth: 703 feet

depth (ft)	Drill Method* Type (No.)	Remarks	Soil and Rock Description
160		Drillers clean out 11.3 lbs/gal. mud; mix new batch with 1 bags Quik Gel, 12lbs sodium bicarbonate, 2 bags Drispac Plus Low Viscosity.	Silty Clay (CL): Light brown; clay fragments in cuttings.
170			Sand (SW): Light brown; fine to coarse; subrounded; with occasional gravel and little fines becomes gravelly at 177.
180			Sandy Clay (CL): Light reddish brown.
190			Silty Clay-Clayey Silt (CL-ML): Reddish brown.
200		End of Day (09-02-98)	Clayey Silt (ML): Brown with little very fine sand.
210			Silty Clay (CL): Tan to brown; with caliche.
220			Silty Sand (SM): Brown; very fine-to fine-grained with occassional coarse-grained sand and fine gravel.
230			Silty Clay (CL): Brown with caliche.
240			Clayey Silt (ML): Brown with some fine to coarse sand.

The information presented on the boring log represents subsurface soil and rock conditions at the specific location and time designated. Changes between soil types may be transitional and approximate. This information was developed to aid in preparing this report. Other parties are fully responsible for their interpretations and conclusions.

* SEE NOTES AND LEGEND

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.

BORING LOG

Project:	WQARF Central Phoenix Plume		Boring No: P-1
Date Started: 08-28-98	Drilled by:	THF Drilling	Ground El: --
Date Completed: 09-22-98	Logged by:	S. Kaminski	Total Depth: 703 feet

depth (ft)	Drill Method* Type (No.)	Remarks	Soil and Rock Description
240		End of Day (09-03-98)	Silty Sand (SM): Gray; fine to coarse; very little material retained on sieve suggesting high silt content.
250			Clayey Silt (ML): Brown; 1/4" clay fragments.
			Clayey Sand (SC): Light brown; with gravel; rough drilling; fine to coarse subrounded sand with few gravel fragments. Increased gravels from 257' to 260'.
260			
			Silty Clay (CL): Reddish brown; with some fine sand; 1/4" clay fragments.
270			
			Clayey Silt (ML): Brown; with some calcification and very fine to fine sand.
280			Silty Clay (CL): Brown; some calification.
290			
300			
310			Clayey Sand (SC): Brown; fine to coarse subrounded sand; with some gravel; increased drilling resistance.
320			

The information presented on the boring log represents subsurface soil and rock conditions at the specific location and time designated. Changes between soil types may be transitional and approximate. This information was developed to aid in preparing this report. Other parties are fully responsible for their interpretations and conclusions.

* SEE NOTES AND LEGEND

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.

BORING LOG

ject:	WQARF Central Phoenix Plume		Boring No: P-1
te Started:	08-28-98	Drilled by: THF Drilling	Ground El: --
te Completed:	09-22-98	Logged by: S. Kaminski	Total Depth: 703 feet

depth (ft)	Drill Method* Type (No.)	Remarks	Soil and Rock Description
320			Sandy Silt (ML): Reddish brown; with clay.
			Clayey Silt (ML): With fine sand; brown; small 1/4" soft, clay fragments.
			Sandy Silt (ML): Very little sample retained; minor amounts of clay fragments.
330			Clayey Silt (ML):
			Sandy Clay (CL): Light brown; subrounded to angular fragments; fine to coarse sand.
340			
			Sand (SW): Light brown; fine-to coarse-grained.
50			
			Sand, Gravel, and Cobbles (GW): Various colors; very dense; slow drilling; subangular to angular fragments; large mica flakes.
60			
			Clayey Silt (ML): Light brown; some sand.
370			
			Increased sand content at 375'.
380			
			Silty Clay (CL): Light brown.
			Sand (SW): Various colors; fine to coarse subrounded sand with abundant mica flakes.
390		390' to 410' poor cuttings recovery-slow hard drilling.	
4			

information presented on the boring log represents u ce soil and rock conditions at the specific location and signated. Changes between soil types may be ional and approximate. This information was developed d in preparing this report. Other parties are fully o ble for their interpretations and conclusions.

* SEE NOTES AND LEGEND

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.

BORING LOG

Project:	WQARF Central Phoenix Plume		Boring No: P-1
Date Started:	08-28-98	Drilled by: THF Drilling	Ground El: --
Date Completed:	09-22-98	Logged by: S. Kaminski	Total Depth: 703 feet

depth (ft)	Drill Method* Type (No.)	Remarks	Soil and Rock Description
400			
410			
420			Silty Clay (CL): Light brown; with fine sand; some fine to coarse sand in cuttings.
430			
440			
450			Sand (SW): Light reddish brown; fine to coarse; subangular to subrounded. At 455 sand becomes very fine-to medium-grained; subrounded.
460			Sand, Gravel and Cobbles (GW): Various colors.
470			Gravelly Sand (SW): Various colors.
480			

The information presented on the boring log represents subsurface soil and rock conditions at the specific location and time designated. Changes between soil types may be transitional and approximate. This information was developed to aid in preparing this report. Other parties are fully responsible for their interpretations and conclusions.

* SEE NOTES AND LEGEND

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.

BORING LOG

Project:	WQARF Central Phoenix Plume		Boring No: P-1
Date Started: 08-28-98	Drilled by: THF Drilling		Ground El: --
Date Completed: 09-22-98	Logged by: S. Kaminski		Total Depth: 703 feet

depth (ft)	Drill Method* Type (No.)	Remarks	Soil and Rock Description
480			
490			Sand, Gravel and Cobbles (GW): Various colors.
500			Clayey Sand (SC): Tan to brown; very fine to coarse; subrounded to angular sand; minor amounts of very soft 1/8" clay fragments.
510			
520			
530			Abundant coarse sand between 535' and 542'.
540			Increased clay content 542' to 545'.
550			At 555' very fine-to fine grained-sand.
560			

The information presented on the boring log represents s[illegible] surface soil and rock conditions at the specific location and t[illegible] designated. Changes between soil types may be t[illegible]sitional and approximate. This information was developed to aid in preparing this report. Other parties are fully r[illegible]onsible for their interpretations and conclusions.

* SEE NOTES AND LEGEND

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.

BORING LOG

ect:	WQARF Central Phoenix Plume		Boring No: P-1
Started:	08-28-98	Drilled by: THF Drilling	Ground El: --
Completed:	09-22-98	Logged by: S. Kaminski	Total Depth: 703 feet

pth ft)	Drill Method* Type (No.)	Remarks	Soil and Rock Description
40		Low retention and mixed cuttings.	Sand (SW): Brown. Sandy Clay (CL): Brown. Silty Clay (CL): Brown.
50		Rough drilling 657' to 659'.	Clayey Sand (SC): Light brown.
60		660 to 678 drill rate ± 10 min/ft extremely smooth drilling.	Silty Clay/Clayey Silt (CL/ML): Light brown; with trace fine sand.
		Fast rough drilling between 678' and 685'. Drill rate approximately 4 min/ft. End of Day (09-15-98)	Clayey Sand (SC): Reddish brown; with gravel lens; mixed clay/sand cuttings with sand angular to subrounded; fine to coarse sand.
90			Sandy Clay/Clayey Sand (CL/SC): Reddish brown. Clayey Sand (SC): Light brown.
00			
1			Drilling Completed to 703 feet. Three screened intervals installed: Shallow: 345' to 365' Middle: 561' to 581' Deep: 681' to 701' For details see well construction diagram.

information presented on the boring log represents the soil and rock conditions at the specific location and designated. Changes between soil types may be gradual and approximate. This information was developed in preparing this report. Other parties are fully responsible for their interpretations and conclusions.

* SEE NOTES AND LEGEND

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.

T1N, R1E, Sec 11
AJ61-01
A(1,1) 11 CAD

GEOLOGIC LOG ADEQ West Van Buren Area

Well ID:	TOL-01	Location:	79th Avenue north of West Buckeye Road at end of road
Northing (ft):	_____.____	Drilling Co:	Layne Environmental Services
Easting (ft):	_____.____	Drilling Method:	Air percussion
Total Depth (ft):	500	Drilling Fluid:	Air
Top of Casing Elev (ft):	1024.15	Date Started:	30 Jun 94
Ground Surface Elev (ft):	1024.47	Date Finished:	05 Jul 94
		Logged by:	Jan Curtis and Dirk Tromp

Comments: East of Sysco Trucking in middle of street.

INTERVAL (FT)	USCS	VISUAL DESCRIPTION
0-10	–	No Recovery
10-20	SP	Dark brown fine sand, soft, dry to damp.
20-30	SP	Sand (80%), gravels (20%), trace clay balls and caliche, dry to damp.
30-40	SW SP	Dark brown fine sand (90%), clay and gravel (10%) dry to damp, cemented.
40-50	SW	Dark brown medium grained sand, damp.
50-60	CL	Dark brown clay (80%) some silt/sand (20%) damp.
60-70	SM	Coarse sand, wet at 65 feet, silt and clay increase with depth.
70-80	CL	Brown silty clay, some caliche, wet.
80-90	CL	Brown silty clay, wet, trace caliche, gravel, and very coarse sand.
90-100	CL	Brown silty clay, wet, trace caliche and gravel, last 0.5 foot sandy.
100-110	SP	Sand, very coarse, trace gravel, cemented, water at 100 feet.
110-120	SC	Sand, very coarse, cemented, gravels and cobbles, clayey in last foot.
120-130	CL	Silty clay, damp to wet, no water.
130-140	CL	Brown silty clay with caliche, last foot contains sand, gravels and cobbles.
140-150	GP	Poorly sorted cobbles, gravels and sand, cobbles to 6 inches in diameter, water.

150-160		GP	As above, but more cobbles
160-162	2	SP	Coarse sand, wet.
162-170	3	CL	Brown silty clay, wet.
170-176	5	CL	Clay, wet.
176-180	4	SP	Very coarse sand, producing water.
180-190		CL	Very sticky clay.
190-200		SP	Coarse cemented sand, producing water.
200-210		SP	Coarse sand and gravel, loose, producing water.
210-220		CL	Brown silty clay, very dense, no water.
220-230		SC CL	Brown sandy clay, cemented sand in trace amounts.
230-240		SC CL	As above, no cemented sand.
240-250		SC CL	As above, with more sticky clay.
250-254	4	CL	Sticky clay.
254-270	6	SP	Cemented sand, producing water.
270-280		CL-SC	Sticky clay and cemented sand.
280-290		SP	Difficult drilling, running sands, lots of water.
290-360		SP	Running sands, lots of water.
360-370		SP	Interbedded cemented and running sands, hard drilling, clay at base.
370-380		CL	Reddish brown clay.
380-390		CL/SC	Reddish brown with 20% cemented sand.
390-400		CL	Brown clay, with some cemented sand, running sands at base.
400-410		SW	Coarse sand (60%) and gravel (40%) lots of water.
410-415	5	SP	Coarse sand (80%) and gravel (20%).
415-420	5	SC CL	Reddish brown clay with cemented sandstone.
420-430		SC CL	Reddish brown clay with cemented sand in lower foot.
430-450		SP	Sandstone, coarse grained, cemented.
450-470		SP	Sandstone, coarse grained, some gravel clasts.
470-480		CH	Fat clay.
480-490		CH/SP	Fat clay with medium to coarse grained friable sandstone, poorly sorted. Some gravel up to 3.0cm in diameter
490-500		ML	Clayey silt, slightly plastic TOTAL DEPTH = 500 ft.

welenco

GAMMA NEUTRON LOG

FILING NO.	
COMPANY	ROY F. WESTON, INC.
WELL	TOL #1
FIELD	TOLLESON
COUNTY	MARICOPA STATE ARIZONA
LOCATION:	SYSCO SITE
SEC	TWP RGE
OTHER SERV:	NONE
JOB NO.	20095

PERMANENT DATUM: G.L. ELEV:

LOG MEASURED FROM G.L., 0 FT ABOVE PERM DATUM

DRILLING MEASURED FROM G.L.

ELEVATION:
KB.
DF.
GL.

DATE	7/5/94		
TYPE OF LOG	GAMMA NEUTRON		
RUN NO.	ONE		
DEPTH - DRILLER	500'		
DEPTH - LOGGER	499'		
BOTTOM LOGGED INT	499'		
TOP LOGGED INT	0'		
TYPE FLUID IN HOLE	WATER		
FLUID LEVEL	10'		
MAX TEMP DEG F	N/A		
OPERATING RIG TIME	N/A		
EQUIP. LOCATION	L05 AZ		
OPERATOR	D. JACOVITCH		
WITNESSED BY	R. PETRUS		

RUN NO.	BORE HOLE RECORD BIT	FROM	TO	CASING RECORD SIZE	TYPE	FROM	TO
1				9.75"	STEEL	0'	T.D.
				6"	STEEL	0'	T.D.

EQUIPMENT DATA

LOG TYPE	GAMMA-RAY	NEUTRON	
RUN NO.	ONE	ONE	
TOOL MODEL NO.	GCN27XL5A	GCN27XL5A	
TOOL SERIAL NO.	274	274	
DIAMETER	1 11/16"	1 11/16"	
DETECTOR TYPE	SCINT.	He3	
DETECTOR LENGTH	4"	6"	
UNITS/DIV.	30	40	
SENSITIVITY	100/494	500/692	
TIME CONSTANT	3	4	
ZERO DIV L OR R	3L	0L, 20L	
SPEED-FPM	20	20	
DATA SAMPLES/FT	2	2	
FORMATION FACTOR	N/A	N/A	
PUMP RATE-GPM	STATIC	STATIC	
PUMP RATE-GPM			
PUMP RATE-GPM			

SOURCE TYPE	STRENGTH	SPACING	MODEL NO	SERIAL NO.
AmBe 241	3 Ci	13"	71-1	119

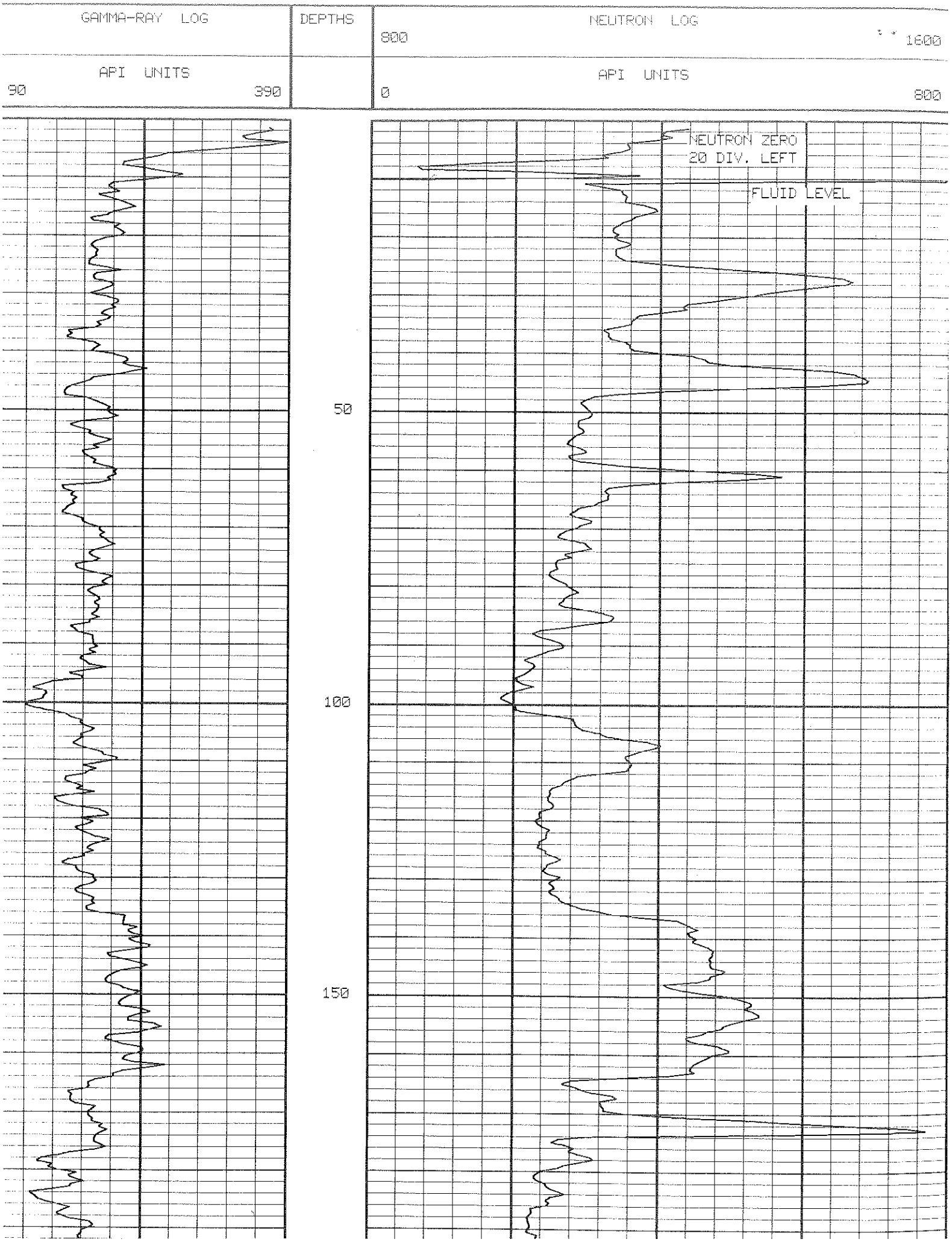
PERFORATIONS:

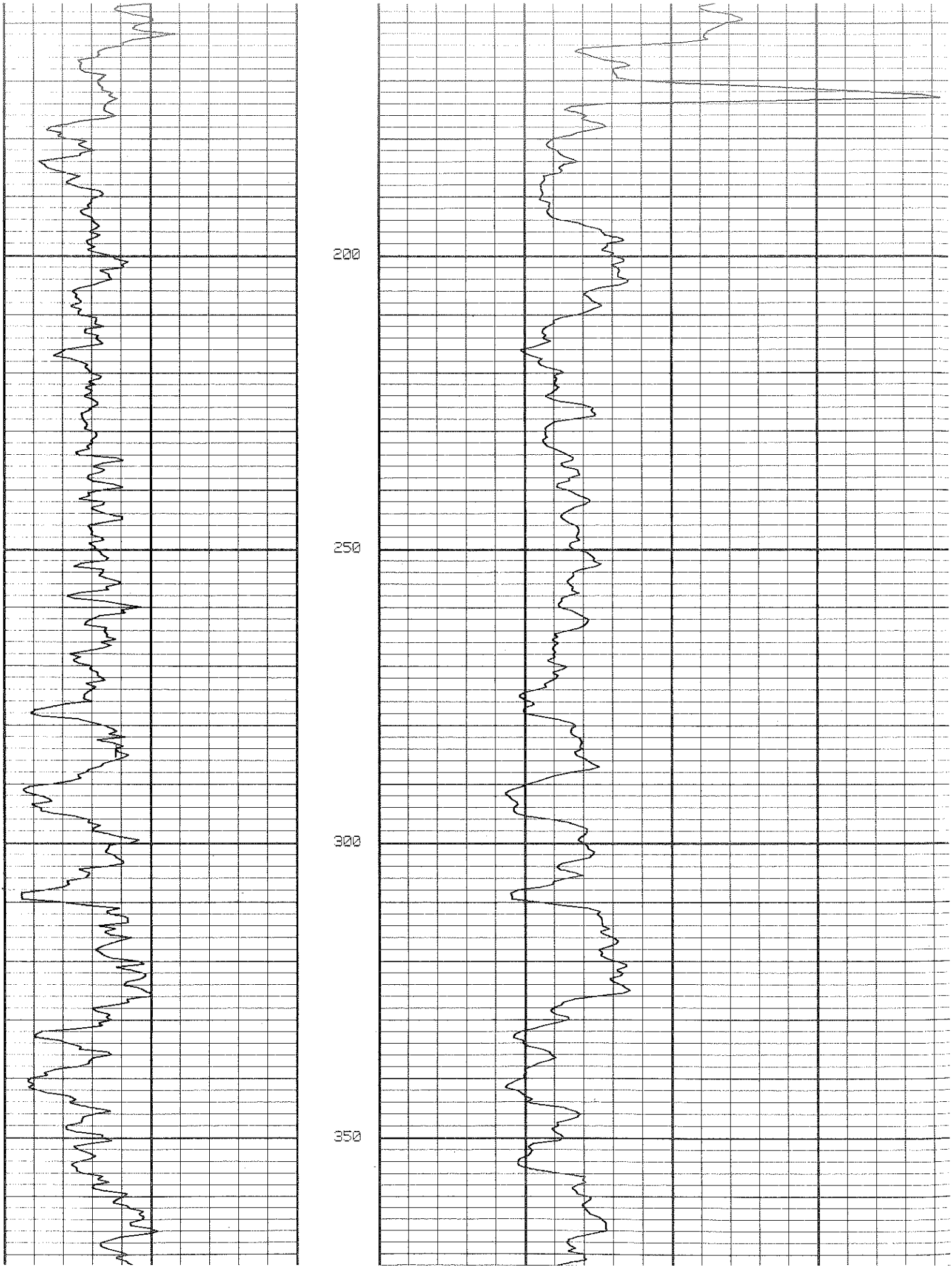
REMARKS:

NOTICE:

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by one of our officers, agents or employees. These interpretations are also subject to our General Terms and Conditions as set out in our current Price Schedule.

WELENCO, INC.


GAMMA-RAY LOG
API UNITS
90
390
DEPTHS
50
100
150
NEUTRON LOG
800
1600
API UNITS
0
800
NEUTRON ZERO
20 DIV. LEFT
FLUID LEVEL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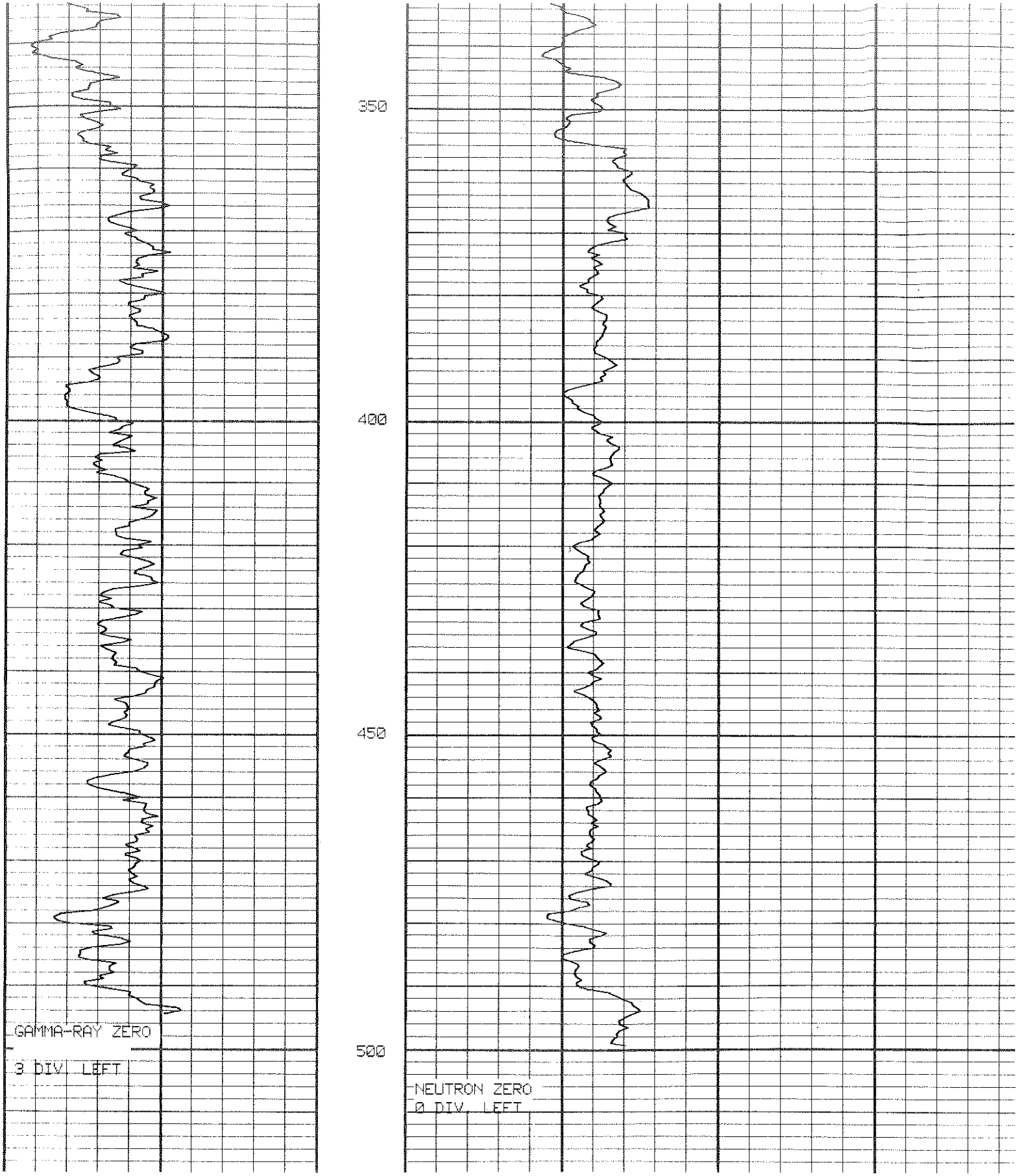
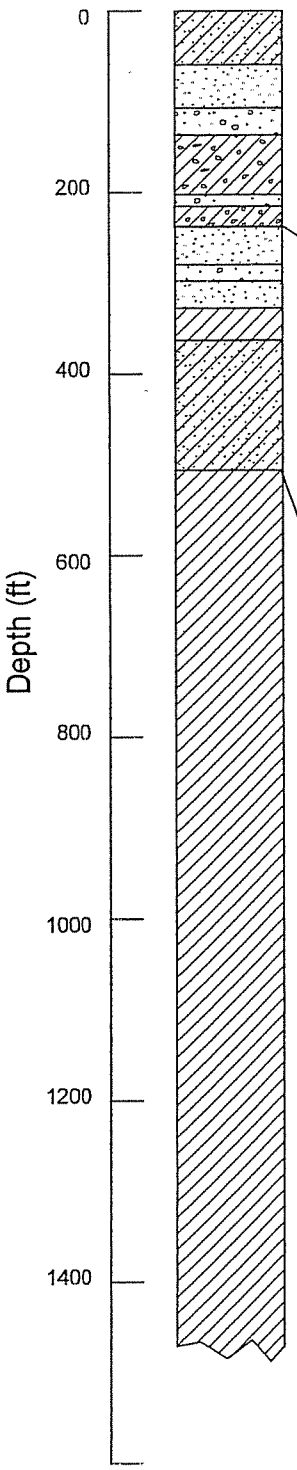
250
300
350

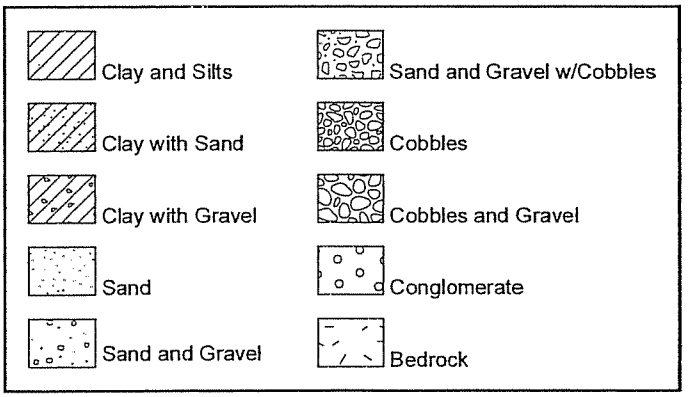


90 — 390 API UNITS GAMMA-RAY LOG	DEPTHS	0 — 800 API UNITS 800 — 1600 NEUTRON LOG

BTE-2 T1N, R1E Sec 14



A(1-1)14bab		
From (feet)	To (feet)	Description of Formation Material
0	30	Valley fill
30	35	Sandy clay
35	45	Clay
45	100	Sand
100	116	Coarse sand and gravel
116	163	Clay, gravel and sand
163	185	Clay
185	224	Gravel, sand and some clay
Bottom of UAU2		
224	245	Sand with trace of clay
245	265	Sand
265	270	Sand
270	280	Sand and gravel with trace of clay
280	305	Sand with trace of clay
305	320	Sand with trace of clay
320	330	Clay
330	340	Clay with sand strips
340	350	Clay
350	351	Sand
351	354	Clay
354	400	Sandy clay
400	430	Clay
430	440	Fine sand
440	475	Clay
475	483	Fine sand
483	490	Sandy clay
Bottom of UAU2		
490	1055	Clay
1055	1105	Silty clay
1105	1445	Clay



Reference:
ADWR Files

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
CENTRAL PHOENIX GROUNDWATER MODEL

Figure 7
Driller's Log and
Stratigraphic Column for
Well A(1,1)14 bab

DRAWN	DATE	DWG. NO.	REV. NO.
TC	26 MAY 00	Figure_7_Final	0
SCALE	W.O. NO.		

55-618655

LOG OF WELL

Viss - 2

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	2	Filled dirt
2	12	Top soil
12	14	Boulders
14	30	Caliche
30	87	Loose boulders, sand & gravel
87	89	Caliche
89	125	Caliche & boulders
125	130	Sand
130	132	Sand & boulders
132	142	Sand & gravel
142	146	Boulders & gravel
146	163	Sand & gravel
163	170	Sand w/little amount of silt
170	207	Sand & silty clay
207	214	Conglomerate
214	215	Pink clay
215	225	Conglomerate
225	235	Tan clay
235	255	Running sand
255	280	Sandy clay
280	344	Clay
344	351	Sandy clay (57 drops)
351	366	Clay
366	370	Sand & clay strips (12 drops)
370	398	Clay
398	425	Sandy clay AND 425 - 445 SAND & CLAY STRIPS(4dro

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

ODOM'S INC

Driller Ernest R. Parker

Name ERNEST R PARKER

327 N. 1st Street

Address

Buckeye, Arizona 85326

City State Z.

Date February 20, 1986

SRP-067

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at wl encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	5	Top soil
5	10	Caliche and gravel
10	19	Sand and gravel
19	50	Clay
50	54	Clay and boulders
54	68	Clay
68	71	Clay and boulders
71	92	Clay
92	135	Clay and gravel
135	170	Clay
170	214	Clay gravel and caliche
214	305	Clay
305	325	Clay some gravel
325	334	Sand gravel and caliche
334	358	Sandy clay and gravel
358	375	Gravel 2"
375	400	Sandy clay and gravel
400	700	Clay

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to th best of my knowledge and belief.

Driller Roscoe Moss Company
Name

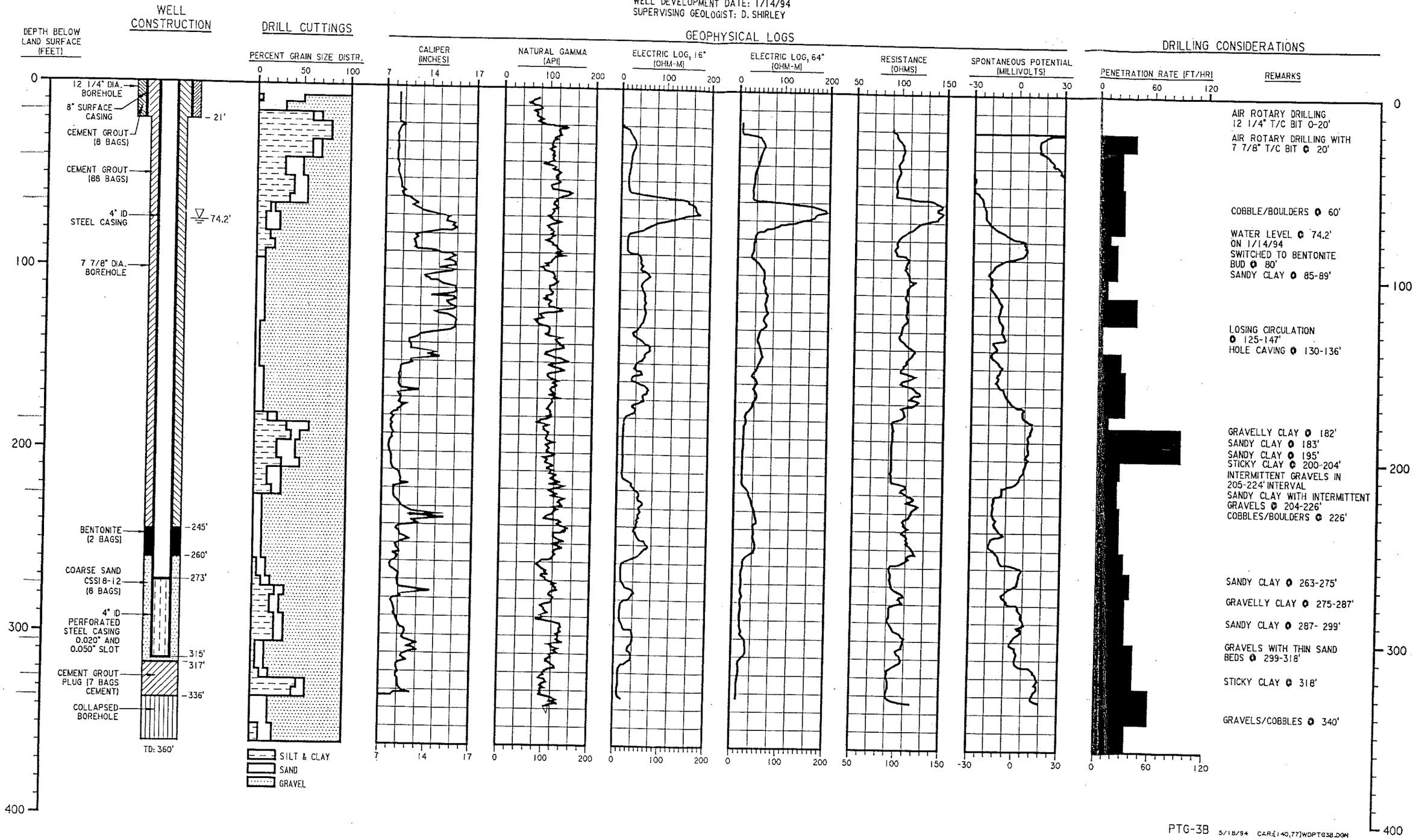
4360 Worth Street, Los Angeles, Cal
Address

Date June 3, 1949

FIGURE 10: WELL DATA PROFILE WELL PTG-3B

ADWR REGISTRATION NO. 55-540983

DRILLING METHOD: AIR/MUD ROTARY
DRILLING CONTRACTOR: B.J. DRILLING CO.
START DRILLING DATE: 1/4/94
WELL COMPLETION DATE: 1/14/94
WELL DEVELOPMENT DATE: 1/14/94
SUPERVISING GEOLOGIST: D. SHIRLEY



RID 86

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	7	soil
7	12	coarse sand
12	35	clay and caliche
35	153	sand, gravel and boulders Water first found at 62'
153	222	sand and gravel 2" streak clay
222	256	hard clay
256	265	sandy clay and gravel
265	280	hard clay
280	300	sandy clay

I hereby certify that I have read the foregoing statements, and that each and all of the items therein contained are true to the best of my knowledge and belief.

Roosevelt Irrigation District

George McLaud
Owner, Operator or Driller

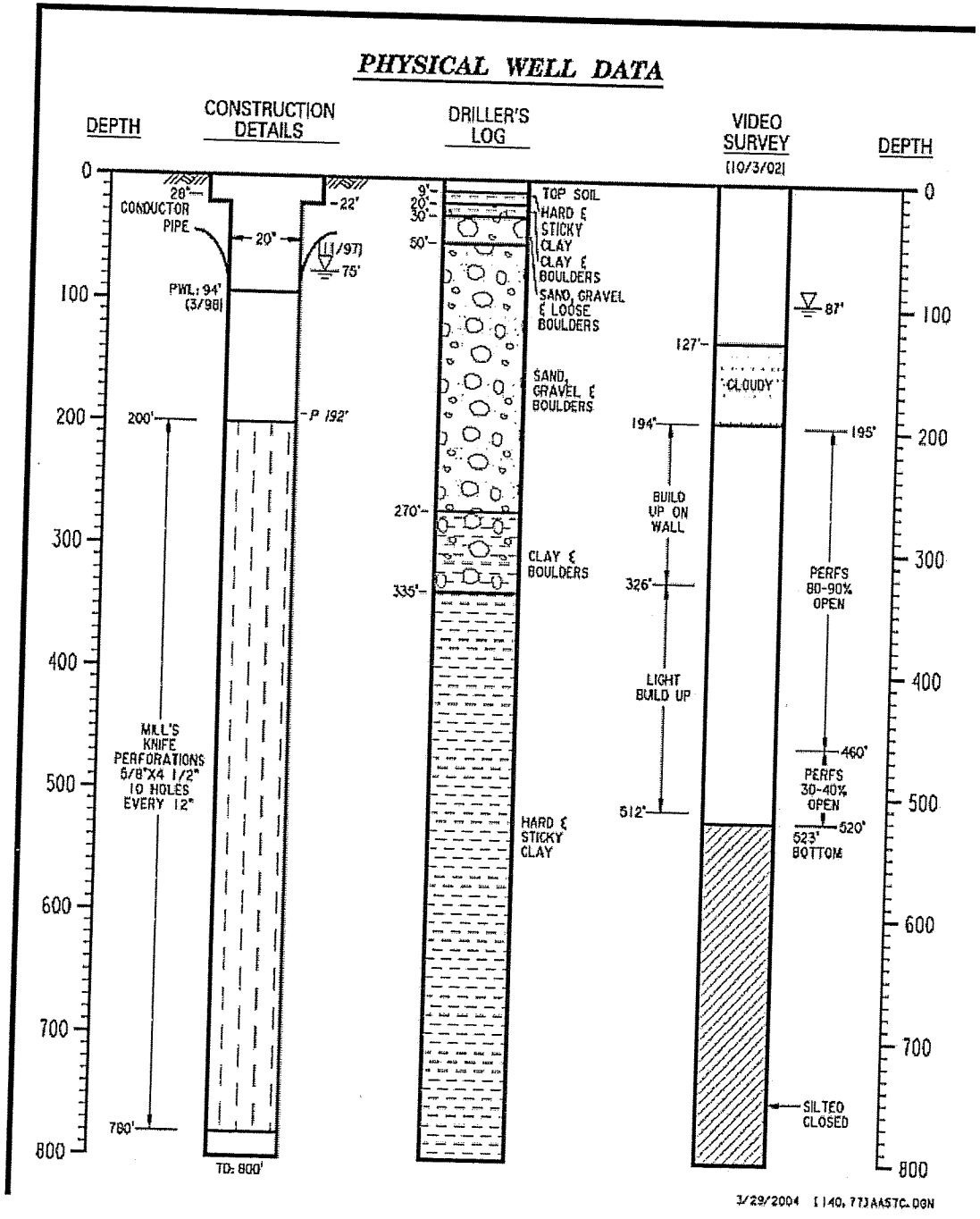
P. O. Box 95, Buckeye, AZ 85326
Address

Date 5/15/80

RECEIVED
MAY 16 1980
ARIZONA WATER
COMMISSION

5-78

07.0E-03.0N



Approx 59th Ave & Lower Buckeye

Ring-2

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encounterd, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	2	TOP SOIL
2	4	SAND & GRAVEL
4	18	SAND, GRAVEL & BOULDERS
18	22	CALICHI
22	80	SAND, GRAVEL & BOULDERS
80	85	GRAVEL & BOULDERS W/TRACE OF CLAY
85	260	SAND, GRAVEL & BOULDERS
260	305	CLAY
305	315	SANDY CLAY
315	320	SAND
320	388	CLAY
388	406	CLAY W/SAND STRIPS
406	408	CLAY

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller Name: Ert R. Park

327 N. 1ST STREET
Street

BUCKEYE AZ 85326
City State Zip

R1D-92

ROOSEVELT IRRIGATION DISTRICT (Redrill)

REPORT ON WELL 9E-4$\frac{1}{2}$N (#92)

Work started--------December 19, 1958
Work completed------February 9, 1959
Total depth---------500'
500' of 20" - 8 Ga. casing used
and left in the well.

LOG OF WELL

0' - 4'---------Brown Clay
4' - 9'---------Brown Clay and gravel
9' - 29'--------Sandy Clay
29' - 107'-------Gravel and boulders
107' - 218'-------Sand, Gravel and boulders
218' - 222'-------Caliche
222' - 238'-------Sandy clay, gravel and boulders
238' - 253'-------Soft brown clay
253' - 293'-------Sand and gravel $\frac{1}{2}$"
293' - 319'-------Soft brown clay
319' - 343'-------Sandy clay and gravel
343' - 346'-------Coarse sand
346' - 500'-------Sandy clay and gravel

PERFORATIONS

Moss Hydraulic perforator used
180' to 488' - 16 holes per 10 inches
Diameter - 3/16" - Length - 2$\frac{1}{2}$"
Depth at which water was first found - 113'
Standing level before perforating - 175'
Standing level after perforating - 112'

Well is straight from top to bottom

REMARKS

Drilled by Roscoe Moss Company-Cable Tool #39
Bill Hulsey, Driller

COST

For Drilling - Casing - Perforation
to a depth of 500'----------$ 12,765.00

Cost per foot----------$ 25.53

RID 90

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water-bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (feet)	TO (feet)	DESCRIPTION OF FORMATION MATERIAL
0	30	Hard clay
30	90	Gravel and some clay
90	190	Clean gravel to 5"
190	215	Clay
215	285	Gravel to 8"
285	315	Caliche clay
315	321	Caliche shell,
321	322	Pea gravel
322	332	Soft clay
332	370	Sandy silt
370	460	Clay

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Roscoe Moss Company
Name

4360 Worth Street, Los Angeles, Calif
Address

Date May 26, 1952

NOTE: Report and Log are to be completed by the permittee and driller, and mailed by the permittee to the Ground Water Division of the State Land Department immediately upon completion of the well and pumping test.

DEPTH	SOIL SYMBOL	USCS	SOIL DESCRIPTION	TIME	COMMENTS
			ASPHALT OVER ROAD BASE	07:45A	17TH MAY 2005 START DRILLING
		CL	SANDY CLAY, REDDISH BROWN, SLIGHTLY MOIST, FIRM		
		CL	CLAY, BROWN, SLIGHTY MOIST, VERY FIRM, CALICHE CEMENTATION		
10					
		SM	SILTY SAND, LT. BROWN, SLIGHTLY MOIST, CALICHE, POORLY CEMENTED,		
20			INCREASING CEMENTATION		
		ML	SANDY SILT, LT. BROWN, DRY, DENSE-CARBONATE CEMENTATION		
		GP	GRAVEL W/ SAND, ROUNDED, LT. BROWN, DRY, MINOR CARBONATE CEMENTATION		
30					
			LARGE COBBLES		
40					
				09:15A	
50					

PROJECT #: 0310-3154	DRILL DATE: 5/17-19/05
LOGGED BY: AJG/BS	
PROJECT MANAGER: AJG	
NOTES:	
DEPTH TO WATER: 100.8 FT	
RIG TYPE: SR102	DIAMETER: 9"
DRILLER: PROSONIC	TOTAL DEPTH: 230'
DRILLING METHOD: ROTOSONIC	

TERRANEXT

FIELD BOREHOLE LOG
AVB 131-01
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOL	USCS	SOIL DESCRIPTION	TIME	COMMENTS
		GW	SANDY GRAVEL, ROUNDED, BROWN, SLIGHTLY MOIST, W/ COBBLES	10:00A	
70					
			SAME - INCREASING MOISTURE		
80					
				11:30-12:30	BREAK FOR LUNCH / OBTAIN HOSE FOR RIG
90					
100					GROUNDWATER @ 100.8'
110		GW	INCREASING SAND CONTENT		
		SP	WELL SORTED SAND W/ MINOR SUB-ROUNDED GRAVEL, BROWN, WET, LOOSE		

PROJECT # : 0310-3154	DRILL DATE: 5/17-19/05
LOGGED BY: AJG/BS	
PROJECT MANAGER: AJG	
NOTES:	
DEPTH TO WATER: 100.8 FT	
RIG TYPE: SR102	DIAMETER: 9"
DRILLER: PROSONIC	TOTAL DEPTH: 230'
DRILLING METHOD: ROTOSONIC	

TERRANEXT

FIELD BOREHOLE LOG
AVB 131-01
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOL	USCS	SOIL DESCRIPTION	TIME	COMMENTS
		GW	POORLY SORTED GRAVEL WITH SILT, SAND, CLAY,	03:00P	
			SUBANGULAR, BROWN, WET		
130		SC	POORLY SORTED CLAYEY SAND, BROWN, WET		
		GW	POORLY SORTED GRAVEL W/ SAND, SUB ROUNDED, BROWN, WET,	03:30P	BROKEN HOSE END OF DAY
					18TH MAY 2005
140				07: 45A	
				08:20A	
150					
		SP	FINE TO COARSE SAND W/ SOME FINE GRAVEL		NO RECOVERY
160		GW	SANDY GRAVEL W/ SOME CLAY & SILT, RED-GREY	10:05A	
		CL	CLAY W/ SAND, SILT & CALICHE NODULES, BROWN, HARD, WET		
		SP	SAND W/ TR GRAVEL, VERY DENSE, RED-GREY, WET		
170		GW	SANDY GRAVEL W/ TR SILT & CLAY, VERY DENSE, RED-GREY, WET	10:35A	
		SW	SAND W/ GRAVEL, CLAY & SILT, RED-GREY, VERY DENSE, WET		
		GW	GRAVEL W/ SAND & CLAY, VERY DENSE, DK. RED-GREY, WET		
					NO RECOVERY
		SW	SAND W/ GRAVEL, CLAY, SOME SILT, VERY DENSE, DK. RED-GREY, WET		

PROJECT # : 0310-3154	DRILL DATE: 5/17-19/05
LOGGED BY: AJG/BS	
PROJECT MANAGER: CHUCK GORDON	
NOTES:	
DEPTH TO WATER: 100.8 FT	
RIG TYPE: SR102	DIAMETER: 9"
DRILLER: PROSONIC	TOTAL DEPTH: 230
DRILLING METHOD: ROTOSONIC	

TERRANEXT

FIELD BOREHOLE LOG
AVB 131-01
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOL	USCS	SOIL DESCRIPTION	TIME	COMMENTS
		SW	AS ABOVE	01:55P	
		CL	CLAY W/ SILT & TR SAND, BROWN, VERY STIFF		
			W/ SOME 2-12" THICK STRINGERS OF SANDY CLAYEY SILT W/ SOME CALICHE NODULES, BROWN, MEDIUM STIFF, WET		
190				08:40A	19TH MAY, 2005
					NO RECOVERY
200		SP	SAND W/ TR-SOME SILT, DK RED-GREY, DENSE, WET	09: 05A	
		GW	SANDY GRAVEL W/ SOME CLAY & SILT, RED-GREY, VERY DENSE, WET		
		SW	GRAVELY SAND W/ CLAY & SOME SILT, GREY-BROWN, VERY DENSE, WET		
210		GW	GRAVEL W/ COBBLES, SAND, SOME SILT & CLAY, GREY-BROWN, VERY DENSE, WET		
		SM	SAND W/ SILT & SOME TR CLAY, RED-GREY, VERY DENSE, WET		
		SW	SAND W/ SOME GRAVEL, TR SILT & CLAY, RED-GREY, VERY DENSE, WET		
220		GW	SANDY GRAVEL W/ TR SILT & CLAY, RED-GREY, VERY DENSE, WET		
		GC	CLAYEY SANDY GRAVEL , GREY-BROWN, VERY DENSE, WET		
230		CL	CLAY W/ TR SILT, BROWN, HARD, WET		TOTAL DEPTH = 230 FT

PROJECT # : 0310-3154	DRILL DATE: 5/17-9/05
LOGGED BY: AJG/BS	
PROJECT MANAGER: AJG	
NOTES:	
DEPTH TO WATER: 100.8 FT	
RIG TYPE: SR102	DIAMETER: 9"
DRILLER: PROSONIC	TOTAL DEPTH: 230'
DRILLING METHOD: ROTOSONIC	

TERRANEXT

FIELD BOREHOLE LOG
AVB 131-01
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOL	USCS	SOIL DESCRIPTION	TIME	COMMENTS
			4" ASPHALT / ROADBASE	11:00A	24TH MAY, 2005 START DRILLING
		ML	REDDISH SANDY SILT W/ TRACE CLAY, DRY, SOFT		
10		ML	BROWN SANDY SILT, DRY, SOFT		
		SM	BROWN SILTY SAND, DRY, LOOSE		
20					HOLE CAVING - PERMISSION GIVEN TO ADD WATER
		GW	SUB-ROUNDED GRAVEL W/ SAND, SILT, GREY-BROWN, DRY, LOOSE		
		SM	SILTY SAND W/ GRAVEL, BROWN, DRY, LOOSE		
30				01:15P	RIG OVERHEATING
		GW	SILTY SANDY GRAVEL, SUB-ROUNDED TO ROUNDED, BROWN, DRY, LOOSE	01:45P	INNER CASING STUCK
				03:30P	STOP FOR DAY
				08:15A	25TH MAY, 2005 START DRILLING
40				08:30A	HOLE CAVING
			COBBLES	10:00A	START DRILLING AGAIN
50		GP	GRAVEL W/ COBBLES, ROUNDED, BROWN, DRY, LOOSE		
		GW	SANDY GRAVEL, SUB-ROUNDED, BROWN, SLIGHTLY MOIST, LOOSE		

PROJECT # : 0310-3154	DRILL DATE: 5/24-27/05
LOGGED BY: AJG/BS	
PROJECT MANAGER: CHUCK GORDON	
NOTES:	
DEPTH TO WATER: 97FT	
RIG TYPE: SR102	DIAMETER: 9"
DRILLER: PROSONIC	TOTAL DEPTH: 302'
DRILLING METHOD: ROTOSONIC	

TERRANEXT

FIELD BOREHOLE LOG
AVB 124-02
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOL	USCS	SOIL DESCRIPTION	TIME	COMMENTS
		GW	SANDY GRAVEL, SUB-ROUNDED, BROWN, SLIGHTLY MOIST, LOOSE		
		ML	CLAYEY SILT, MOIST, BROWN TO REDDISH-BROWN		
70					
		GP	ROUNDED GRAVEL W/ SAND, BROWN, SLIGHTLY MOIST, LOOSE		
80					
				11:30A	BREAK FOR LUNCH
90			COBBLES		
		GW	GRAVEL W/ CLAY, ROUNDED, BROWN, VERY MOIST, FIRM		GROUND WATER AT 97'
100		GW	SANDY GRAVEL, WET		
			COBBLES		
110					
			INCREASING SAND		

PROJECT # : 0310-3154	DRILL DATE: 5/24-27/05
LOGGED BY: AJG/BS	
PROJECT MANAGER: CHUCK GORDON	
NOTES:	
DEPTH TO WATER: 97FT	
RIG TYPE: SR102	DIAMETER: 9"
DRILLER: PROSONIC	TOTAL DEPTH: 302'
DRILLING METHOD: ROTOSONIC	

TERRANEXT

FIELD BOREHOLE LOG
AVB 124-02
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOL	USCS	SOIL DESCRIPTION	TIME	COMMENTS
		GW	SANDY GRAVEL, ROUND, BROWN, WET		
130			ROUNDED COBBLES		
		GC	INCREASING CLAY		
140					
		GW	DECREASING CLAY, INCREASING SAND		
150			COBBLES		
		SW	SAND W/ SOME GRAVEL, RED-GREY, VERY DENSE, WET	04:30P	STOP AT 157'
160				06:35A	26TH MAY, 2005 START DRILLING
		GW	SANDY GRAVEL, SOME SILT & CLAY, VERY DENSE, WET		
		SP	FINE TO MEDIUM SAND		
		GW	GRAVEL W/ SAND, SOME SILT, TR CLAY & COBBLES, GREY-BROWN, VERY DENSE, WET		
170				07:40A	
		SW	SAND W/ TR SILT & GRAVEL, RED-GREY, DENSE, WET		
		GW	GRAVEL W/ SAND, SOME SILT & TR CLAY		
		GC	CLAYEY GRAVEL, GREY-BROWN, VERY DENSE, WET		
		GW			
		SP	SAND W/ SILT & TR CLAY, LT RED-GREY, DENSE, WET		

PROJECT # : 0310-3154	DRILL DATE: 5/24-27/05
LOGGED BY: AJG/BS	
PROJECT MANAGER: CHUCK GORDON	
NOTES:	
DEPTH TO WATER: 97FT	
RIG TYPE: SR102	DIAMETER: 9"
DRILLER: PROSONIC	TOTAL DEPTH: 302'
DRILLING METHOD: ROTOSONIC	

TERRANEXT

FIELD BOREHOLE LOG
AVB 124-02
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOL	USCS	SOIL DESCRIPTION	TIME	COMMENTS
		SP		08:45A	
		SW	SAND W/ TR SILT, CLAY & FINE GRAVEL, RED-GREY, DENSE, WET		
			AS ABOVE W/ SOME FINE TO COARSE GRAVEL		
190		CL	CLAY W/ TR SILT & SAND, HARD, BROWN, WET		
		SW	SAND W/ SOME GRAVEL & SILT, LT RED-GREY, VERY DENSE, WET	09:45A	
200				10:55A	
			AS ABOVE W/ GRAVEL		
210				01:25P	
		GW	SANDY GRAVEL W/ SILT & CLAY, BROWN, VERY DENSE, WET		
		SP	SAND W/ TRACE OF SILT, RED-GREY, VERY DENSE, WET		
		SW	SAND W/ GRAVEL & TRACE SILT, RED-GREY, VERY DENSE, WET	04:25P	
220					
			AS ABOVE W/ SOME CLAY, VERY DENSE		
230				07:10A	27TH MAY, 2005
		CL	SILTY CLAY W/ TR SAND, LT RED-GREY, BROWN, HARD, MOIST		

PROJECT # : 0310-3154	DRILL DATE: 5/24-27/05
LOGGED BY: AJG/BS	
PROJECT MANAGER: CHUCK GORDON	
NOTES:	
DEPTH TO WATER: 97FT	
RIG TYPE: SR102	DIAMETER: 9"
DRILLER: PROSONIC	TOTAL DEPTH: 302'
DRILLING METHOD: ROTOSONIC	

TERRANEXT

FIELD BOREHOLE LOG
AVB 124-02
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOL	USCS	SOIL DESCRIPTION	TIME	COMMENTS
		CL	INTER BEDDED W/ SOME LAYERS OF CLAYEY SILT, VERY STIFF, BROWN, MOIST	08:25A	
250					
				10:30A	
		ML	SILT W/ SAND, SOME CLAY & CALICHE NODULES, BROWN, MOIST, VERY STIFF		
		CL	CLAY W/ SOME SILT & SAND, HARD, BROWN, MOIST		NO RECOVERY
260				11:15A	
		ML	SANDY SILT W/ CLAY, BROWN, WET		
		SW	SAND W/ TR GRAVEL, CLAY & SILT, RED-GREY, WET, VERY DENSE		
		CL	SILTY CLAY W/ SOME SAND, BROWN, VERY STIFF		
		SW	SAND W/ TR GRAVEL, CLAY & SILT, RED-GREY, WET, VERY DENSE		NO RECOVERY
		CL	SANDY CLAY W/ SOME GRAVEL	12:05P	
270		SW			
		CL	SANDY CLAY W/ SOME GRAVEL		
		SW			
		CL	CLAY W/ SILT & TR SAND, VERY STIFF, BROWN, MOIST		
		SW	SAND W/ TR GRAVEL & CLAY, RED-GREY, VERY DENSE, WET	12:50P	
280		ML	SILT W/ SOME SAND & TR CLAY, VERY STIFF, BROWN, WET		
		CL	CLAY W/ SOME SILT & TR SAND, HARD, BROWN, MOIST, SILTY INTER BEDS		
		ML	SANDY SILT W/ CLAY, BROWN, VERY STIFF	01:50P	
290		CL			
		ML	SILT W/ SOME CLAY & TR SAND, BROWN, HARD		
		CL			
		ML			
		CL			
					TOTAL DEPTH = 302'

PROJECT # : 0310-3154	DRILL DATE: 5/24-27/05
LOGGED BY: AJG/BS	
PROJECT MANAGER: CHUCK GORDON	
NOTES:	
DEPTH TO WATER: 97FT	
RIG TYPE: SR102	DIAMETER: 9"
DRILLER: PROSONIC	TOTAL DEPTH: 302'
DRILLING METHOD: ROTOSONIC	

TERRANEXT

FIELD BOREHOLE LOG
AVB 124-02
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOL	USCS	SOIL DESCRIPTION	TIME	COMMENTS
					11TH MAY, 2005
		CL	CLAY W/ SOME SILT & TR SAND, RED-GREY, MOIST, M STIFF		
10					
		SW	SAND W/ GRAVEL, RED-GREY, SLIGHTLY MOIST, DENSE		
20		GC	CLAYEY GRAVEL W/ SOME SAND, BROWN, VERY DENSE, SLIGHTLY MOIST		
30		GW	GRAVEL W/ SAND, SOME COBBLES, RED-GREY, SLIGHTLY MOIST, VERY DENSE		
40					
50		SW	SAND W/ SOME SILT & CLAY & TR FINE GRAVEL, RED-BROWN, VERY DENSE, MOIST		
		GW	AS ABOVE		
		SP	FINE-MEDIUM SAND, LIGHT RED-GREY, VERY DENSE, SLIGHTLY MOIST		
		GW	AS ABOVE		

PROJECT #: 0310-3154	DRILL DATE: 5/11-13/05
LOGGED BY: BS	
PROJECT MANAGER: CHUCK GORDON	
NOTES:	
DEPTH TO WATER: 94FT	
RIG TYPE: SR102	DIAMETER: 9"
DRILLER: PROSONIC	TOTAL DEPTH: 231.5'
DRILLING METHOD: ROTOSONIC	

TERRANEXT

FIELD BOREHOLE LOG
AVB 133-01
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOL	USCS	SOIL DESCRIPTION	TIME	COMMENTS
		SM	SILTY SAND W/ FINE GRAVEL, RED-BROWN, SLIGHTLY MOIST, VERY DENSE		
		GW	AS ABOVE		
70					
80					
90			INCREASING MOISTURE		
100					
		SW	SAND STRINGER		
		SC	CLAYEY SAND		
		GW	AS ABOVE		
		SW	GRAVELLY SAND W/ CLAY AND SOME SILT, GREY BROWN, WET, VERY DENSE		
110		GW	AS ABOVE		

PROJECT # : 0310-3154	DRILL DATE: 5/11-13/05
LOGGED BY: BS	
PROJECT MANAGER: CHUCK GORDON	
NOTES:	
DEPTH TO WATER: 94FT	
RIG TYPE: SR102	DIAMETER: 9"
DRILLER: PROSONIC	TOTAL DEPTH: 231.5'
DRILLING METHOD: ROTOSONIC	

TERRANEXT

FIELD BOREHOLE LOG
AVB 133-01
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOL	USCS	SOIL DESCRIPTION	TIME	COMMENTS
		GW	AS ABOVE		
130		GC	CLAYEY GRAVEL W/ SAND, DK GREY/BROWN, MOTTLED, NO ODOR, VERY DENSE, WET		12TH MAY, 2005
		GW	AS ABOVE		
		SW	GRAVELY SAND W/ SOME CLAY & SILT, RED-GREY, VERY DENSE		
		GW	AS ABOVE EXCEPT INCREASING CLAY & SILT		
140		SP/SM	SAND W/ SOME SILT & TR CLAY, VERY DENSE, RED-GREY, WET		
		GW	FINE - COARSE GRAVEL, SAND & CLAY, DK RED-GREY, VERY DENSE, WET		
150		SP/SM	AS ABOVE		
		GW	AS ABOVE		
		SW	FINE - COARSE SAND W/ SOME GRAVEL, SILT, TR CLAY, LT RED-GREY, VERY DENSE, WET		
160		GW	SANDY GRAVEL W/ SOME SILT & TR CLAY, RED-GREY, DENSE, WET		
		SW	AS ABOVE EXCEPT W/ SOME CLAY		
		GW	SANDY GRAVEL W/ CLAY, VERY DENSE, RED-GREY/BROWN, WET		
		GP	FINE GRAVEL, VERY DENSE, DK RED-GREY, WET		
170		GW	AS ABOVE		
		SP	SAND W/ SILT, RED-GREY, VERY DENSE, WET		
		GW	FINE - COARSE GRAVEL W/ SOME SILT, SAND & CLAY, DK RED-GREY, VERY DENSE, WET		

PROJECT #: 0310-3154	DRILL DATE: 5/11-13/05
LOGGED BY: BS	
PROJECT MANAGER: CHUCK GORDON	
NOTES:	
DEPTH TO WATER: 94FT	
RIG TYPE: SR102	DIAMETER: 9"
DRILLER: PROSONIC	TOTAL DEPTH: 231.5'
DRILLING METHOD: ROTOSONIC	

TERRANEXT

FIELD BOREHOLE LOG
AVB 133-01
PHOENIX, ARIZONA

DEPTH	SOIL SYMBOL	USCS	SOIL DESCRIPTION	TIME	COMMENTS
		GW	AS ABOVE		
		CL			
		GW			
		CL			
		GW	AS ABOVE		
190		SW	SAND W/ TR GRAVEL & SILT, LT RED-GREY, VERY DENSE		
		GW	SANDY GRAVEL, WET		
		SP			
200		GW	SANDY GRAVEL W/ SILT & CLAY, RED-GREY, VERY DENSE, WET		
		GC	CLAYEY GRAVEL W/ SAND, RED-GREY, VERY DENSE, WET		
		GW	SANDY GRAVEL W/ SILT & CLAY, BROWN, VERY DENSE, WET		
210		GC	AS ABOVE EXCEPT WITH CLAY, RED-GREY		
		ML	SILT W/ SAND & TR CLAY, BROWN, SOFT, WET		13TH MAY, 2005
		CL	CLAY, BROWN, MEDIUM STIFF W/ TR SILT & SAND		
		SW	SAND W/ TR SILT & GRAVEL, RED-GREY, VERY DENSE, WET		
220		ML/CL	SILT W/ SOME CLAY & SAND, BROWN, MEDIUM STIFF, LAYERS INTER BEDDED W/ CLAY		
230					TOTAL DEPTH = 231.5'

PROJECT # : 0310-3154	DRILL DATE: 5/11-13/05
LOGGED BY: BS	
PROJECT MANAGER: CHUCK GORDON	
NOTES:	
DEPTH TO WATER: 94FT	
RIG TYPE: SR102	DIAMETER: 9"
DRILLER: PROSONIC	TOTAL DEPTH: 231.5'
DRILLING METHOD: ROTOSONIC	

TERRANEXT

FIELD BOREHOLE LOG
AVB 133-01
PHOENIX, ARIZONA

AVB-69-01 1 1N, K3E Sec. 8

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU**

Project *Central Phx Groundwater Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*
Surface Elev. _____ Total Hole Depth *305 ft.* Diameter *9 3/4 in.*
Top of Casing _____ Water Level Initial *93 ft.* Static _____
Screen: Dia *4 in.* Length *50 ft.* Type/Size *0.020 in.*
Casing: Dia *4 in.* Length *253/2 ft.* Type *Low Carbon Steel*
Fill Material *Colorado Sand 10/20* Rig/Core *AP-1000*
Drill Co. *Layne Christensen* Method *AP-1000 Dual-wall percussion drill*
Driller *B. Morris* Log By *T. Busby* Date *5/12-17/97* Permit # *55-562052*
Checked By [signature] License No. *AZ 21616*

See Site Map For Boring Location

COMMENTS:

All USCS soil type boundaries are gradational. All percentages are approximate.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2							
0							0 – 12 Feet: Clayey Silty Sand Brown, dry to damp, very poorly sorted, soft. Sand is fine to coarse grained, subrounded to subangular. Trace gravel. Sand 60%, silt 30%, clay 10%.
2							
4							
6		0	grab			SM	
8							
10		0	grab				
12							12 – 22 Feet: Sand Brown, damp, very poorly sorted, soft. Sand is fine to coarse grained, subrounded. Sand 90%, silt 10%.
14							
16		0	grab			SW	
18							
20		0	grab				
22							22 – 27 Feet: Gravelly Silty Sand Brown, dry, poorly to very poorly sorted. Sand is fine to coarse grained, subrounded. Gravel is fine to coarse, subrounded. Sand 60%, silt 20%, gravel 20%.
24						SM	

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU**

Project *Central Phx Groundwater Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24							Gravelly Silty Sand (continued)
		0	grab				
26							
28							27 – 37 Feet: Silty Sand Dark brown, dry to damp, very poorly sorted. Sand is fine to coarse grained, subrounded. Sand 70%, silt 30%.
30		0	grab			SM	
32							32 – 37 Feet: Some gravel present.
34							
		0	grab				
36							
38							37 – 42 Feet: Sandy Gravel Brown, dry, very poorly sorted, semi-hard. Gravel is fine to coarse, subrounded to subangular. Sand is fine to coarse grained, subrounded to subangular. Gravel 60%, sand 30%, silt 10%.
40		0	grab			GW	
42							42 – 47 Feet: Sand Dark brown, damp, poorly sorted, semi-hard. Sand is fine to coarse grained, subrounded to subangular. Gravel is fine to coarse, subrounded. Sand 80%, clay 10%, gravel 10%.
44						SW	
		0	grab				
46							
48							47 – 87 Feet: Gravelly Silty Sand Dark brown, damp, very poorly sorted. Sand is fine to coarse grained, subrounded. Gravel is fine to coarse, rounded to subrounded. Sand 70%, silt 20%, gravel 10%.
50		0	grab				
52						SM	
54							
		0	grab				
56							

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU**

Project *Central Phx Groundwater Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
56							Gravelly Silty Sand (continued)
58							
60		0	grab				
62							
64							
		0	grab				Sand is fine to medium grained.
66							
68							
70		0	grab				
72						SM	
74							
		0	grab				
76							
							77 - 87 Feet: Cuttings are moist.
78							
80		0	grab				
82							
84							
		0	grab				Sand is fine to medium grained. Color changes to light brown.
86							
88						SP	87 - 92 Feet: Sand

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU**

Project *Central Phx Groundwater Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
88							Sand (continued) Brown, moist, very well sorted. Sand is medium grained. Sand 100%.
90		0	grab			SP	
92							92 – 103 Feet: Silty Clay Brown, moist to wet, moderate to poorly sorted. Sand is fine grained. Clay 70%, silt 25%, sand 5%.
94							Initial water level.
		0	grab				Very moist to wet.
96							
98							
100		0	grab			CH	Fine to coarse gravel.
102							
104							103 – 107 Feet: Gravelly Sandy Clay Brown, saturated, very poorly sorted. Sand is fine to coarse grained, subrounded to subangular. Gravel is fine, subrounded to subangular. Clay 70%, sand 20%, gravel 10%.
		0	grab				
106							
108							107 – 127 Feet: Gravelly Silty Sand Brown, saturated, very poorly sorted. Sand is fine to coarse grained, subrounded to subangular. Gravel is fine to coarse, rounded to subrounded. Sand 50%, silt 30%, gravel 20%.
110		0	grab				
112							
114						SM	
		0	grab				
116							
118							
120							

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU**

Project *Central Phx Groundwater Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
120		0	grab			Gravelly Silty Sand (continued)
122						
124					SM	
		0	grab			
126						
128						127 – 157 Feet: Gravelly Sand Sand is fine to coarse grained, subrounded to subangular. Gravel is fine to coarse, well rounded to subrounded. Sand 80%, gravel 15%, silt 5%.
130		0	grab			
132						
134						
		0	grab			
136						
138						
140		0	grab		SW	
142						
144						
			grab			
146						
148						
150		0	grab			
152						

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU**

Project *Central Phx Groundwater Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
152						Gravelly Sand (continued)
154		0	grab		SW	
156						
158						157 – 163 Feet: Silty Gravelly Clay Brown, saturated, poorly sorted. Gravel is fine to coarse, rounded to subrounded. Clay 60%, gravel 25%, silt 15%.
160		0	grab		CH	
162						
164						163 – 178 Feet: Gravelly Sand Brown, saturated, very poorly sorted. Sand is fine to coarse grained, subrounded to subangular. Gravel is fine to coarse, rounded to subrounded. Sand 80%, gravel 20%.
166		0	grab			
168						
170		0	grab		SW	
172						
174		0	grab			
176						
178						178 – 188 Feet: Silty Clay Brown, damp to wet, moderate to poorly sorted. Trace of gravel. Clay 60%, silt 40%.
180		0	grab		CH	
182						
184						

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU**

Project *Central Phx Groundwater Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
184							
		0	grab			CH	No gravel.
186							
188							188 – 202 Feet: Sandy Gravel Brown, saturated, very poorly sorted. Gravel is fine to coarse, well rounded to subangular. Sand is fine to coarse grained, subrounded to subangular. Gravel 50%, sand 40%, silt 10%.
190		0	grab				
192							
194							
		0	grab			GW	
196							
198							
200		0	grab				
202							202 – 218 Feet: Silty Sand Brown, saturated, very poorly sorted. Sand is fine to coarse grained, subrounded to subangular. Sand 80%, silt 20%.
204							
		0	grab				Some gravel at 205 feet.
206							
208							
						SM	
210		0	grab				No gravel.
212							
214							
		0	grab				No gravel.
216							

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU**

Project *Central Phx Groundwater Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
216							Silty Sand (continued)
						SM	Middle Aquifer Unit (MAU) encountered at 218 feet.
218							218 – 252 Feet: Silty Clay Brown, moist, hard to very hard. Sand is fine grained. Clay 75%, silt 20%, sand 5%.
220		0	grab				
222							
224		0	grab				More clay content.
226							
228							
230		0	grab				
232						CH	
234		0	grab				
236							
238							
240		0	grab				
242							
244		0	grab				
246							
248							

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MAU**

Project *Central Phx Groundwater Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
248						
250		0	grab		CH	Producing a lot of water.
252						252 – 277 Feet: Gravelly Coarse Sand Brown, saturated, poorly sorted. Sand is fine to coarse grained. Gravel is fine, subrounded. Sand 80%, silt 10%, gravel 10%.
254		0	grab			Producing lots of water.
256						
258						
260		0	grab			
262					SW	
264						
266		0	grab			
268						
270		0	grab			
272						272 – 277 Feet: Sandy Clay Brown, saturated, well to very well sorted. Sand is fine grained. Clay 60%, sand 35%, gravel 5%.
274						
276					CH	
278						277 – 293 Feet: Silty Clay Brown, damp to moist, well sorted. Clay 80%, silt 20%.
280		0	grab			Dried out between 280–285 feet.

FLUOR DANIEL GTI

Drilling Log

Monitoring Well MAU

Project *Central Phx Groundwater Plume Area* Owner *ADEQ*
Location *19th Avenue and Pima St., Phoenix, Arizona* Proj. No. *023300586*

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
280		0	grab				Silty Clay (continued)
282							
284							
286		0	grab			CH	Wet.
288							
290		0	grab				Indurated.
292							
294						SW	293 – 303 Feet: Sand Brown, saturated, very poorly sorted. Sand is fine to coarse grained. Gravel is fine, subrounded. Sand 80%, silt 10%, gravel 10%.
296		0	grab				Increase in water.
298							
300		0	grab				
302							
304						CH	303 – 305 Feet: Silty Clay Brown, damp to moist, well sorted. Clay 80%, silt 20%. Begins to dry out and loses gravel.
306							305 Feet: Total Depth of Monitoring Well MAU
308							
310							
312							

BID 103

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	
0	12	sandy clay
12	180	sand,gravel,boulders
180	238	sand,gravel
238	253	clay
253	270	sand,gravel
270	275	cemented clay
275	300	caliche
300	315	soft clay, small gravel
315	340	soft sandy clay, silt
340	358	hard clay
358	375	soft sandy clay
375	390	clay, gravel
390	440	hard clay

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller's Name (Qualifying Party): Harvey Anderson

16825 S. Weber Drive
Street

Chandler AZ 85226
City State Zip

(602) 961-1141 3/11/97
Phone Number Date

DWR 55-55 (Rev 2/96)

SURFACE ELEV. 1055.34 FEET IN MSL

LOCATION T 1N R 2E S 13

SE 1/4 NW 1/4 SE 1/4

DEPTH BELOW SURFACE (FEET)	GEOLOGIC SUBUNIT	COMPLETION INTERVAL (FEET)	WELL SCHEMATIC	SCREEN INTERVAL (FEET)	CASING SIZE/TYPE (INCHES)	BOREHOLE DIAMETER (INCHES) / METHOD	GEOLOGY
	S						SILTY SAND, SM, BROWN, FINE TO MEDIUM SAND WITH SILT, MINOR FINE GRAVEL, MINOR CALICHE.
40	A_1					13.75 MUD ROTARY	GRAVEL AND SANDY GRAVEL, GP, POORLY SORTED, CLAST SIZE RANGES FROM MEDIUM AND TO COBBLES AND BOULDERS.
80					10.75 STEEL		
120	A_2				5.0 SCH. 80 PVC BLANK		SANDY GRAVEL AND GRAVELLY SAND, GP-SP, POORLY SORTED, SOME SAND LENSES INCREASING FINES PERCENTAGE WITH DEPTH.
160							
200	B						SILTY SAND WITH GRAVEL, SM-GM, REDDISH BROWN, POORLY SORTED, FINE TO COARSE SAND WITH SILT AND CALY, MINOR FINE GRAVEL.
240	C	268 270 273		280		9.88 MUD ROTARY	SANDY GRAVEL WITH SILT AND CLAY, GM, BROWN, POORLY SORTED, INTER-BEDDED SAND (SP) AND GRAVEL (GP) LENSES, DECREASING FINES PERCENTAGE WITH DEPTH.
280					6.0 SCH. 80 PVC SCREEN 0.040 SLOT		
320		322 324		320			
360	MFU	TD=370					SILTY SAND WITH GRAVEL, SM-GM, INTERBEDDED SANDY SILT, CLAYEY SILT, AND SILTY SAND WITH MINOR FINE TO MEDIUM GRAVEL.
400							
0							
0							
0							
0							
0							

DM-3D MONITOR WELL COMPLETION LOG