

# BAKER HUGHES

## ALIGNED BOREHOLE PROFILE LOG

Baker Atlas

FILE NO:

COMPANY

SIERRA GEOTHERMAL POWER, INC.

APN NO:

WELL

ALUM 25-29

27-008-80074

FIELD

ALUM

STATE NEVADA

Ver. 3.87

LOCATION:

SHL: 2235.18' FSL & 938.11' FWL

TIGHT HOLE

SEC 29

TWP 1N

RGE 28.5 E

OTHER SERVICES

HDL

ZOL/CN

XMAC

STAB/CBIL

TEMP

PERMANENT DATUM

G.L.

ELEVATION

4803.57 FT

LOG MEASURED FROM

K.B.

18.0 FT

ABOVE P.D.

ELEVATIONS:

KB

4919.57 FT

DF

4803.57 FT

DRILL MEAS. FROM

K.B.

18.0 FT

ABOVE P.D.

KB

4919.57 FT

DF

4803.57 FT

DATE

25-NOV-2008

RUN

TRIP

2

5

SERVICE ORDER

575896

DEPTH DRILLER

3314 FT

DEPTH LOGGER

3311 FT

BOTTOM LOGGED INTERVAL

3308 FT

TOP LOGGED INTERVAL

2280 FT

CASING DRILLER

10.75 IN

Ø 2300 FT

CASING LOGGER

2280 FT

BIT SIZE

9.875 IN

TYPE OF FLUID IN HOLE

LSND

DENSITY

8.8 LB/G

40 S

PH

9.7

6 C3

SOURCE OF SAMPLE

FLOWLINE

RM AT MEAS. TEMP.

0.885 CHM

Ø 67.72 DEGF

RM AT MEAS. TEMP.

0.826 CHM

Ø 87.54 DEGF

RM AT MEAS. TEMP.

1.018 CHM

Ø 88.90 DEGF

SOURCE OF RMF

MEASURED

MEASURED

RM AT BHT

0.282 CHM

Ø 227 DEGF

TIME SINCE CIRCULATION

31 HOURS

MAX. RECORDED TEMP.

227 DEGF

EQUIP. NO.

IN-4232

FALLON, NV

RECORDED BY

C. PEAVY

WITNESSED BY

J. HANBLIN

IN MAKING INTERPRETATIONS OF LOGS OUR EMPLOYEES WILL GIVE CUSTOMER THE BENEFIT OF THEIR BEST JUDGEMENT. BUT SINCE ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS, WE CANNOT, AND WE DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATION. WE SHALL NOT BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COST, DAMAGES, OR EXPENSES WHATSOEVER INCURRED OR SUSTAINED BY THE CUSTOMER RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR EMPLOYEES.

### REMARKS

RUN 2 TRIP 5: CYOL WAS COMPUTED USING 8.625" CASING (BVOL AND CYOL UNITS ARE IN CUBIC FEET) CALIPER WAS VERIFIED IN CASING.

A MAXIMUM READING THERMOMETER WAS RUN AS WELL AND THE MAXIMUM TEMPERATURE IT REACHED WAS: 227 DEGF

THANK YOU FOR CHOOSING BAKER ATLAS!  
CREW: R. DANKLEFSEN AND J. HAYCOCK  
RIG: ENSIGN 561

### EQUIPMENT DATA

RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION
2	5	PWR	4430KB	370550	FREE
2	5	SNPL	3844KD	10201370	FREE
2	5	TRM	3681XA	10203010	FREE
2	5	WTS	3514KB	10200389	FREE
2	5	SEZ	1328VA	10203000	FREE

2	5	CRIT	4401KB	10080238	FREE
2	5	STAR PWR	1022PA	10565885	FREE
2	5	STAR EA	1038EA	10402331	FREE
2	5	STAR MA	4238MA	1173888	END-DEVICE
2	5	ISO	38822A	10348282	FREE
2	5	KALIT	3838IA	10200308	FREE
2	5	CEIL	1671EB/MB	154383/183418	CENTRALIZED

## MAIN LOG 5"/100FT SCALE

ECLIPS 6.01 Feb 21, 2008  
Updates: 1,43

Thu Nov 26 05:14:18 2009

Perplft /main/62

Cplot

Pdf\_Cpp /main/16

Fileview 5.42

### PARAMETER AND FILTER SUMMARY REPORT

FILE: /data/575998/k857m03.prm  
LOGGING MODE: DEPTH DIRECTION: UP  
TOP DEPTH: 2274.500 ft BOTTOM DEPTH: 3315.884 ft

#### SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
TENSION	FILTER ()	medium (1)		TOP	BOTTOM
GR	FILTER ()	medium (1)		''	''

#### BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
CASING - BOREHOLE & CEMENT VOLUME	CASING O.D.	8.625	1in	TOP	BOTTOM
BIT SIZE	BIT SIZE	9.875	1in	''	''

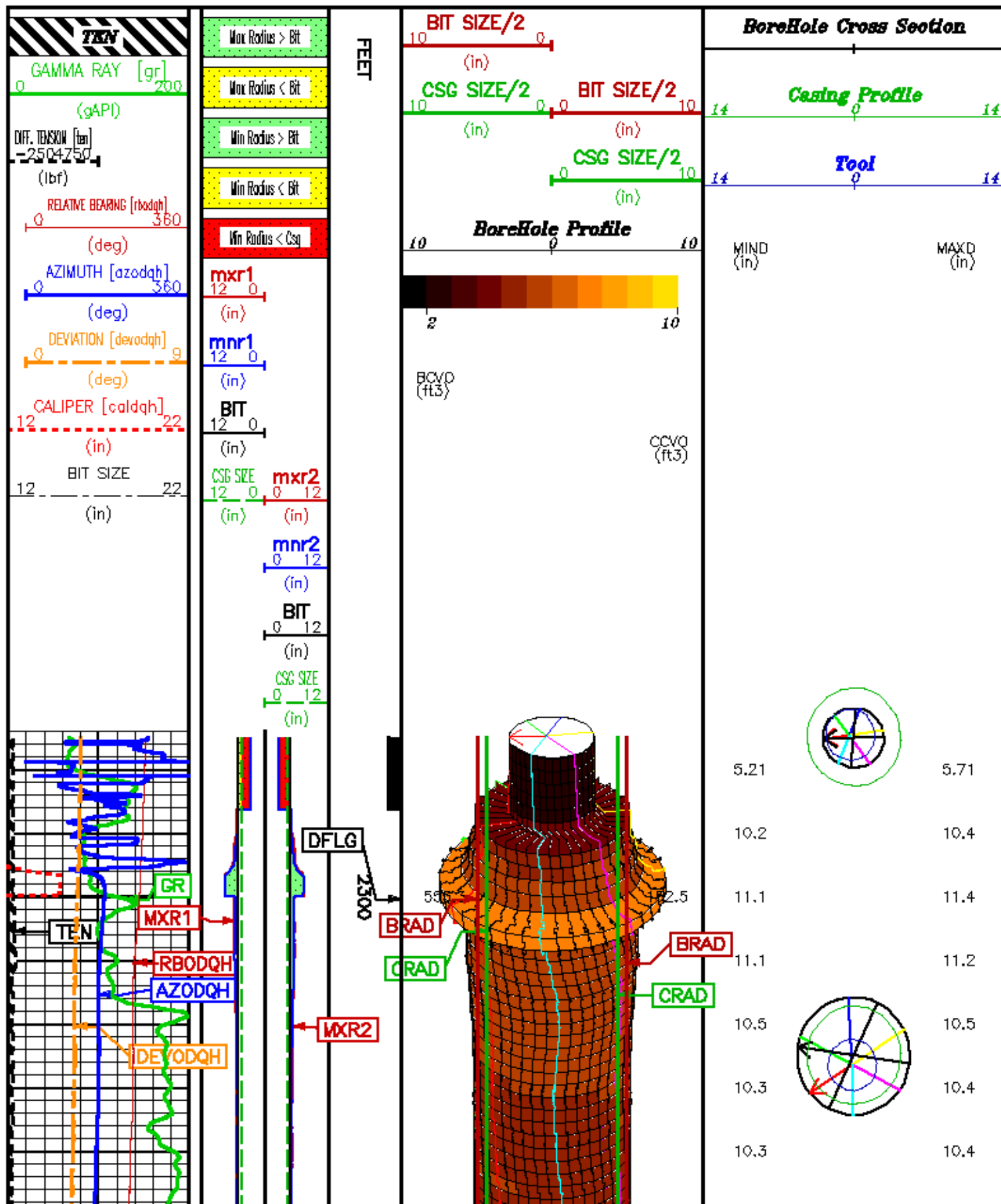
### CURVE DESCRIPTION REPORT

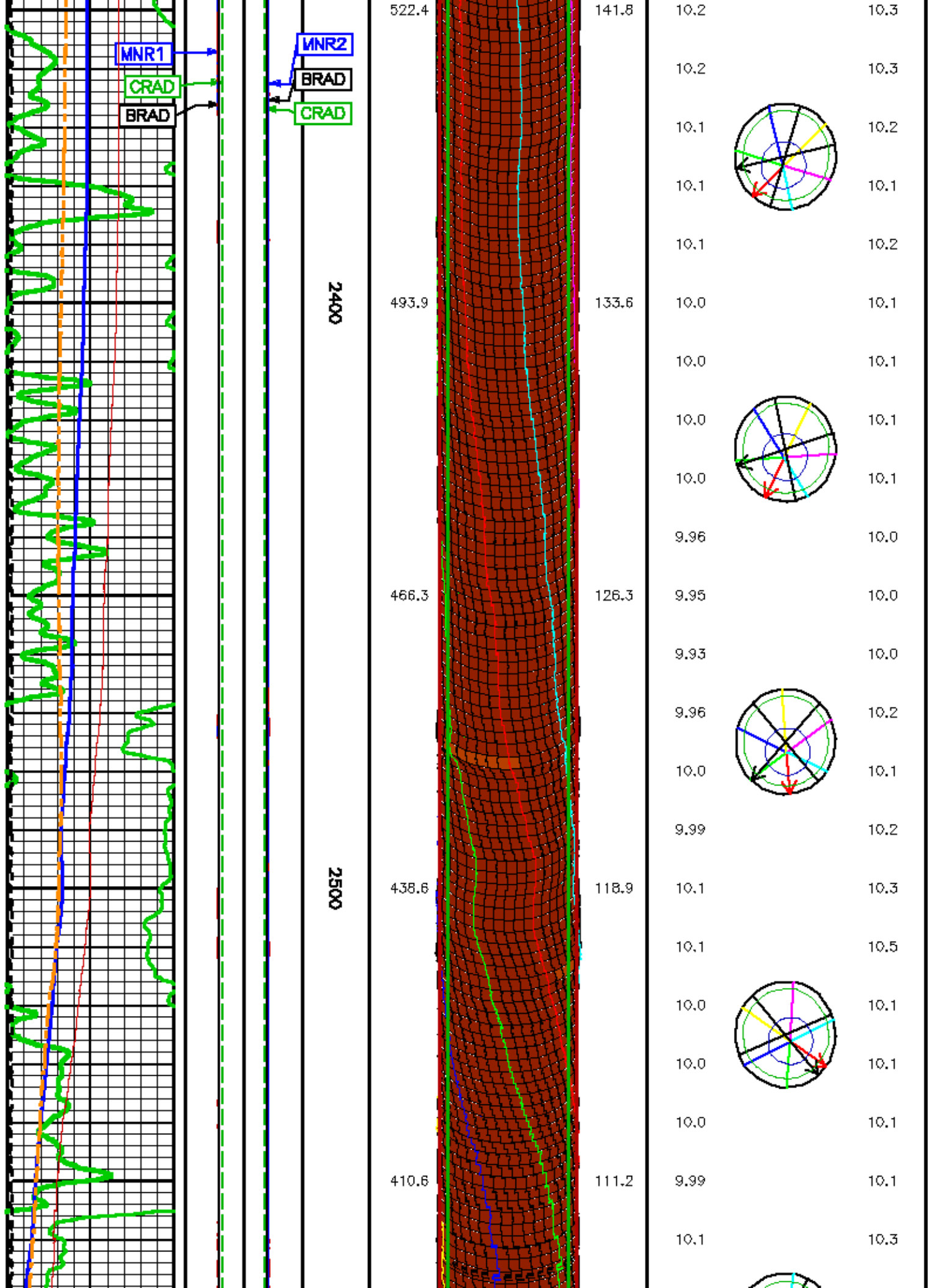
CURVE NAME	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
F1:AZ00QH	AZ00.H	Nov 25 22:04:12 2009	AZIMUTH OF REFERENCE PAD
F1:BCVD		Nov 25 22:04:12 2009	BOREHOLE CUMULATIVE VOLUME.
F1:BIT	BIT	Nov 25 22:04:12 2009	BIT SIZE
F1:BRAD	BRAD_1L	Nov 25 22:04:12 2009	BIT RADIUS
F1:CALDQH	CALD.H	Nov 25 22:04:12 2009	BOREHOLE CALIPER FROM MULTI-ARM TOOL
F1:CCVD		Nov 25 22:04:12 2009	CEMENT CUMULATIVE VOLUME.
F1:CRAD	CRAD_1L	Nov 25 22:04:12 2009	CASING RADIUS
F1:DEV00QH	DEV00QH	Nov 25 22:04:12 2009	DEVIATION
F1:DFLG	DFLG	Nov 25 22:04:12 2009	DEAD CROSS-SECTIONAL AREA FLAG.
F1:GR	GR	Nov 25 22:04:12 2009	GAMMA RAY
F1:MAXD		Nov 25 22:04:12 2009	MAXIMUM CALIPER DIAMETER.
F1:MIND		Nov 25 22:04:12 2009	MINIMUM CALIPER DIAMETER.
F1:MINR1	MINR1	Nov 25 22:04:12 2009	MINIMUM RADIUS 1.
F1:MINR2	MINR2	Nov 25 22:04:12 2009	MINIMUM RADIUS 2.
F1:MXR1	MXR1	Nov 25 22:04:12 2009	MAXIMUM RADIUS 1.
F1:MXR2	MXR2	Nov 25 22:04:12 2009	MAXIMUM RADIUS 2.
F1:RB00QH	RB00.H	Nov 25 22:04:12 2009	RELATIVE BEARING (RELATIVE TO HIGH SIDE OF BOREHOLE)
F1:TEN	TEN	Nov 25 22:04:12 2009	DIFFERENTIAL TENSION

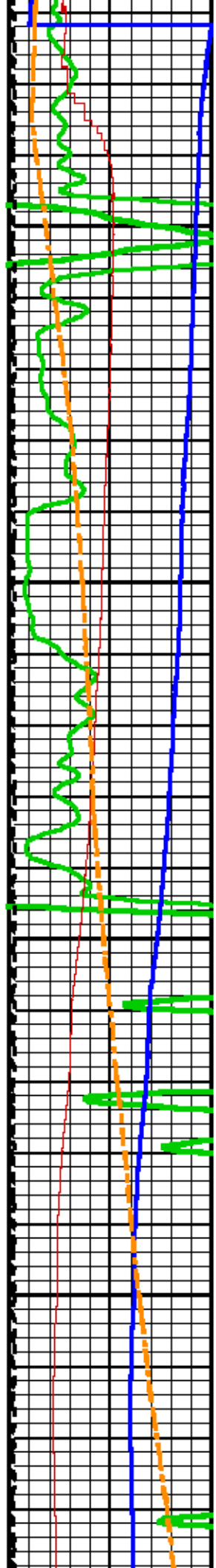
### CURVE MEASURE POINT OFFSET

CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
AZ00QH	52.89	CRAD	25.25	MINR1	25.25	RB00QH	52.89
BIT	0.00	DEV00QH	52.89	MINR2	25.25	TEN	0.00
BRAD	25.25	DFLG	25.25	MXR1	25.25		
CALDQH	25.34	GR	85.00	MXR2	25.25		

Presentation : c:\p1\dat1a\575986\bhp\_align-mcal.pdf [5"/100" Scale]  
 Plot Interval : 2275 - 3313.25 Feet  
 Data File 1 : F1 : c:\p1\dat1a\575986\BHP\_ALIGN.txt  
 Created On : Nov 25 22:04:12 2008  
 Company : SIERRA GEOTHERMAL POWER, INC.  
 Well : ALUM 25-29  
 Field : ALUM  
 File Interval : 2196.75 - 3313.5 Feet  
 Oct : k837m







2600

2700

382.1

353.0

324.5

296.8

103.0

94.2

85.9

78.5

10.2

10.1

10.0

10.0

10.1

10.2

10.2

10.1

10.0

10.1

10.0

10.1

9.99

10.0

9.98

10.0

10.0

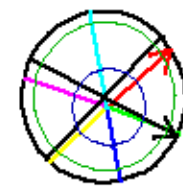
10.0

10.0

10.0

9.99

10.0



10.4

10.3

10.2

10.0

10.5

10.5

10.6

10.5

10.3

10.4

10.3

10.5

10.4

10.0

10.1

10.0

10.1

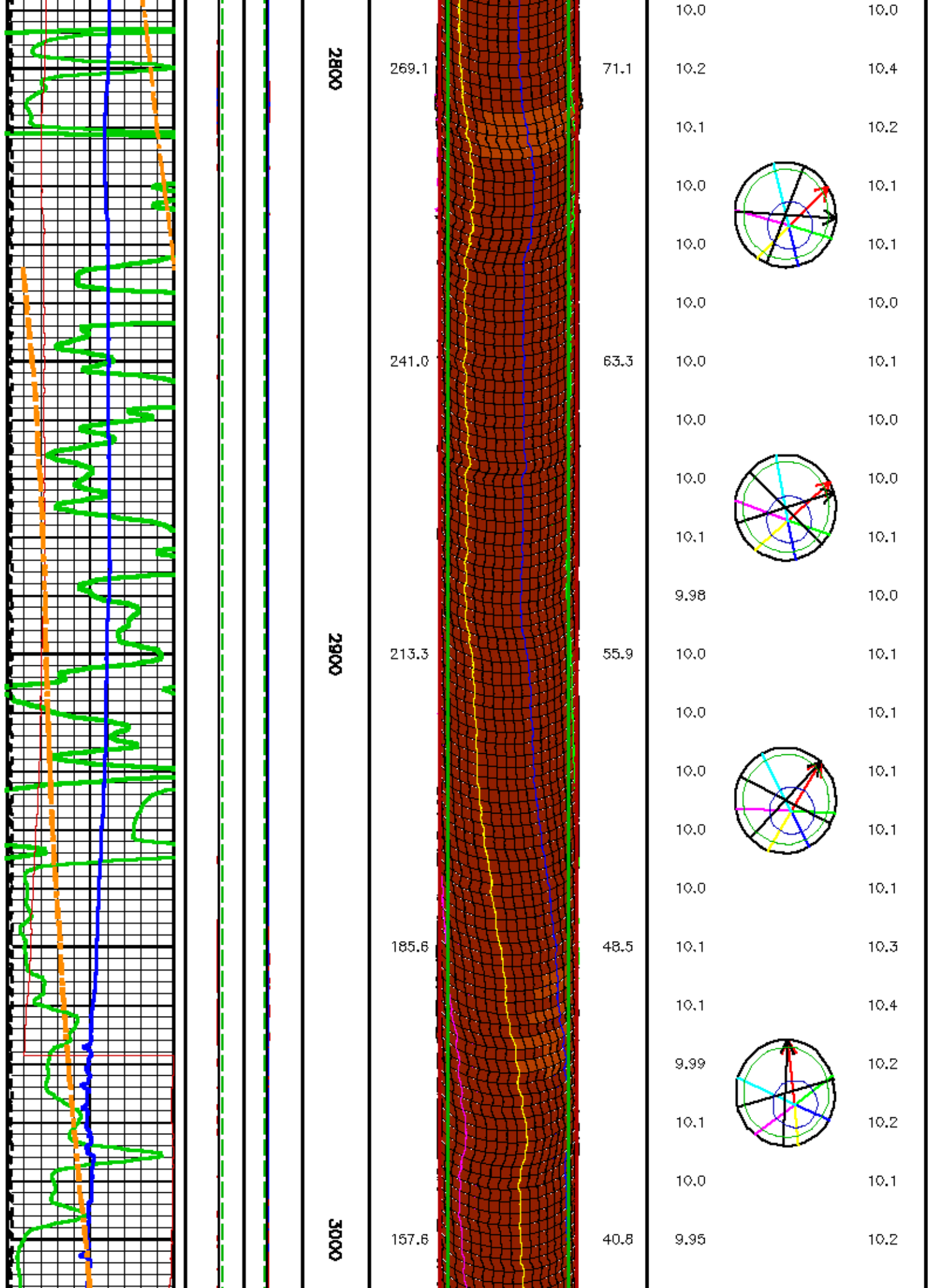
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10.0

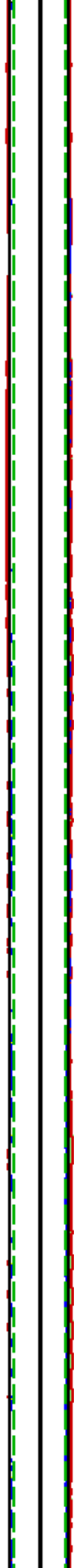
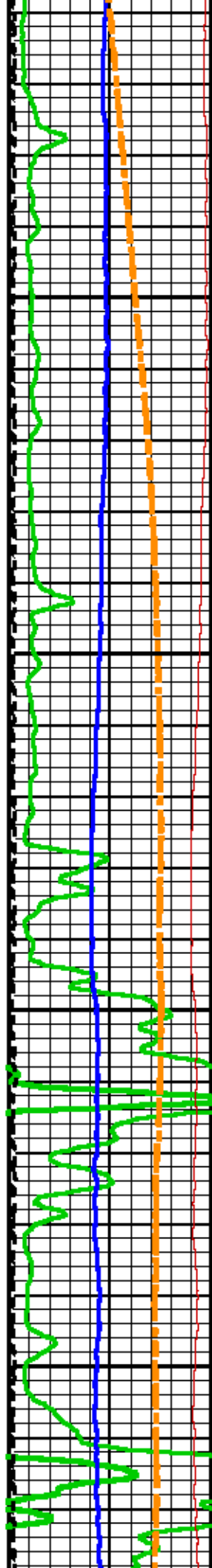
10.0

10.0

10.0







3100

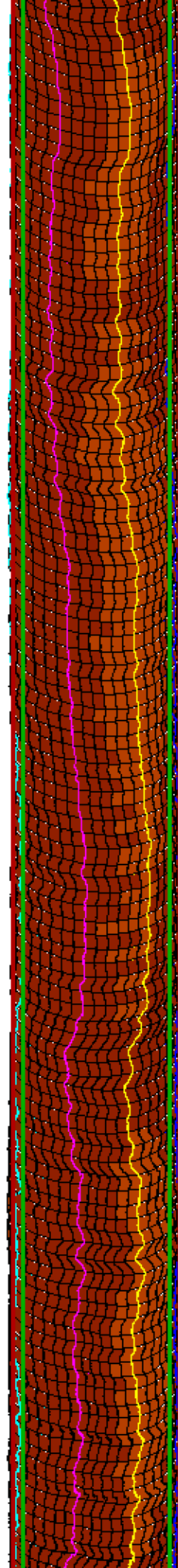
3200

129.7

101.3

73.6

46.5



33.2

25.0

17.7

10.8

9.69

9.88

9.93

10.0

10.0

10.0

9.97

10.0

9.81

10.0

9.75

9.70

9.93

9.83

9.83

9.43

9.68

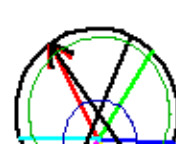
9.46

9.54

9.41

9.53

9.54



10.3

10.4

10.5

10.5

10.5

10.6

10.8

10.7

10.5

10.6

10.6

10.2

10.2

10.3

10.1

10.1

10.7

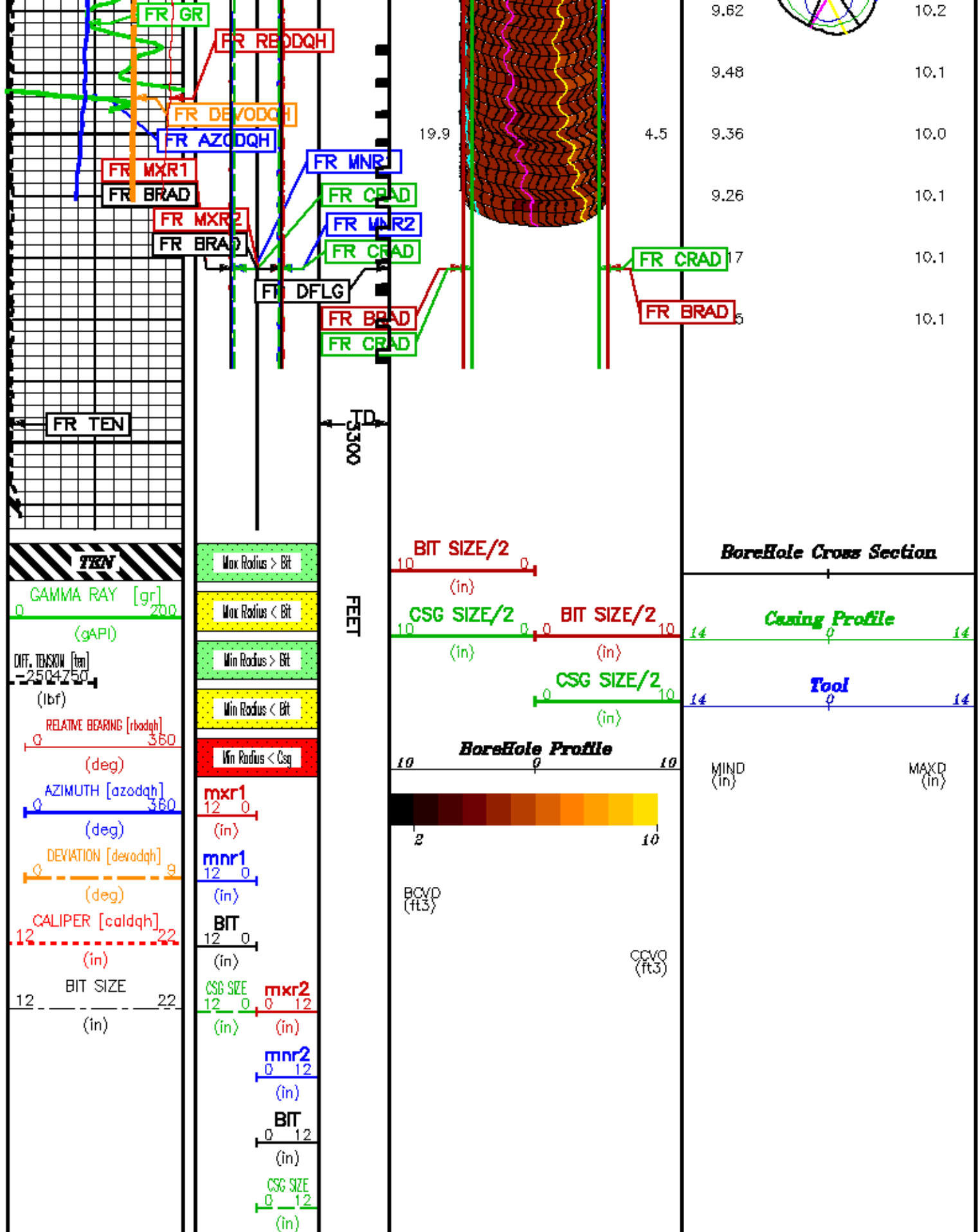
10.3

10.7

10.5

10.2

10.2





## GR PRIMARY CALIBRATION SUMMARY

TOOL #: 1329XA 10203000

DATE/TIME PERFORMED: Sun Oct 25 14:28:31 2009

UNIT #: 3885TD ML4232

CALB JIG #: 4702NK DA-321

	BACKGROUND (cts/s)	CALBRTR ON (cts/s)	CR DIFF (cts/s)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	CALBRTR (gAPI)
GR	269.02	1162.96	893.9	0.168	45.14	195.14	150

## GR PRIMARY VERIFICATION SUMMARY

TOOL #: 1329XA 10203000

DATE/TIME PERFORMED: Sun Oct 25 14:33:28 2009

UNIT #: 3885TD ML4232

VERI JIG #: 4702NK DA-321

	BACKGROUND (cts/s)	CALBRTR ON (cts/s)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	DIFF. (gAPI)
GR	269.44	1191.73	0.168	45.21	199.97	154.76

## GR BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1329XA 10203000

DATE/TIME PERFORMED: Tue Nov 24 23:50:39 2009

DAYS SINCE CAL: 30

UNIT #: 3885TD ML4232

VERI JIG #: 4702NK DA-321

	BACKGROUND (cts/s)	CALBRTR ON (cts/s)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	DIFF. (gAPI)
GR	255.24	1118.22	0.168	42.83	187.64	144.81

## GR AFTER LOG VERIFICATION SUMMARY

TOOL #: 1329XA 10203000

DATE/TIME PERFORMED: Wed Nov 25 02:09:11 2009

DAYS SINCE CAL: 30

UNIT #: 3885TD ML4232

VERI JIG #: 4702NK DA-321

	BACKGROUND (cts/s)	CALBRTR ON (cts/s)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	DIFF. (gAPI)
GR	303.09	1132.69	0.168	50.86	190.06	139.21

## STARCAL PRIMARY CALIBRATION SUMMARY

TOOL #: 4236MA 173868

DATE/TIME PERFORMED: Fri Nov 20 11:48:56 2009

UNIT #: 3885TD ML4232

	SMALL RING (raw)	LARGE RING (raw)	MULT (in/raw)	ADD (in)	SMALL RING (in)	LARGE RING (in)
RADIUS 1	954.6	2363.3	0.0021	1.9671	4.000	7.000
RADIUS 2	1076.7	2485.3	0.0021	1.7071	4.000	7.000
RADIUS 3	995.6	2439.0	0.0021	1.9306	4.000	7.000
RADIUS 4	1005.9	2452.4	0.0021	1.9139	4.000	7.000
RADIUS 5	1059.6	2527.1	0.0020	1.8340	4.000	7.000
RADIUS 6	1110.8	2536.6	0.0021	1.6627	4.000	7.000
CALIPER 1					8.000	14.000
CALIPER 2					8.000	14.000

CALIPER 2  
CALIPER 3

8.000 14.000  
8.000 14.000

SMALL RING LARGE RING

PAD FORCE % 5.593 5.593

DC MOTOR V 0.1 0.1

### STARCAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 4236MA 173868 DATE/TIME PERFORMED: Wed Nov 25 20:37:08 2009 DAYS SINCE CAL: 5

UNIT #: 3885TD ML4232

	I.D. (raw)	MULT	ADD	I.D. (in pct V)	CASING SIZE (in)
RADIUS 1	2011.7	0.00213	1.96707	6.251	
RADIUS 2	2135.5	0.00213	1.70710	6.255	
RADIUS 3	1423.3	0.00208	1.93065	4.889	
RADIUS 4	1008.3	0.00207	1.91392	4.005	
RADIUS 5	1011.0	0.00204	1.83397	3.901	
RADIUS 6	1552.2	0.00210	1.66267	4.929	
CALIPER 1				10.256	10.050
CALIPER 2				10.156	
CALIPER 3				9.818	
PAD FORCE				11.118	
DC MOTOR V				0.0	

### STARCAL AFTER LOG VERIFICATION SUMMARY

TOOL #: 4236MA 173868 DATE/TIME PERFORMED: Thu Nov 26 00:30:12 2009 DAYS SINCE CAL: 5

UNIT #: 3885TD ML4232

	I.D. (raw)	MULT	ADD	I.D. (in pct V)	CASING SIZE (in)
RADIUS 1	1367.4	0.00213	1.96707	4.879	
RADIUS 2	2158.2	0.00213	1.70710	6.303	
RADIUS 3	2074.9	0.00208	1.93065	6.243	
RADIUS 4	1445.3	0.00207	1.91392	4.911	
RADIUS 5	959.5	0.00204	1.83397	3.795	
RADIUS 6	1042.2	0.00210	1.66267	3.856	
CALIPER 1				9.791	10.050
CALIPER 2				10.099	
CALIPER 3				10.099	
PAD FORCE				11.234	
DC MOTOR V				1.6	

# INSTRUMENT CONFIGURATION

Source File: /dallia/575896/k837m/C090-ldg

## CABLEHEAD

Series : CABL338  
Mnemonic : CBLH  
Diameter : 3.38"  
Weight : 24 lbs  
Length : 5.50'

## DOWNHOLE POWER ADAPTER

Series : 4430XB  
Mnemonic : DHPA  
Diameter : 3.62"  
Weight : 88 lbs  
Length : 5.27'

## SWIVEL

Series : 3944XD  
Mnemonic : SWVL

## TTRM SUB

Series : 3681XA  
Mnemonic : TTRM  
Diameter : 3.63"

## WTS COMMON REMOTE

Series : 3514XB  
Mnemonic : WTS  
Diameter : 3.63"  
Weight : 128 lbs  
Length : 6.36'

## DIGITAL SPECTRALOG

Series : 1329XA  
Mnemonic : DSL  
Diameter : 3.63"  
Weight : 130 lbs  
Length : 7.31'

## DIGITAL ORIENTATION

Series : 4401XB  
Mnemonic : ORIT  
Diameter : 3.38"  
Weight : 110 lbs  
Length : 10.81'

## C6PC IMAGER POWER SUPPLY

Series : 1022PA  
Mnemonic : C6PC  
Diameter : 3.62"  
Weight : 118 lbs  
Length : 9.08'

## C6PC IMAGER ELECTRONICS

Series : 1038EA



95.40'

CABLEHEAD TOP

92.65'

TEMP MP  
RM MP

78.84'  
78.59'

GR MP

65.38'

ORIENT MP

52.98'

Mnemonic : C8PC  
Diameter : 3.62"  
Weight : 94 lbs  
Length : 9.08'

#### C8PC IMAGER MANDREL

Series : 4236MA  
Mnemonic : C8PC  
Diameter : 5.25"  
Weight : 278 lbs  
Length : 12.50'

#### ISOLATION RETURN SUB

Series : 3992XA

#### KNUCKLE JOINT (DOUBLE)

Series : 3939XA  
Mnemonic : KJUT  
Diameter : 3.38"  
Weight : 90 lbs

#### DIGITAL CBIL ELECTRONICS

Series : 1671EB  
Mnemonic : CBIL  
Diameter : 3.38"  
Weight : 120 lbs  
Length : 7.48'

#### DIGITAL CBIL MANDREL

Series : 1671MB  
Mnemonic : CBIL  
Diameter : 3.63"  
Weight : 150 lbs  
Length : 7.81'

#### BULL PLUG 3 3/8

TOTAL LENGTH: 95.40'  
TOTAL WEIGHT: 1481 lbs  
MAX DIAMETER: 0'5.25"

PAD MP 25.62'

MUD MP 3.55'

IMAGE MP 1.81'

0.00'



COMPANY  
WELL  
FIELD  
COUNTY

SIERRA GEOTHERMAL POWER, INC.

ALUM 25-29

ALUM

ESMERALDA

STATE NEVADA

FILE NO:

API NO:

27-009-90074

LOCATION:

SHL: 2235.18' FSL & 938.11' PVL  
SW/C

SEC 29 TWP 1N RGE 38.5 E

ELEVATIONS:

KB 4919.57 FT

DF

GL 4903.57 FT

DATE 25-NOV-2009

TIGHT HOLE

Baker Atlas

