025-30

digital logging, inc.

X-Y CALIPER LOG

RECEIVED
JUL - 6 1994
DEPT OF ENV PROTECTION
WEST PALM BEACH

File No. : 28-JUNE-1994
Company : YOUNGQUIST BROTHERS INC
Well : IW-#16
Field : S. DISTRICT WASTEWATER TREATMENT PLANT
County : DADE
State : FLORIDA
Country : USA

Location : MIAMI-DADE WATER & SEWER
SOUTH DISTRICT WWTP

Sect : Twp : Rge :

Recorded By : RANDY NITZ
Witnessed By : C. CAUSARA'S

Date : 28-JUNE-94
Run No. : 5

Permanent Datum :	PAD	
Drilling Measured From :	PAD	
Log Measured From:	PAD	
Above Permanent Datum :	0.0	FT
Depth--Driller :	2500.0	FT
Depth--Logger :	2482.0	FT
Bottom Log Interval :	2474.0	FT
Top Log Interval :	1875.0	FT
Casing Depth--Driller :	1900.0	FT
Casing Depth--Logger :	1900.0	FT
Casing Diameter :	34.000	IN
Bit Size :	12.250	IN

Unit No. : LU #78
Location : TULSA, OKLAHOMA

Elevations :

KB :	0.0	FT
DF :	0.0	FT
GL :	0.0	FT

Additional Services

GRT
SDT

GRT
CST

GRT
MST
DIT

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Run Number 5

Depth To Fluid	0.0	FT		
Fluid Type In Hole :	NATIVE WATER			
Density :	0.000	LB/GAL		
Viscosity :	0.000	SEC.		
pH :	0.000			
Fluid Loss :	0.000	CC		
Salinity :	0.000	PPM		
RM Source :	PIT			
RM :	0.180	OHMM at	85	F
RM at BHT :	0.160	OHMM at	99	F
RMF Source :	CALCULATED			
RMF :	0.140	OHMM at	85	F
RMF at BHT :	0.130	OHMM at	99	F
RMC Source :	CALCULATED			
RMC :	0.220	OHMM at	85	F
RMC at BHT :	0.190	OHMM at	99	F
Max Recorded Temp. :			99	F
Time Circulation Stopped :	10:00 6/28/94			
Operating Rig Time Hrs. :			4.0	

Sonde Serial Numbers

GRTB	GRT B 01
FEN	Not Calibrated
SDT	SDT 00 022
FEN	Not Calibrated

Casing Strings

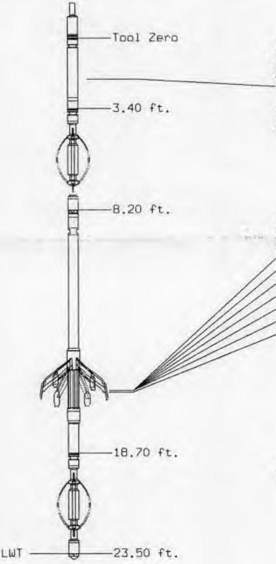
Size (IN)	Weight (LB/FT)	Bottom (FT)
34.000	0.00	190.00
44.000	0.00	980.00
54.000	0.00	160.00

Comments

SONDE STRING GRT/CEN/SDT/CEN
LOGGING SPEED 15'/MIN.
CALIPERS 1-4 USED FOR X CALIPER, AND CALIPERS 3-6 USED FOR Y CALIPER.
MUD INFORMATION N/A.
WELL SPOT LOCATION N/A.
DEPTH SAMPLE INT. = 0.2'.
10 LBS/GAL. NaCL PLUG PUMPED IN AT SURFACE TO KILL WELL.
12.250" IS USED FOR A PILOT HOLE.

Tool String Schematic

Total Tool Length - 23.50 **ft.**
Maximum Outside diameter - 4.40 **in.**
Net Weight in Air - 454.00 **lbs.**



Tool: GRTB **Length:** 3.40 **ft. O.D.:** 3.60 **in.**
Sonde ID : GRT-B-01

Measure Point	Stack Offset	Tool Offset
GRP	2.00	2.00

Tool: CEN **Length:** 4.80 **ft. O.D.:** 3.60 **in.**
Sonde ID : Not Calibrated

Tool: SDT **Length:** 10.50 **ft. O.D.:** 4.40 **in.**
Sonde ID : SDT-AA-022

Measure Point	Stack Offset	Tool Offset
CLD1, DR1A	16.40	8.20
CLD2, DR2A	16.40	8.20
CLD3, DR3A	16.40	8.20
CLD4, DR4A	16.40	8.20
CLD5, DR5A	16.40	8.20
CLD6, DR6A	16.40	8.20
DRSP	16.48	8.28

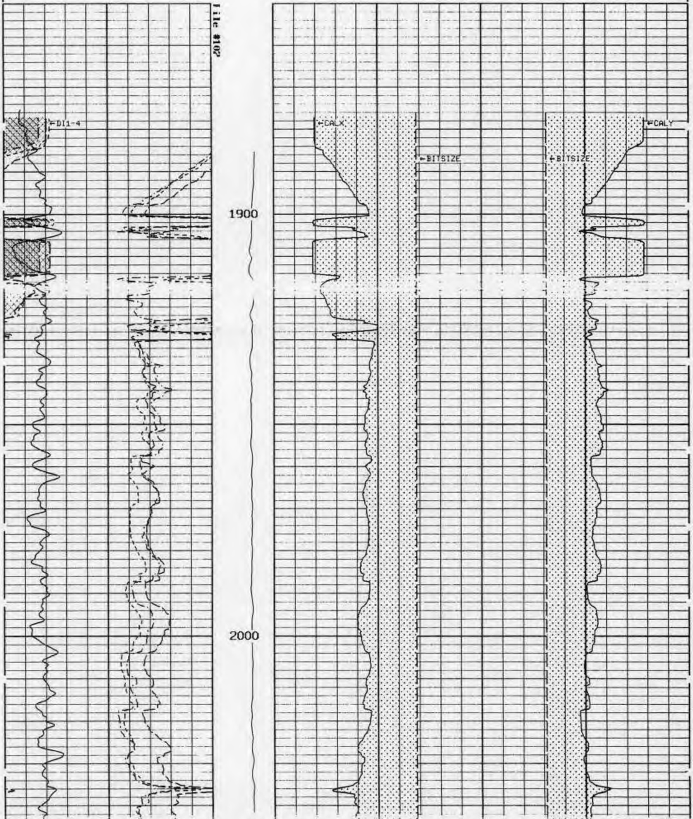
Tool: CEN **Length:** 4.80 **ft. O.D.:** 3.60 **in.**
Sonde ID : Not Calibrated

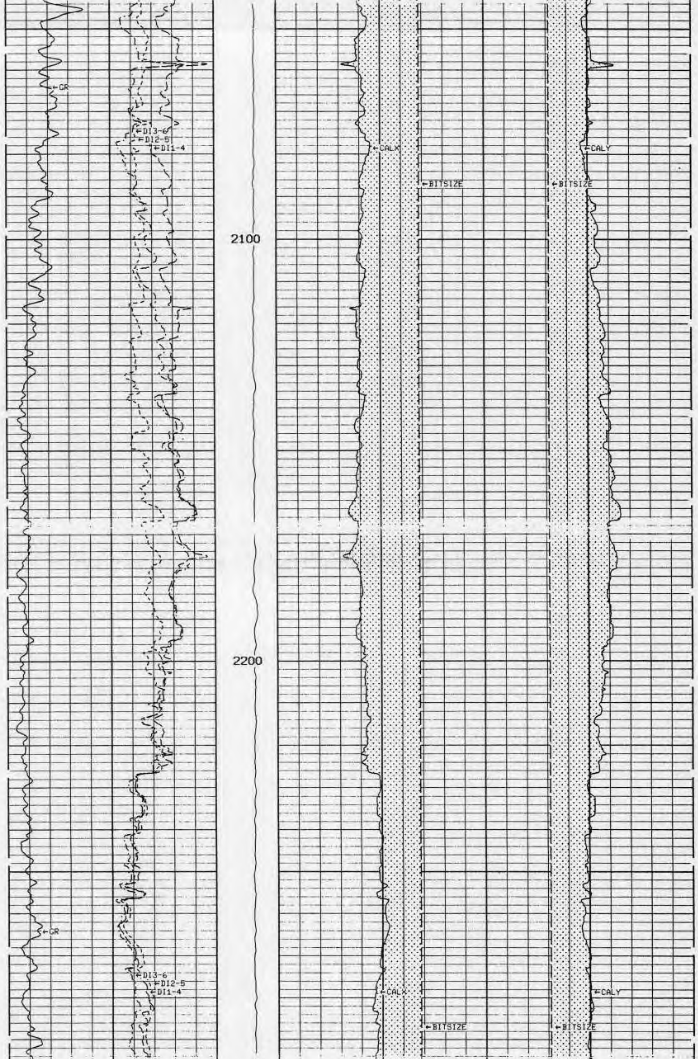
DIAMETER 3-6
INCHES

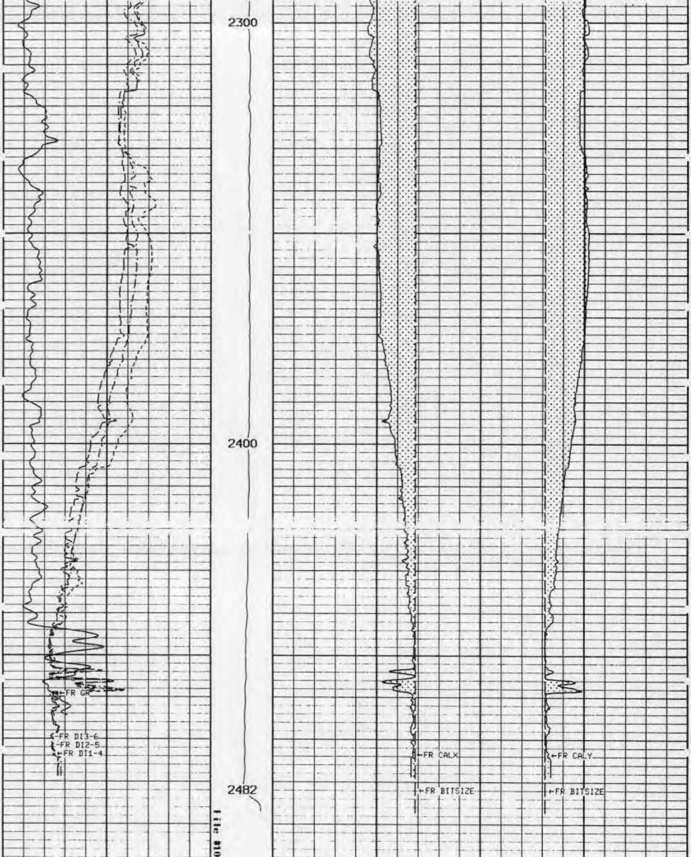
20 ▨	30
10	20

DIAMETER 2-5 INCHES 20 30 10 20			
DIAMETER 1-4 INCHES 20 30 10 20		BOREHOLE SIZE INCHES 26 6	BOREHOLE SIZE INCHES 6 26
GAMMA RAY API Units 100 200 0 100	TENSION LBS 2000 0	CALIPER X INCHES 26 6	CALIPER Y INCHES 6 26

MAIN LOG 1:240 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16







MAIN LOG 1:240 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16

GAMMA RAY API Units 100 200 0 100	TENSION LBS 2000 0	CALIPER X INCHES 26 6	CALIPER Y INCHES 6 26
DIAMETER 1-4 INCHES 20 30 10 20		BOREHOLE SIZE INCHES 26 6	BOREHOLE SIZE INCHES 6 26
DIAMETER 2-5 INCHES 20 30 10 20			

DIAMETER 3-6
INCHES
20 30
10 20

*** Borehole Zone Factors ***

Zone 1 99999.0 to 0.0 F

Drill Bit Size____________________ 12.250 IN

DIAMETER 3-6
INCHES
20 30
10 20

DIAMETER 2-5
INCHES
20 30
10 20

DIAMETER 1-4
INCHES
20 30
10 20

GAMMA RAY
API Units
100 200
0 100

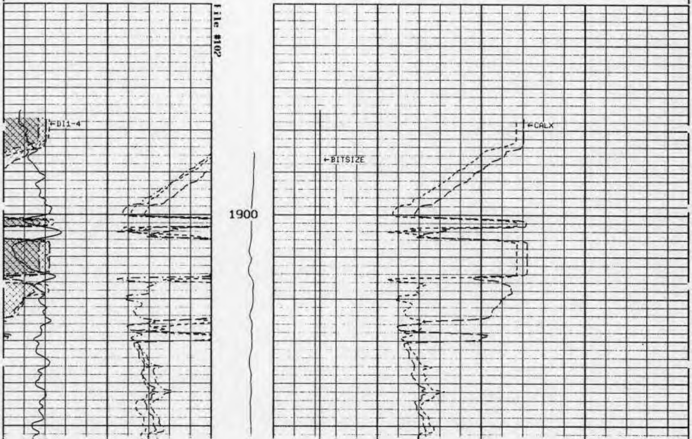
TENSION
LBS
2000 0

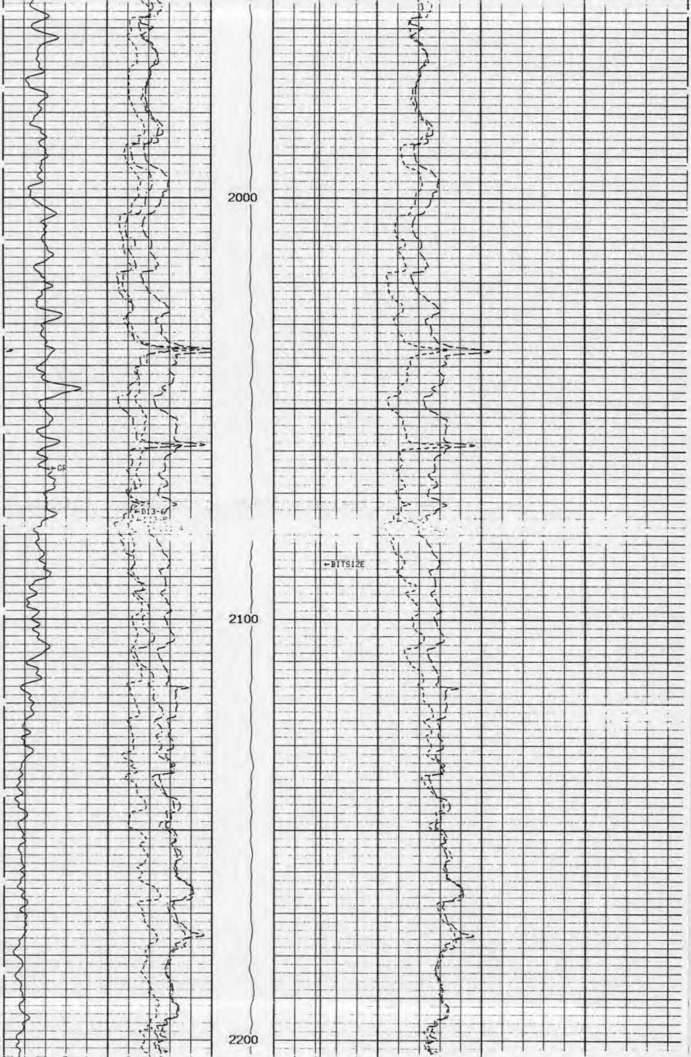
BOREHOLE SIZE
INCHES
10 30

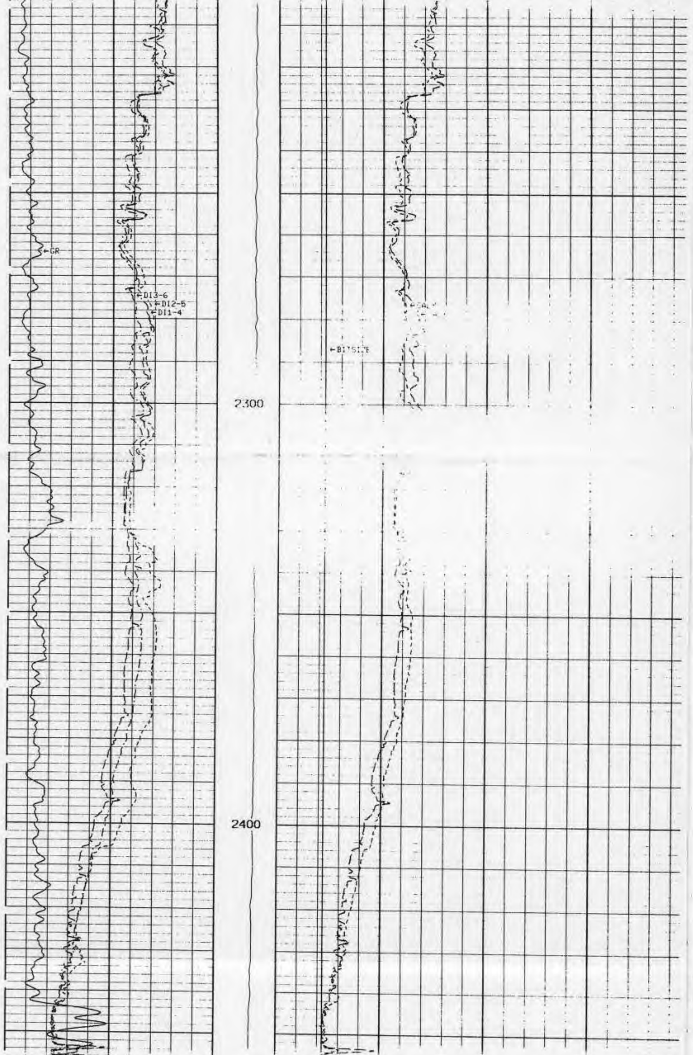
CALIPER Y
INCHES
10 30

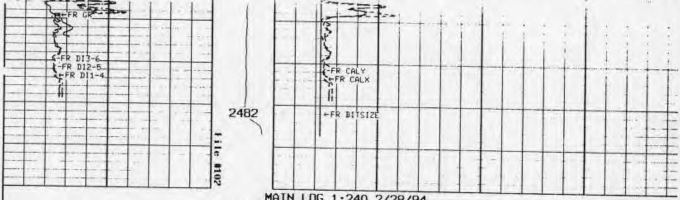
CALIPER X
INCHES
10 30

MAIN LOG 1:240 2/28/94
YOUNGQUIST BROTHERS INC. IW#16









MAIN LOG 1:240 2/28/94
YOUNGQUIST BROTHERS INC. IW#16

GAMMA RAY
API Units
100 200
0 100

TENSION
LBS
2000 0

CALIPER X
INCHES
10 3

DIAMETER 1-4
INCHES
20 30
10 20

CALIPER Y
INCHES
10 3

DIAMETER 2-5
INCHES
20 30
10 20

BOREHOLE SIZE
INCHES
10 3

DIAMETER 3-6
INCHES
20 30
10 20

* Borehole Zone Factors *

Zone 1 99999.0 to 0.0 F

Drill Bit Size____________________ 12.250 IN

DIAMETER 3-6
INCHES
20 30
10 20

DIAMETER 2-5
INCHES
20 30
10 20

BOREHOLE SIZE
INCHES
10 3

DIAMETER 1-4
INCHES
20 30
10 20

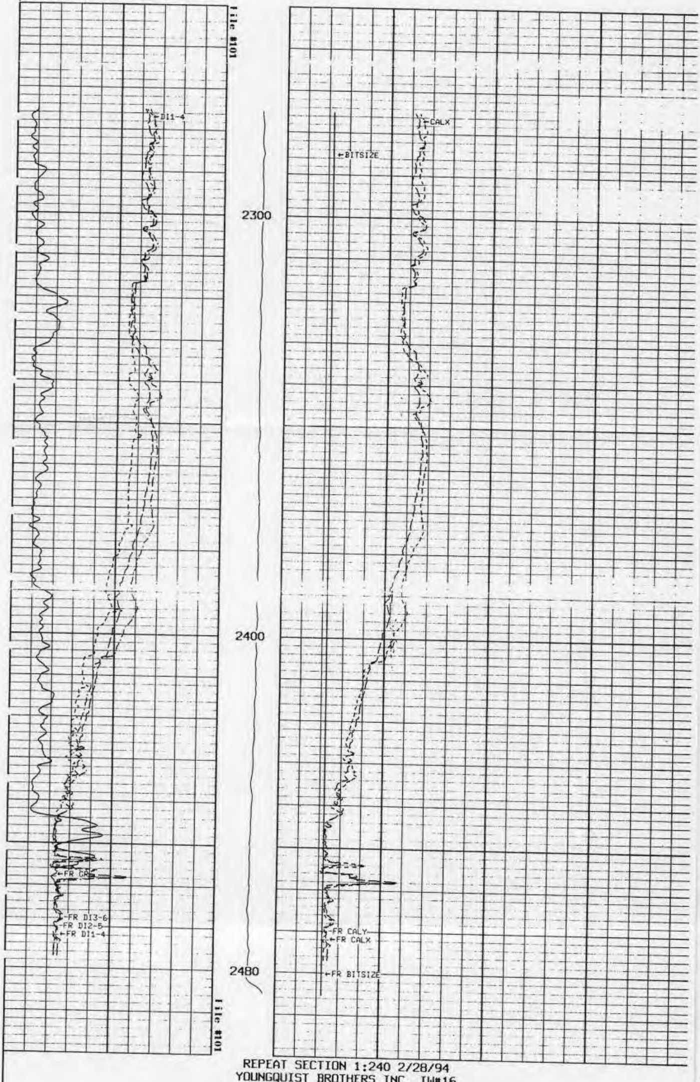
CALIPER Y
INCHES
10 3

GAMMA RAY
API Units
100 200
0 100

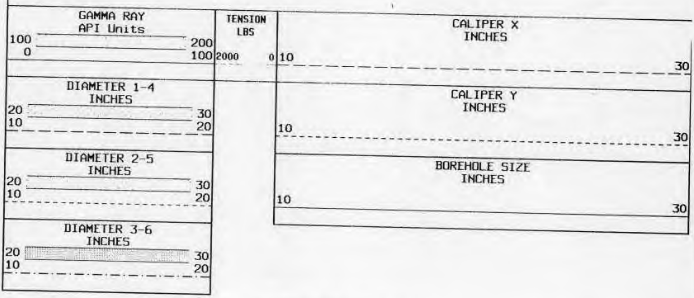
TENSION
LBS
2000 0

CALIPER X
INCHES
10 3

REPEAT SECTION 1:240 2/28/94
YOUNGQUIST BROTHERS INC. IW#16



REPEAT SECTION 1:240 2/28/94
YOUNGQUIST BROTHERS INC. IW#16



* Borehole Zone Factors *

Zone 1 99999.0 to 0.0 F

Drill Bit Size____________________ 12.250 IN

* Calibration Summary *

Shop Calibration
GRTB

Performed : 23-JUN-1994 Time : 20:52
Sensor Suite : GR-GR5 ID : GRT-B-01

	Measured Background	Jig	Units	Calibrated Jig	Units
GR	[illegible]	[illegible]	CPS	200	GRAPI

Before Survey Verification
GRTB

Performed : 28-JUN-1994 Time : 12:44
Sensor Suite : GR-GR5 ID : GRT-B-01

	Shop Jig	Before Jig	Units
GR	200	205	GRAPI

After Survey Verification
GRTB

Performed : 28-JUN-1994 Time : 20:10
Sensor Suite : GR-GR5 ID : GRT-B-01

	Before Jig	After Jig	Units
GR	205	211	GRAPI

Shop Calibration
SDT

Performed : 17-Jun-1994 Time : 12:10
Sensor Suite : CALI-DIP ID : SDT-AA-022

	Measured			Calibrated			Units
	Jig#1	Jig#2	Verifier	Jig#1	Jig#2	Verifier	
PRES	98808.4	98837.0	98805.2	0.0	50.0	-5.7	PSI

	Jig - Measured		Jig - Calibrated		Units
	Ring#1	Ring#2	Ring#1	Ring#2	
CL # 1	3.9	7.0	4.0	7.1	IN.
CL # 2	3.9	7.0	4.0	7.1	IN.
CL # 3	4.0	7.2	4.0	7.1	IN.
CL # 4	4.1	7.2	4.0	7.1	IN.
CL # 5	4.0	7.1	4.0	7.1	IN.
CL # 6	3.9	7.1	4.0	7.1	IN.

Before Survey Verification
SDT

Performed : 28-JUN-1994 Time : 12:50
Sensor Suite : CALI-DIP ID : SDT-AA-022

	Shop Calibrated Verifier Jig	Before Calibrated Verifier Jig	Units
PRES	-5.7	-9.1	PSI

```
            Shop - Calibrated                        Before        Units
           Ring#1   Ring#2                            Jig
CL # 1       4.0      7.1                             4.0           IN.
CL # 2       4.0      7.1                             4.0           IN.
CL # 3       4.0      7.1                             4.0           IN.
CL # 4       4.0      7.1                             4.0           IN.
CL # 5       4.0      7.1                             4.0           IN.
CL # 6       4.0      7.1                             4.1           IN.

                      After Survey Verification
                                 SDT
     Performed : 28-JUN-1994             Time : 20:13
  Sensor Suite : CALI-DIP                  ID : SDT-AA-022

            Before Calibrated            After Calibrated          Units
              Verifier Jig                 Verifier Jig
PRES             -9.1                          -9.1                PSI

                 Before                        After               Units
                  Jig                           Jig
CL # 1            4.0                           4.0                 IN.
CL # 2            4.0                           4.0                 IN.
CL # 3            4.0                           4.0                 IN.
CL # 4            4.0                           4.0                 IN.
CL # 5            4.0                           4.0                 IN.
CL # 6            4.1                           4.1                 IN.
```

digital logging, inc.

RECEIVED
JUL - 6 1994
DEPT OF ENV PROTECTION
WEST PALM BEACH

DUAL INDUCTION MICRO SPHERICAL FOCUSED LOG

File No. : 28-JUNE-1994
Company : YOUNGQUIST BROTHERS INC.
Well : IW-#16
Field : S. DISTRICT WASTEWATER TREATMENT PLANT
County : DADE
State : FLORIDA
Country : USA

Location : MIAMI-DADE WATER & SEWER
SOUTH DISTRICT WWTP

Sect : Twp : Rge :

Recorded By : RANDY NITZ
Witnessed By : C. CAUSARA'S

Date : 28-JUNE-94
Run No. : 5

Permanent Datum : PAD
Drilling Measured From : PAD
Log Measured From : PAD
Above Permanent Datum : 0.0 FT

Depth--Driller : 2500.0 FT
Depth--Logger : 2475.0 FT
Bottom Log Interval : 2473.0 FT
Top Log Interval : 1875.0 FT

Casing Depth--Driller : 1900.0 FT
Casing Depth--Logger : 1900.0 FT
Casing Diameter : 34.000 IN

Bit Size : 12.250 IN
Unit No. : LU #78
Location : TULSA, OKLAHOMA

Elevations :
KB : 0.0 FT
DF : 0.0 FT
GL : 0.0 FT

Additional Services
SDT
GRT
GRT
CST
GRT
MST
DIT

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Run Number 5

```
Depth To Fluid              0.0     FT
Fluid Type In Hole : NATIVE WATER
Density :                   0.000   LB/GAL
Viscosity :                 0.000   SEC.
pH :                        0.000
Fluid Loss :                0.000   CC
Salinity :                  0.000   PPM

RM  Source :            PIT
RM :                        0.180   OHMM at            85    F
RM  at BHT :                0.160   OHMM at            99    F

RMF Source :            CALCULATED
RMF :                       0.140   OHMM at            85    F
RMF at BHT :                0.120   OHMM at            99    F

RMC Source :            CALCULATED
RMC :                       0.220   OHMM at            85    F
RMC at BHT :                0.190   OHMM at            99    F

Max Recorded Temp. :                                   99    F
Time Circulation Stopped :        10:00 6/28/94
Operating Rig Time, Hrs. :                             4.0
```

- Sonde Serial Numbers -

GRTB	GRT-B-01
MST	MST-22-001
DIT	DIT-B-02

Casing Strings

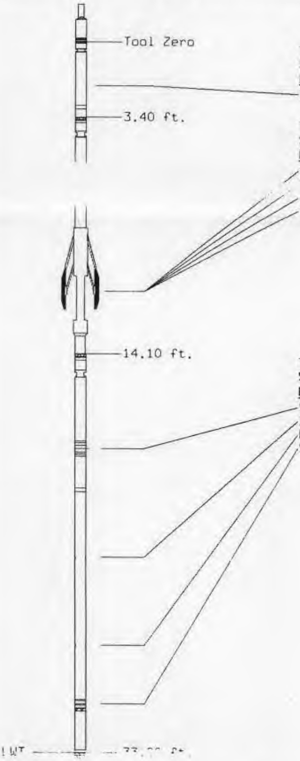
Size (IN)	Weight (LB/FT)	Bottom (FT)
34.000	0.00	190.00
44.000	0.00	980.00
54.000	0.00	160.00

- Comments -

NO BORHOLE CORRECTION APPLIED TO DIT, MIL OR DIL.
SONDE STRING GRT/MST/DIT
LOGGING SPEED 30'/MIN.
1.5" STAND OFF RAN ON DIT.
MUD INFORMATION N/A.
WELL SPOT LOCATION N/A.
DEPTH SAMPLE INT. = 0.2'.
10 LBS/GAL. NaCL PLUG PUMPED IN AT SURFACE TO KILL WELL.
12.250" IS USED FOR A PILOT HOLE.
REPEAT #3 CALIPERS WERE CLOSED FROM 2420'-2422' DUE TO PULLING 1700 LBS OVER STRING WEIGHT. CABLE HEAD DEPTH WAS AT 2404.9'.
MST RAN X-CENTERED.

Tool String Schematic

Total Tool Length - 33.00 **ft.**
Maximum Outside diameter - 6.00 **in.**
Net Weight in Air - 494.00 **lbs.**



Tool: GRTB **Length:** 3.40 **ft. O.D.:** 3.60 **in.**
Sonde ID : GRT-B-01

Measure Point	Stack Offset	Tool Offset
GRP	2.00	2.00

Tool: MST **Length:** 10.70 **ft. O.D.:** 6.00 **in.**
Sonde ID : MST-22-001

Measure Point	Stack Offset	Tool Offset
MSFL	12.30	8.90
[illegible]	12.30	8.90
MSFN	12.30	8.90
MSFI	12.30	8.90

Tool: DIT **Length:** 18.90 **ft. O.D.:** 3.80 **in.**
Sonde ID : DIT-B-02

Measure Point	Stack Offset	Tool Offset
SGRP	16.50	2.40
DIR	23.30	9.20
MIR	27.10	13.00
SP	31.50	17.40

MSFL CALIPER
INCHES
10 20

SP
mV
76 96
56 76

GAMMA RAY
API
100 200
0 100

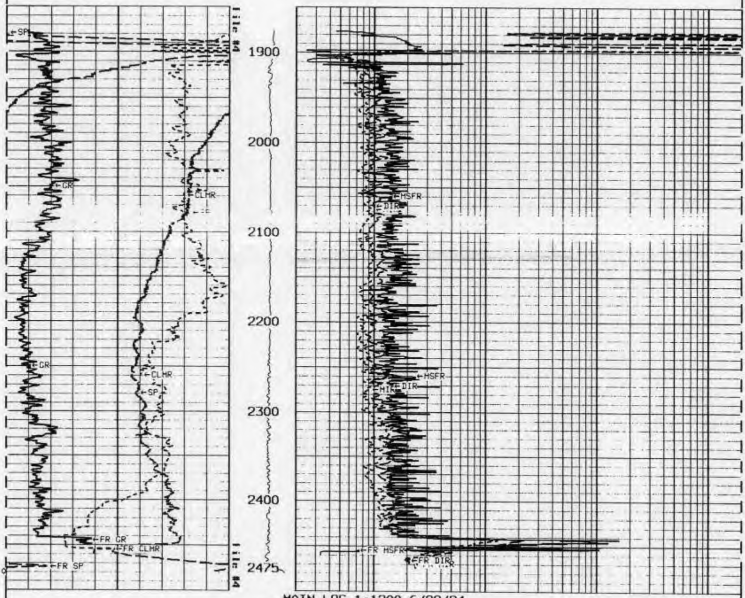
TENSION
LBS
2000 0

MICRO SPHERICALLY FOCUSED
OHM-METERS
0.2 2000.0

DEEP INDUCTION
OHM-METERS
0.2 2000.0

MEDIUM INDUCTION
OHM-METERS
0.2 2000.0

MAIN LOG 1:1200 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16



MAIN LOG 1:1200 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16

GAMMA RAY API		TENSION LBS		MEDIUM INDUCTION OHM-METERS	
100	200				
0	100	2000	0	0.2	2000.0

SP mV		DEEP INDUCTION OHM-METERS	
76	96		
56	76	0.2	2000.0

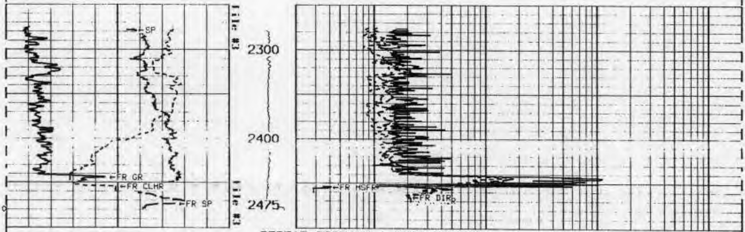
MSFL CALIPER INCHES		MICRO SPHERICALLY FOCUSED OHM-METERS	
10	20	0.2	2000.0

MSFL CALIPER INCHES		MICRO SPHERICALLY FOCUSED OHM-METERS	
10	20	0.2	2000.0

SP mV		DEEP INDUCTION OHM-METERS	
74	94		
54	74	0.2	2000.0

GAMMA RAY API		TENSION LBS		MEDIUM INDUCTION OHM-METERS	
100	200				
0	100	2000	0	0.2	2000.0

REPEAT SECTION 1:1200 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16



REPEAT SECTION 1:1200 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16

GAMMA RAY API		TENSION LBS		MEDIUM INDUCTION OHM-METERS	
100	200				
0	100	2000	0	0.2	2000.0

SP mV		DEEP INDUCTION OHM-METERS	
74	94		
54	74	0.2	2000.0

MSFL CALIPER INCHES		MICRO SPHERICALLY FOCUSED OHM-METERS	
10	20	0.2	2000.0

MSFL CALIPER
INCHES
10 20

MICRO SPHERICALLY FOCUSED
OHM-METERS
0.2 2000.0

SP
mV
76 96
56 76

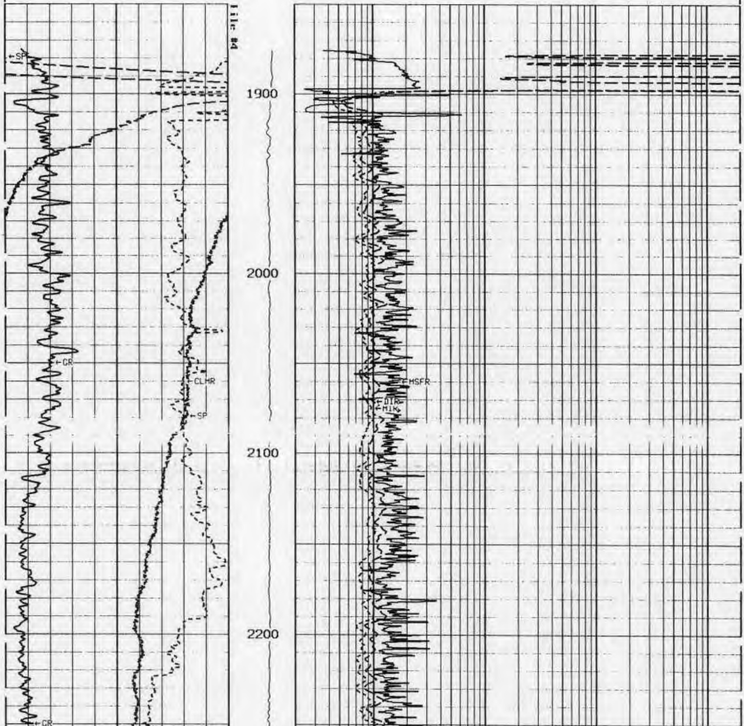
DEEP INDUCTION
OHM-METERS
0.2 2000.0

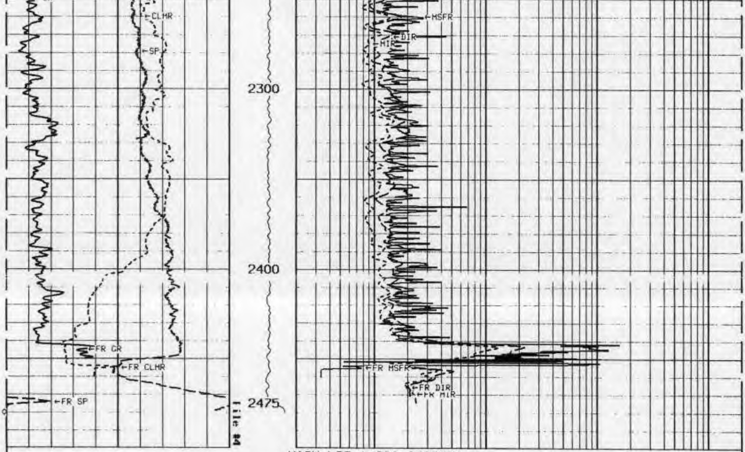
GAMMA RAY
API
100 200
0 100

TENSION
LBS
2000 0

MEDIUM INDUCTION
OHM-METERS
0.2 2000.0

MAIN LOG 1:600 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16



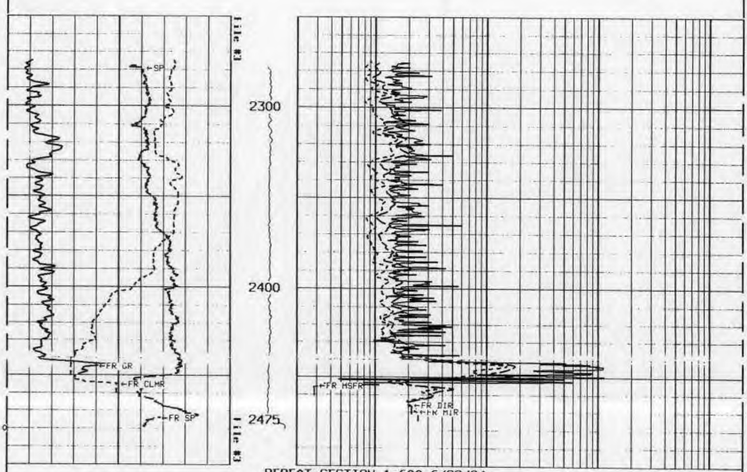


MAIN LOG 1:600 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16

GAMMA RAY API 100 200 0 100	TENSION LBS 2000 0	MEDIUM INDUCTION OHM-METERS 0.2 2000.0
SP mV 76 96 56 76		DEEP INDUCTION OHM-METERS 0.2 2000.0
MSFL CALIPER INCHES 10 20		MICRO SPHERICALLY FOCUSED OHM-METERS 0.2 2000.0

MSFL CALIPER INCHES 10 20		MICRO SPHERICALLY FOCUSED OHM-METERS 0.2 2000.0
SP mV 74 94 54 74		DEEP INDUCTION OHM-METERS 0.2 2000.0
GAMMA RAY API 100 200 0 100	TENSION LBS 2000 0	MEDIUM INDUCTION OHM-METERS 0.2 2000.0

REPEAT SECTION 1:600 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16

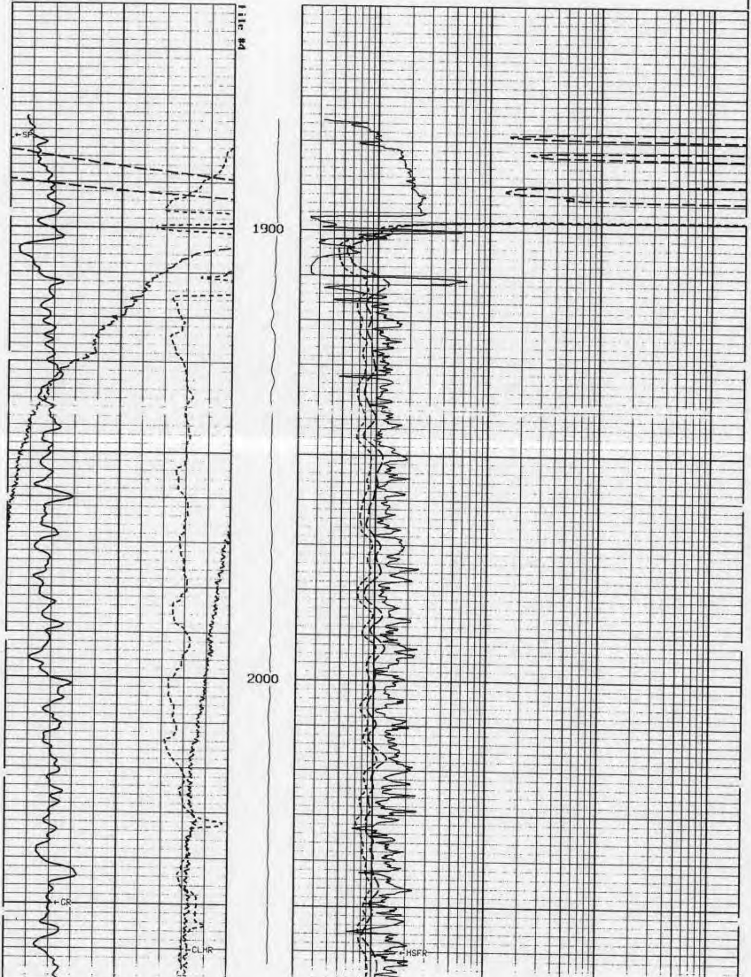


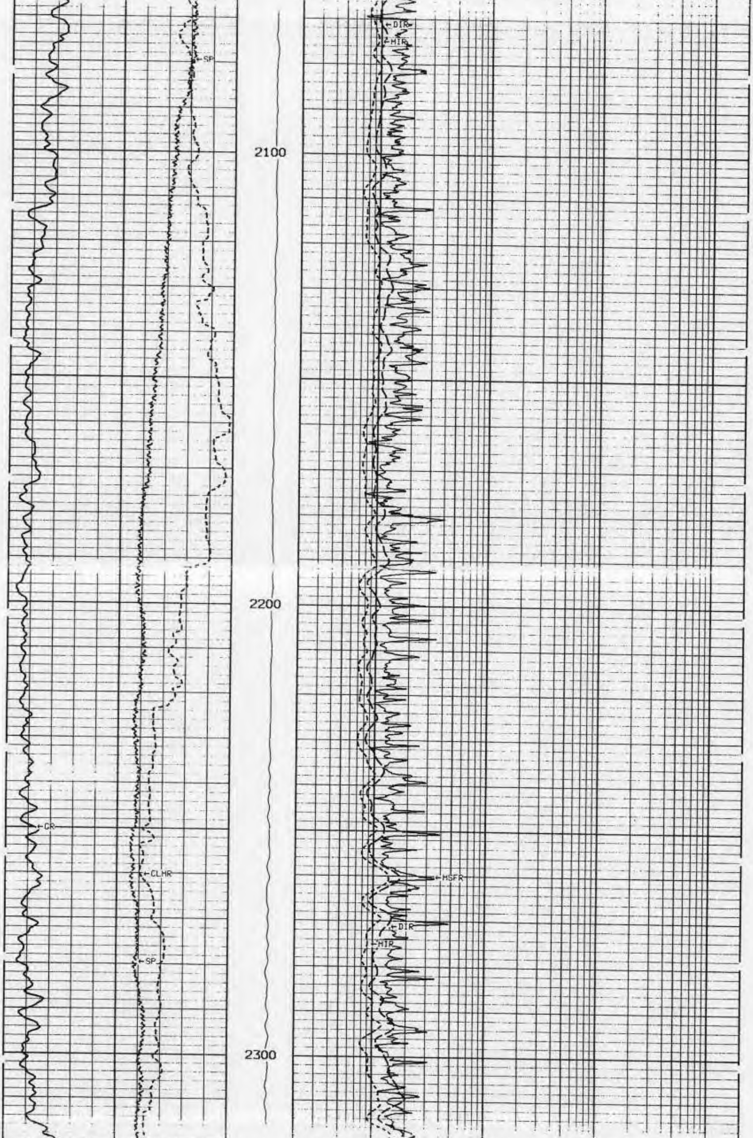
REPEAT SECTION 1:600 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16

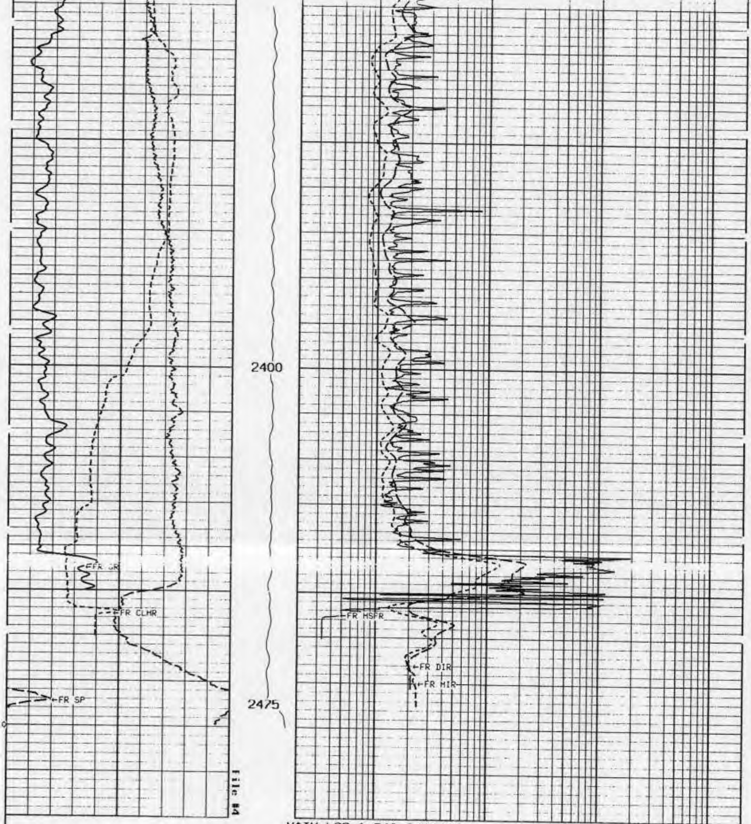
GAMMA RAY API 100 200 0 100	TENSION LBS 2000 0	MEDIUM INDUCTION OHM-METERS 0.2 2000.0
SP mV 74 94 54 74		DEEP INDUCTION OHM-METERS 0.2 2000.0
MSFL CALIPER INCHES 10 20		MICRO SPHERICALLY FOCUSED OHM-METERS 0.2 2000.0

MSFL CALIPER INCHES 10 20		MICRO SPHERICALLY FOCUSED OHM-METERS 0.2 2000.0
SP mV 76 96 56 76		DEEP INDUCTION OHM-METERS 0.2 2000.0
GAMMA RAY API 100 200 0 100	TENSION LBS 2000 0	MEDIUM INDUCTION OHM-METERS 0.2 2000.0

MAIN LOG 1:240 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16







MAIN LOG 1:240 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16

GAMMA RAY
API
100 200
0 100

TENSION
LBS
2000 0

MEDIUM INDUCTION
OHM-METERS
0.2 2000.0

SP
mV
76 96
56 76

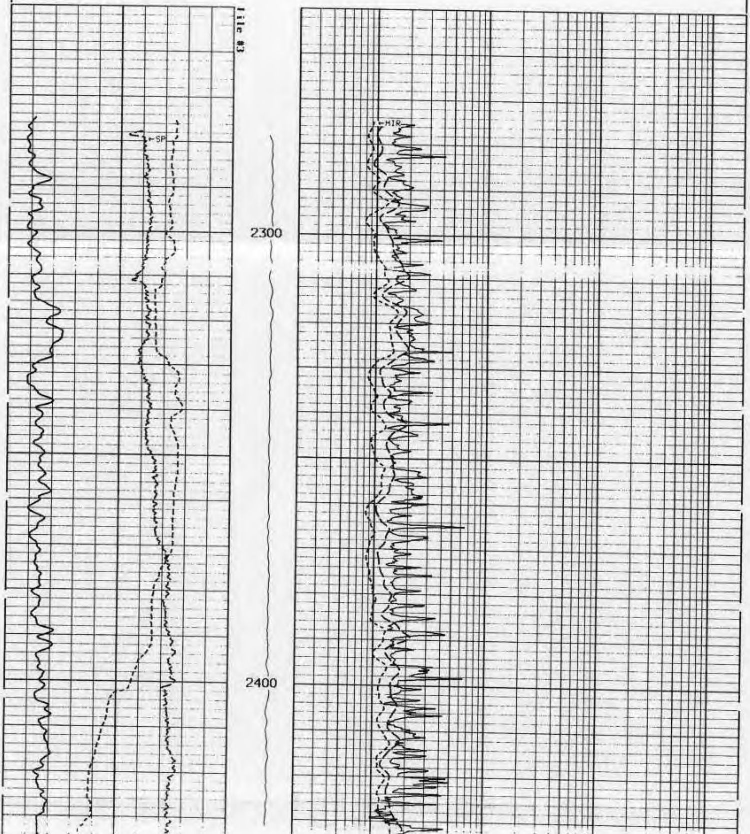
DEEP INDUCTION
OHM-METERS
0.2 2000.0

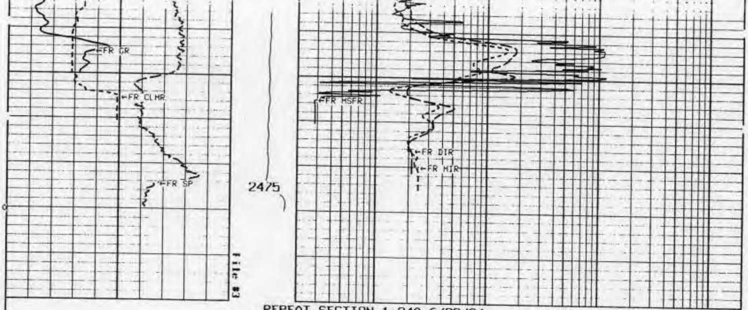
MSFL CALIPER
INCHES
10 20

MICRO SPHERICALLY FOCUSED
OHM-METERS
0.2 2000.0

MSFL CALIPER INCHES 10 20		MICRO SPHERICALLY FOCUSED OHM-METERS 0.2 2000.0
SP mV 54 74		DEEP INDUCTION OHM-METERS 0.2 2000.0
GAMMA RAY API 100 200 0 100	TENSION LBS 2000 0	MEDIUM INDUCTION OHM-METERS 0.2 2000.0

REPEAT SECTION 1:240 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16





REPEAT SECTION 1:240 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16

GAMMA RAY
API
100 200
0 100

TENSION
LBS
2000 0

MEDIUM INDUCTION
OHM-METERS
0.2 2000.0

SP
mV
54 74

DEEP INDUCTION
OHM-METERS
0.2 2000.0

MSFL CALIPER
INCHES
10 20

MICRO SPHERICALLY FOCUSED
OHM-METERS
0.2 2000.0

* Calibration Summary *

Shop Calibration
GRTB

Performed : 23-JUN-1994 Time : 20:52
Sensor Suite : GR-GR5 ID : GRT-B-01

	Background	Measured Jig	Units	Calibrated Jig	Units
GR	60	389	CPS	200	GRAPI

Before Survey Verification
GRTB

Performed : 28-JUN-1994 Time : 12:44
Sensor Suite : GR-GR5 ID : GRT-B-01

	Shop Jig	Before Jig	Units
GR	200	205	GRAPI

After Survey Verification
GRTB

Performed : 29-JUN-1994 Time : 00:10
Sensor Suite : GR-GR5 ID : GRT-B-01

	Before Jig	After Jig	Units
GR	205	201	GRAPI

Shop Calibration
MST

Performed : 16-JUN-1994 Time : 09:58
Sensor Suite : CALI-MSD ID : MST-22-001

Jig - Measured		Jig - Calibrated		Units
Ring#1	Ring#2	Ring#1	Ring#2	

```
   Performed : 16-JUN-1994                Time : 09:59
  Sensor Suite : MSD-MSFL                   ID : MST-22-001

                                 Internal
               Measured                          Calibrated
         Zero   Reference   Units         Zero    Reference   Units
IT      1490.5   11974.3                  0.00     1755.00     UA
MOM1    1490.8   37876.9                  0.00     1755.00     MV

MSFR                                                 43.30    OHMM
```

Before Survey Verification
MST

```
   Performed : 28-JUN-1994                Time : 13:13
  Sensor Suite : CALI-MSD                   ID : MST-22-001

              Shop - Calibrated                Before       Units
               Ring#1  Ring#2                   Jig
CL # 1          8.0     14.0                    7.9          IN.
```

After Survey Verification
MST

```
   Performed : 29-JUN-1994                Time : 00:13
  Sensor Suite : CALI-MSD                   ID : MST-22-001

                   Before                      After         Units
                    Jig                         Jig
CL # 1              7.9                         8.0          IN.
```

```
   Performed : 29-JUN-1994                Time : 00:14
  Sensor Suite : MSD-MSFL                   ID : MST-22-001

                               Internal
             Shop                         Post Verification
        Zero    Reference                 Zero    Reference    Units
IT      0.00     1755.00                  8.34     1760.48      UA
MOM1    0.00     1755.00                  2.15     1756.33      MV

MSFR              43.30                              43.20     OHMM
```

Shop Calibration
DIT

```
   Performed : 23-JUN-1994                Time : 21:01
  Sensor Suite : DUAL-X                     ID : DIT-B-02

                        Measured Electronic
                  Zero   Internal Reference   Units
                  891          3063            CPS

          Measured                   Calibrated
          Test Loop           Test Loop     Electronic    Sonde
     Zero    Loop Units     Zero    Loop    Zero   Ref.   Error Units
DIL  1995    7126  CPS       0.0   500.0    62.5   156.8   90.2 MMHOS
MIL   836    7282  CPS       0.0   500.0    64.1   156.5   -4.0 MMHOS
```

```
   Performed : 26-Jun-1994                Time : 11:53
  Sensor Suite : SP-X                       ID : DIT-B-02

              Measured                       Calibrated            Units
        Jig#1  Jig#2 Verifier         Jig#1  Jig#2 Verifier
SP      -71.0   71.3    -1.3          -90.0   90.0    -1.9          MV
```

Before Survey Verification
DIT

```
   Performed : 28-JUN-1994                Time : 12:58
  Sensor Suite : DUAL-X                     ID : DIT-B-02

   Shop Measured Electronic      Before Measured Electronic
  Zero    Internal Reference     Zero    Internal Reference   Units
  891          3063              853           3025            CPS

      Shop Calibrated                Before Calibrated
     Zero          Ref.               Zero          Ref.        Units
DIL  62.5         156.8               76.6         194.6        MMHOS
MIL  64.1         156.5               66.7         163.2        MMHOS
```

```
   Performed : 28-JUN-1994                Time : 12:54
  Sensor Suite : SP-X                       ID : DIT-B-02

           Shop Calibrated            Before Calibrated         Units
            Verifier Jig                Verifier Jig
SP              -1.9                        0.3                  MV
```

After Survey Verification
DIT

```
   Performed : 29-JUN-1994                Time : 00:15
  Sensor Suite : DUAL-X                     ID : DIT-B-02

 Before Measured Electronic      After Measured Electronic
  Zero    Internal Reference     Zero    Internal Reference   Units
  853          3025              853           3025            CPS

      Before Calibrated               After Calibrated
     Zero          Ref.               Zero          Ref.        Units
DIL  76.6         194.6              -76.6         194.6        MMHOS
MIL  66.7         163.2               66.7         163.2        MMHOS
```

```
   Performed : 29-JUN-1994                Time : 00:20
  Sensor Suite : SP-X                       ID : DIT-B-02

         Before Calibrated            After Calibrated          Units
            Verifier Jig                Verifier Jig
SP              0.3                         0.3                  MV
```

RECEIVED
JUL - 6 1994
DEPT OF ENV PROTECTION
WEST PALM BEACH

BOREHOLE RESISTIVITY LOG

digital logging, inc.

File No. : 28-JUNE-1994
Company : YOUNGQUIST BROTHERS INC.
Well : IW-#16
Field : S. DISTRICT WASTEWATER TREATMENT PLANT
County : DADE
State : FLORIDA
Country : USA

Location : MIAMI-DADE WATER & SEWER
SOUTH DISTRICT WWTP

Sect : Twp : Rge :

Recorded By : RANDY NITZ
Witnessed By : C. CAUSARA'S

```
Date :28-JUNE-94
Run No. :  5

Permanent Datum :           PAD
Drilling Measured From :    PAD
Log Measured From:          PAD
Above Permanent Datum :     0.0   FT

Depth--Driller :         2500.0   FT
Depth--Logger :          2475.0   FT
Bottom Log Interval :    2473.0   FT
Top Log Interval :       1875.0   FT

Casing Depth--Driller :  1900.0   FT
Casing Depth--Logger :   1900.0   FT
Casing Diameter :        34.000   IN

Bit Size :               12.250   IN
Unit No. : LU #78
Location : TULSA, OKLAHOMA
```

```
Elevations :
KB :     0.0  FT
DF :     0.0  FT
GL :     0.0  FT
```

Additional Services
GRT
SDT

GRT
CST

GRT
MST
DIT

The customer is hereby warned that by providing the log data herein, Digital Logging,Inc. does not agree to provide any interpretation of log data, conversion of log data to physical rock parameters or recommendations. Digital Logging,Inc. does not guarantee or warrant either expressly or impliedly, the accuracy of any interpretation of log data, conversion of log data to physical rock parameters or recommendations which may be given by Digital Logging,Inc. personnel. Any interpretation, conversion or recommendation is not part of the consideration for the agreement between the parties and is not part of any part of the charge by Digital Logging,Inc. for its services. Any user of the log data is warned that said user is not entitled to rely on intepretations, conversions or recommendations as aforesaid.

Run Number 5

```
Depth To Fluid            0.0     FT
Fluid Type In Hole : NATIVE WATER
Density :                 0.000   LB/GAL
Viscosity :               0.000   SEC.
pH :                      0.000
Fluid Loss :              0.000   CC
Salinity :                0.000   PPM

RM  Source :          PIT
RM :                      0.180   OHMM at          85    F
RM  at BHT :              0.160   OHMM at          99    F

RMF Source :          CALCULATED
RMF :                     0.140   OHMM at          85    F
RMF at BHT :              0.120   OHMM at          99    F

RMC Source :          CALCULATED
RMC :                     0.220   OHMM at          85    F
RMC at BHT :              0.190   OHMM at          99    F

Max Recorded Temp. :                               99    F
Time Circulation Stopped :      10:00 6/28/94
Operating Rig Time, Hrs. :                         4.0
```

- Sonde Serial Numbers -

GRTB	GRT-B-01
MST	MST-22-001
DIT	DIT-B-02

Casing Strings

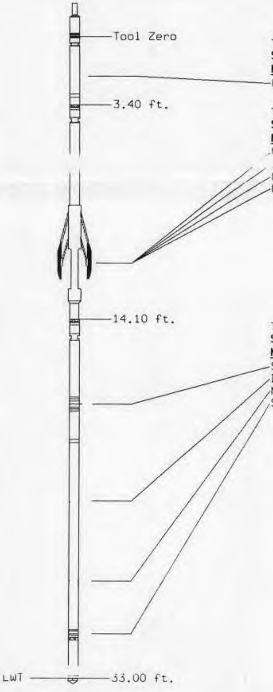
Size (IN)	Weight (LB/FT)	Bottom (FT)
34.000	0.00	190.00
44.000	0.00	980.00
54.000	0.00	160.00

- Comments -

NO BORHOLE CORRECTION APPLIED TO DIT, MIL OR DIL.
SONDE STRING GRT/MST/DIT
LOGGING SPEED 30'/MIN.
1.5" STAND OFF RAN ON DIT.
MUD INFORMATION N/A.
WELL SPOT LOCATION N/A.
DEPTH SAMPLE INT. = 0.2'.
10 LBS/GAL. NaCL PLUG PUMPED IN AT SURFACE TO KILL WELL.
12.250" IS USED FOR A PILOT HOLE.
REPEAT #3 CALIPERS WERE CLOSED FROM 2420'-2422' DUE TO PULLING 1700 LBS OVER STRING WEIGHT. CABLE HEAD DEPTH WAS AT 2404.9'.
MST RAN X-CENTERED.

Tool String Schematic

Total Tool Length - 33.00 **ft.**
Maximum Outside diameter - 6.00 **in.**
Net Weight in Air - 494.00 **lbs.**



Tool: GRTB **Length:** 3.40 **ft. O.D.:** 3.60 **in.**
Sonde ID : GRT-B-01

Measure Point	Stack Offset	Tool Offset
GRP	2.00	2.00

Tool: MST **Length:** 10.70 **ft. O.D.:** 6.00 **in.**
Sonde ID : MST-22-001

Measure Point	Stack Offset	Tool Offset
MSFL	12.30	8.90
[illegible]	[illegible]	[illegible]
MSFN	12.30	8.90
MSFI	12.30	8.90

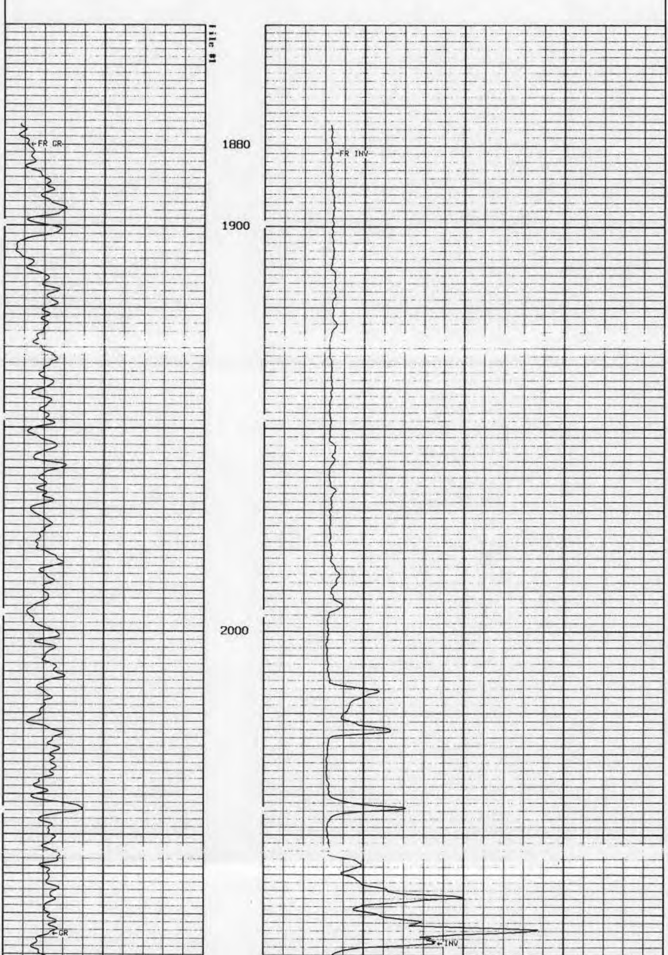
Tool: DIT **Length:** 18.90 **ft. O.D.:** 3.80 **in.**
Sonde ID : DIT-B-02

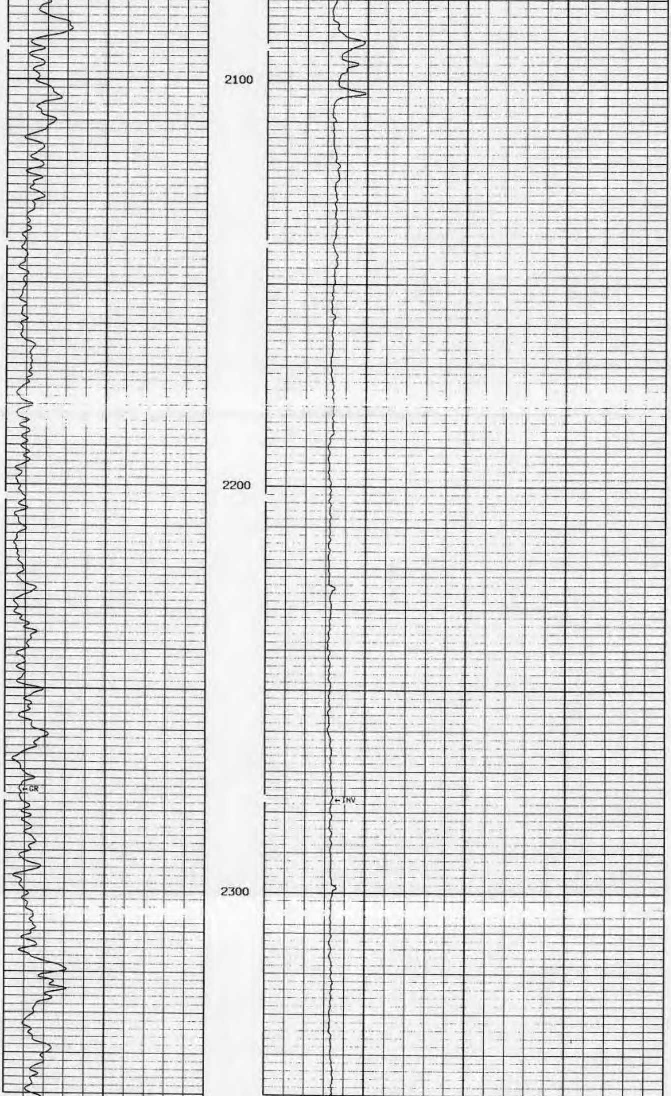
Measure Point	Stack Offset	Tool Offset
SGRP	16.50	2.40
DIR	23.30	9.20
MIR	27.10	13.00
SP	31.50	17.40

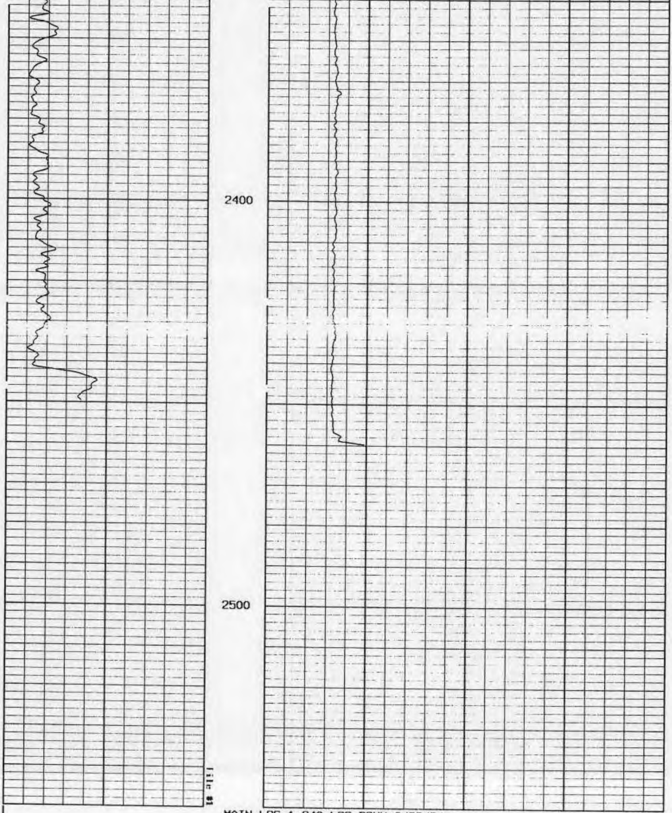
GAMMA RAY
API UNITS
100 ▨ **200**
0 **100**

MICRO-INVERSE
OHM-METERS
0.0 **1.0**

MAIN LOG 1:240 LOG DOWN 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16







MAIN LOG 1:240 LOG DOWN 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16

JUL - 6 1994
DEPT OF ENV PROTECTION

FLORIDA GEOPHYSICAL LOGGING, INC.

FLUID
RESISTIVITY
FLUID DENSITY
TEMPERATURE

FILE NO. ____

COMPANY YOUNGQUIST BROTHERS INC.
WELL IW-16
FIELD MIAMI-DADE
COUNTY DADE STATE FLORIDA

LOCATION
SEC. ____ TWP ____ RGE ____

OTHER SERVICES:
FLOWMETER

PERMANENT DATUM PAD ELEV. ____
LOG MEASURED FROM PAD FT.ABOVE PERMANENT DATUM
DRILLING MEASURED FROM PAD

ELEV.:K.B. ____
D.F. ____
G.L. ____

DATE	29-JUN-94	
RUN NO.	FIVE	
TYPE LOG	FRTD	
DEPTH-DRILLER	2500'	
DEPTH-LOGGER	2484'	
LOGGED INTERVAL	2475' TO 1918'	TO
OPERATING RIG TIME	2 HRS	
TYPE FLUID IN HOLE	WATER	
SALINITY. PPM CL	NATIVE	
DENSITY-VISCOSITY	8.5	
LEVEL	FULL	
MAX. REC. TEMP. DEG F.	168 DEG F	
EQUIPMENT-LOCATION	101 - FTM	
RECORDED BY	WILLIAMS	
WITNESSED BY	CAUSARA'S	

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
ONE	52 1/2"	190'	SURF	54"	.5" WT.	160'	SURF
TWO	12 1/4"	990'	SURF	44"	.5" WT.	980'	SURF
THREE	12 1/4"	1930'	SURF	34"	.5" WT.	1900'	SURF
FIVE	12 1/4"	2500'	SURF				

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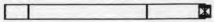
REMARKS

FLUID RESISTIVITY/TEMPERATURE TOOL STRING CONFIGURATION



-- 1 3/8" 7 TO 1 ADAPTER -- 1 FT. LONG

-- TOTAL TOOL STRING LENGTH = 9.5 FT. --

-- 1 11/16" WEIGHT -- 5 FT. LONG

-- FLUID RESISTIVITY/TEMPERATURE
3.5 FT. LONG

---MEASURE POINT (BOT)

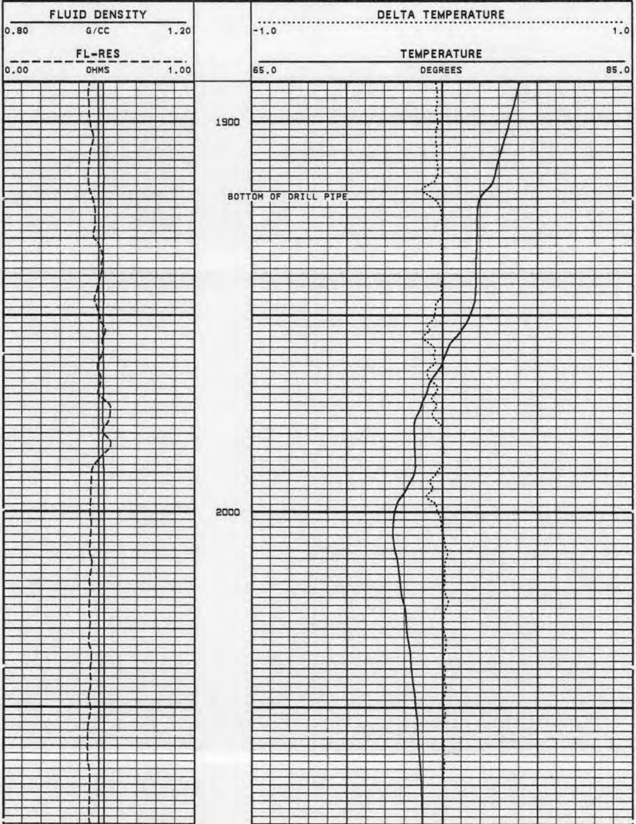
REMARKS

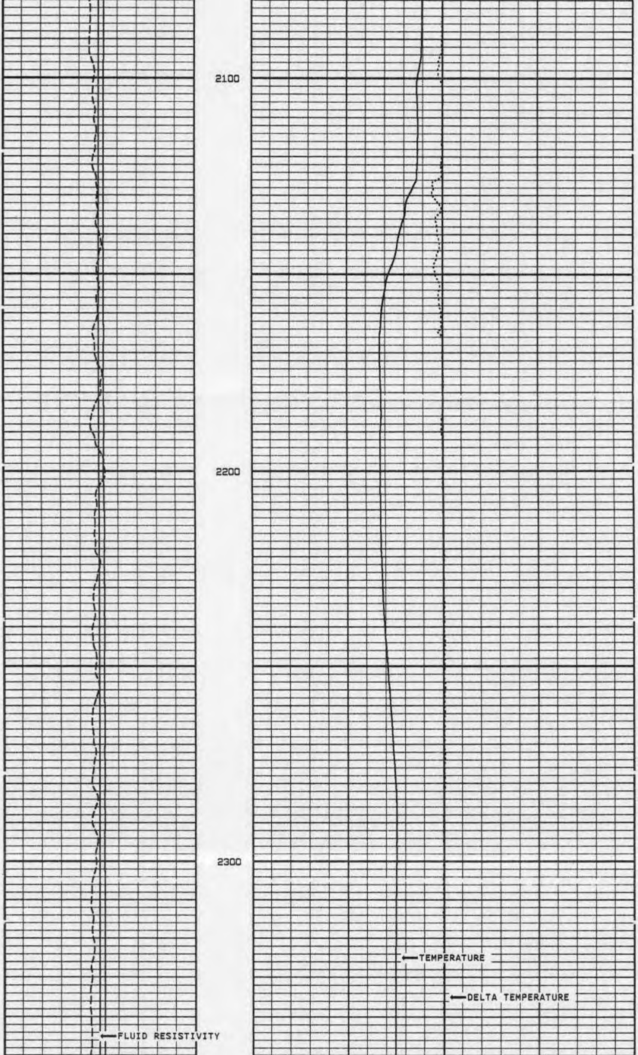
MAIN PASS
LOGGED GOING DOWN

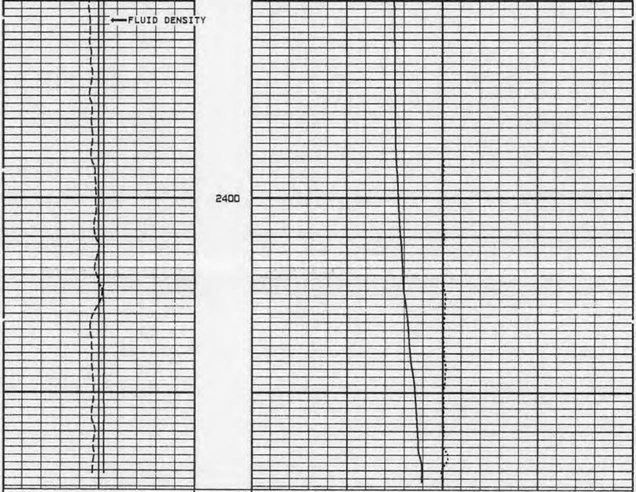
VERSION: 2.16

IW165FRT2

FINISH DEPTH: **2474.8** FEET DIRECTION: **DOWN** DATE: **06/29/94** TIME: **12:54:34** MODE: **TRACE PLAYBACK**







FL-RES

0.00 OHMS 1.00

FLUID DENSITY

0.80 G/CC 1.20

TEMPERATURE

65.0 DEGREES 85.0

DELTA TEMPERATURE

-1.0 1.0

START DEPTH: **1880.0** FEET DIRECTION: **DOWN** DATE: **06/29/94** TIME: **12:38:56** MODE: **TRACE PLAYBACK**

IW165FRT2

VERSION: 2.16

REMARKS

REPEAT SECTION
LOGGED COMING UP

VERSION: 2.16

IW165FRT3

FINISH DEPTH: **2271.1** FEET DIRECTION: **UP** DATE: **06/29/94** TIME: **13:02:05** MODE: **TRACE PLAYBACK**

FLUID DENSITY

0.80 G/CC 1.20

FL-RES

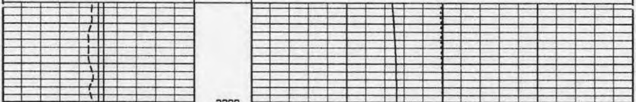
0.00 OHMS 1.00

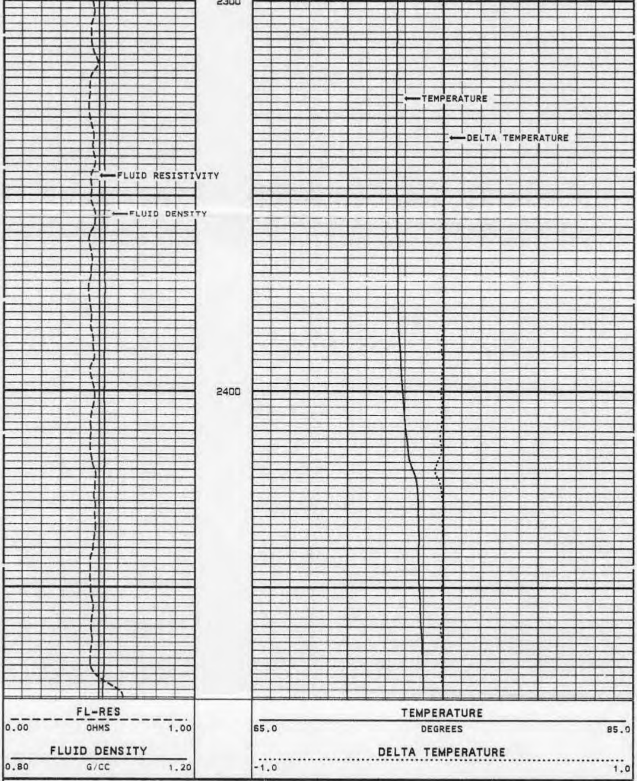
DELTA TEMPERATURE

-1.0 1.0

TEMPERATURE

65.0 DEGREES 85.0





START DEPTH: **2474.8** FEET DIRECTION: **UP** DATE: **06/29/94** TIME: **12:55:43** MODE: **TRACE PLAYBACK**

IW165FRT3

VERSION: **2.16**

MASTER CALIBRATION SUMMARY

FILE: DATE: 06/29/94 TIME: 15:24 VERSION: 2.16

TEMPERATURE

DATE: 02/21/94 TIME: 00:19

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
ZERO	1682.6	CPS	64.4	60.9	65.5	0.86	DEGF
PLUS	2147.1	CPS	104.0	97.8	106.5	1.59	DEGF

FL-RES

DATE: 06/29/94 TIME: 11:17

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
ZERO	180.9	CPS	0.0	0.0	0.0	0.00	OHMS
PLUS	2742.8	CPS	149.0	149.0	149.0	0.00	OHMS

COMPANY YOUNGQUIST BROTHERS INC.
SOUTH DISTRICT WWTP
WELL IW-16
FIELD MIAMI-DADE STATE FLORIDA

FLORIDA
GEOPHYSICAL LOGGING, INC.

FLOWMETER

FILE NO. ______

COMPANY YOUNGQUIST BROTHERS INC.
WELL IW-16
FIELD MIAMI-DADE
COUNTY DADE STATE FLORIDA

LOCATION
SEC. ______ TWP ______ RGE ______

OTHER SERVICES:
FRT

PERMANENT DATUM PAD ELEV. ______
LOG MEASURED FROM PAD FT. ABOVE PERMANENT DATUM
DRILLING MEASURED FROM PAD

ELEV.: K.B. ______
D.F. ______
G.L. ______

DATE	29-JUN-94	
RUN NO.	FIVE	
TYPE LOG	FLOWMETER	
DEPTH-DRILLER	2500'	
DEPTH-LOGGER	2484'	
LOGGED INTERVAL	2475' TO 1918'	TO
OPERATING RIG TIME	11 HRS	
TYPE FLUID IN HOLE	WATER	
SALINITY, PPM CL	NATIVE	
DENSITY-VISCOSITY	8.5	
LEVEL	FULL	
MAX. REC. TEMP, DEG F.	168 DEG F	
EQUIPMENT-LOCATION	101 - FTM	
RECORDED BY	WILLIAMS	
WITNESSED BY	CAUSARA'S	

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
ONE	52 1/2"	190'	SURF	54"	.5" WT.	160'	SURF
TWO	12 1/4"	990'	SURF	44"	.5" WT.	980'	SURF
THREE	12 1/4"	1930'	SURF	34"	.5" WT.	1900'	SURF
FIVE	12 1/4"	2500'	SURF				

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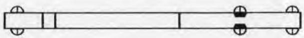
REMARKS

FLOWMETER TOOL STRING CONFIGURATION



-- CENTRALIZER -- 3 FT. LONG

-- ADAPTER -- 1 FT. LONG

-- TOTAL TOOL STRING LENGTH = 14 FT. --

-- 1 11/16" WEIGHT -- 5 FT. LONG

-- FLOWMETER -- 5 FT. LONG

-- SPINNER MEASURE POINT
2.5 FT. FROM BOT

-- CENTRALIZER
----------------BOT

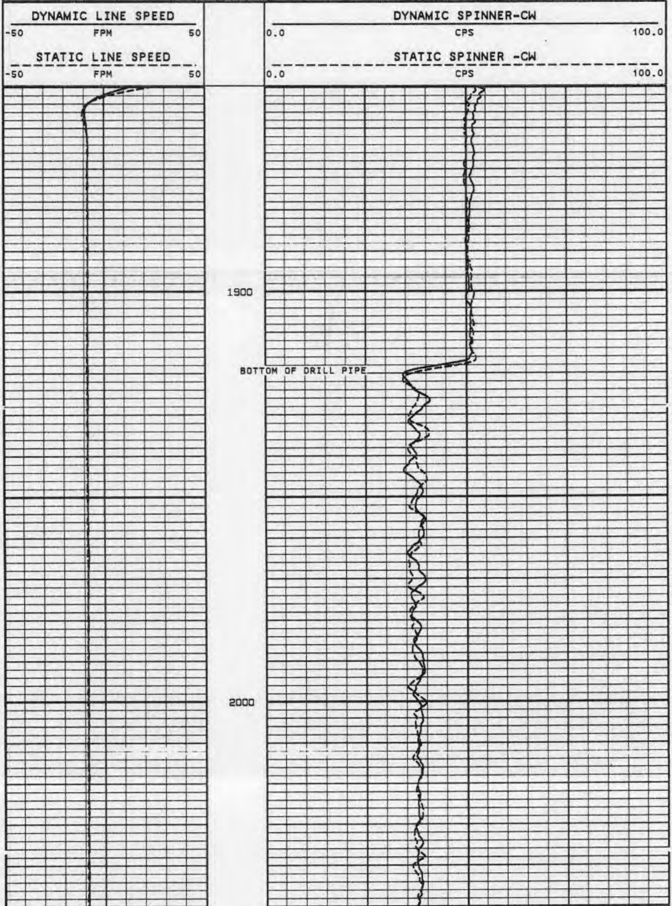
REMARKS

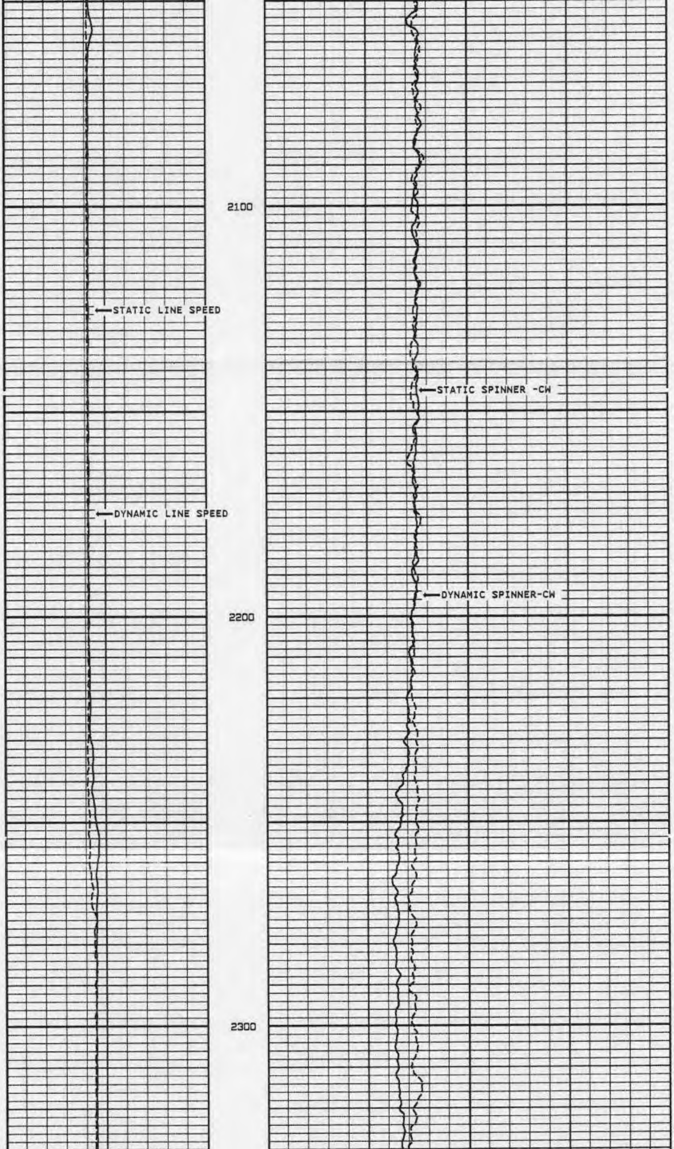
MERGED DOWN PASSES
THE SURFACE DYNAMIC FLOWRATE WAS 20-40 GPM AND UNSTABLE
THE DOWNHOLE FLOWRATE APPEARS TO NOT BE SUFFICIENT TO OVERCOME THE
SPINNER THRESHHOLD VELOCITY.

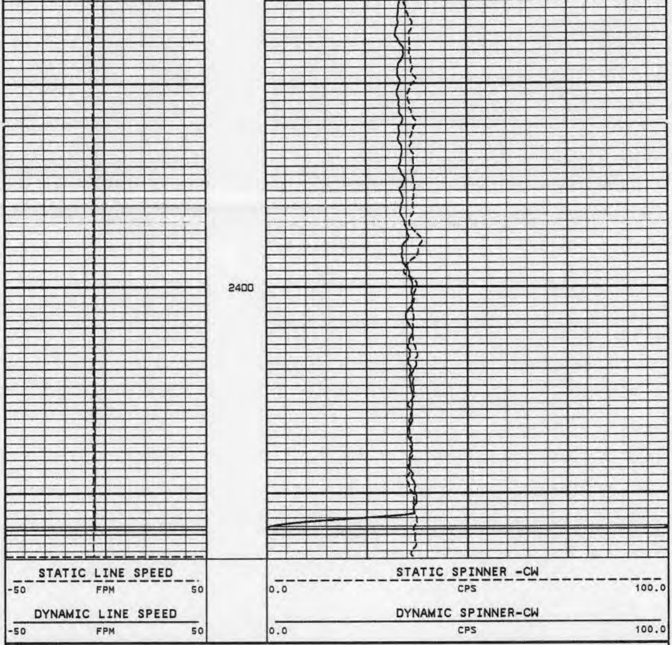
VERSION: 2.16

IW165FLOW6

FINISH DEPTH: 1854.9 FEET DIRECTION: UP DATE: 06/30/94 TIME: 01:05:53 MODE: TRACE PLAYBACK







START DEPTH: **2466.0** FEET DIRECTION: **UP** DATE: **06/30/94** TIME: **01:04:14** MODE: **TRACE PLAYBACK**

IW165FLOW6

VERSION: **2.16**

REMARKS

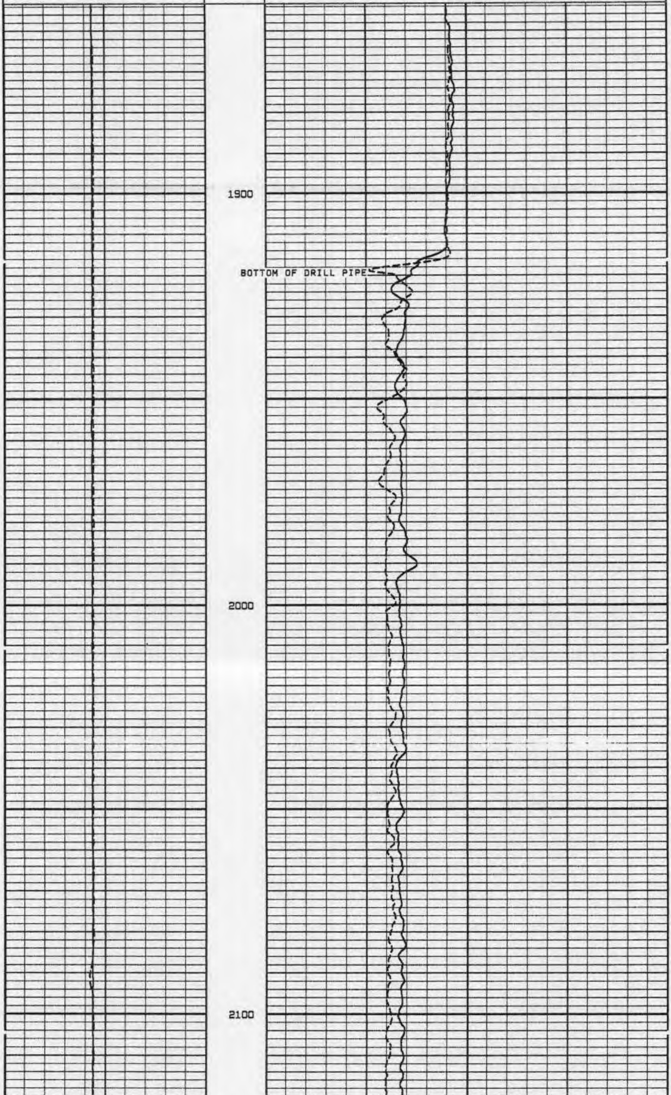
MERGED UP PASSES
SURFACE DYNAMIC FLOWRATE WAS 20-40 GPM AND UNSTABLE
DOWNHOLE FLOWRATE APPEARS TO NOT BE SUFFICIENT TO OVERCOME THE SPINNER
THRESHHOLD VELOCITY

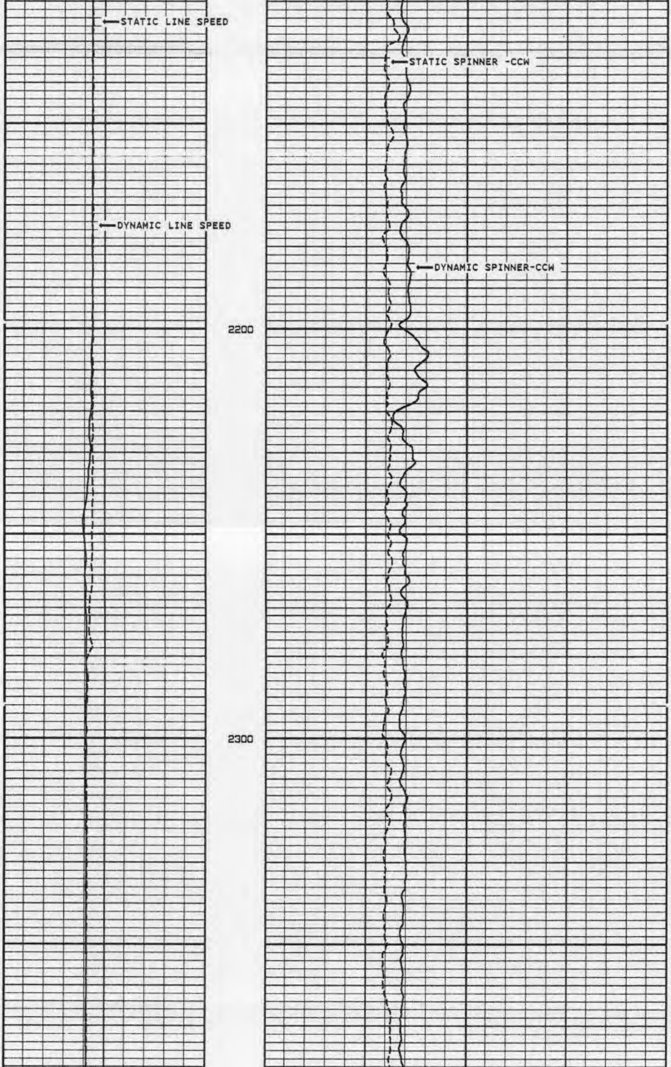
VERSION: **2.16**

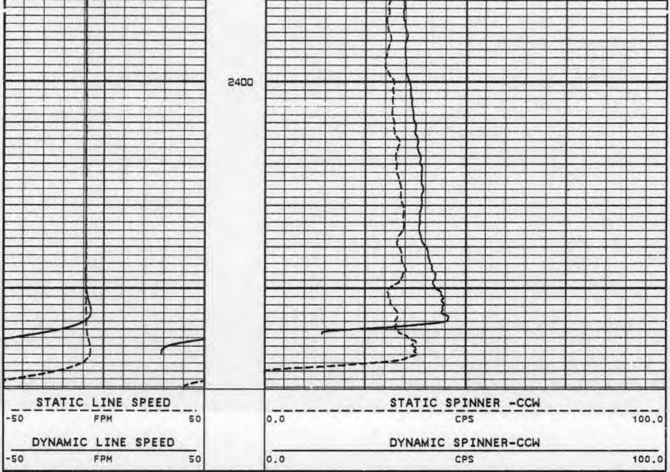
IW165FLOW5

FINISH DEPTH: **1858.5** FEET DIRECTION: **UP** DATE: **06/30/94** TIME: **00:49:51** MODE: **TRACE PLAYBACK**

DYNAMIC LINE SPEED -50 FPM 50	DYNAMIC SPINNER-CCW 0.0 CPS 100.0
STATIC LINE SPEED -50 FPM 50	STATIC SPINNER -CCW 0.0 CPS 100.0







START DEPTH: **2474.7** FEET DIRECTION: **UP** DATE: **06/30/94** TIME: **00:48:15** MODE: **TRACE PLAYBACK**

IW165FLOW5

VERSION: 2.16

COMPANY YOUNGQUIST BROTHERS INC.
SOUTH DISTRICT WWTP
WELL IW-16
FIELD MIAMI-DADE STATE FLORIDA

FLORIDA GEOPHYSICAL LOGGING, INC.

XY CALIPER
GAMMA RAY

FILE NO. ______

COMPANY YOUNGQUIST BROTHERS INC.
WELL IW-16
FIELD MIAMI-DADE
COUNTY DADE STATE FLORIDA
LOCATION
SEC. ____ TWP ____ RGE ____

RECEIVED
AUG 5 1994
DEPT OF ENV PROTECTION
WEST PALM BEACH

OTHER SERVICES:
FRTD
CBL
DIL/LL3
BHC

PERMANENT DATUM PAD ELEV. ____
LOG MEASURED FROM PAD FT.ABOVE PERMANENT DATUM
DRILLING MEASURED FROM PAD

ELEV.:K.B. ____
D.F. ____
G.L. ____

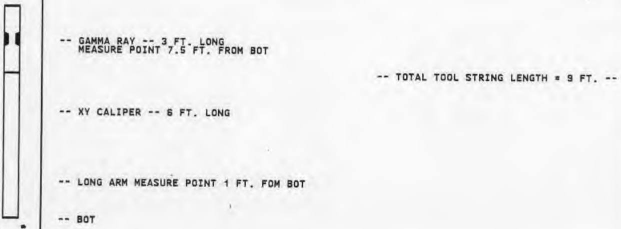
DATE	23-JUL-94		
RUN NO.	SEVEN		
TYPE LOG	XYCALGR		
DEPTH-DRILLER	3055'		
DEPTH-LOGGER	3056'		
LOGGED INTERVAL	3056' TO 2304'	TO	
OPERATING RIG TIME	2 HRS		
TYPE FLUID IN HOLE	WATER		
SALINITY, PPM CL	NATIVE		
DENSITY-VISCOSITY	8.5		
LEVEL	FULL		
MAX. REC. TEMP. DEG F.	75 DEG F		
EQUIPMENT-LOCATION	101 - FTM		
RECORDED BY	WILLIAMS		
WITNESSED BY	CAUSARA'S		

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
ONE	52 1/2"	190'	SURF	54"	.5" WT.	160'	SURF
TWO	12 1/4"	990'	SURF	44"	.5" WT.	980'	SURF
THREE	12 1/4"	1930'	SURF	34"	.5" WT.	1900'	SURF
FIVE	12 1/4"	2500'	SURF	24"	.5" WT.	2450'	SURF
SEVEN	22"	3055'	SURF				

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 INTERPRETATION, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILLFULL NEGLEGENCE 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 ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS SET OUT IN OUR CURRENT PRICE SCHEDULE.

REMARKS

XY CALIPER/GAMMA RAY TOOL STRING CONFIGURATION


-- GAMMA RAY -- 3 FT. LONG
MEASURE POINT 7.5 FT. FROM BOT
-- TOTAL TOOL STRING LENGTH = 9 FT. --
-- XY CALIPER -- 6 FT. LONG
-- LONG ARM MEASURE POINT 1 FT. FOM BOT
-- BOT

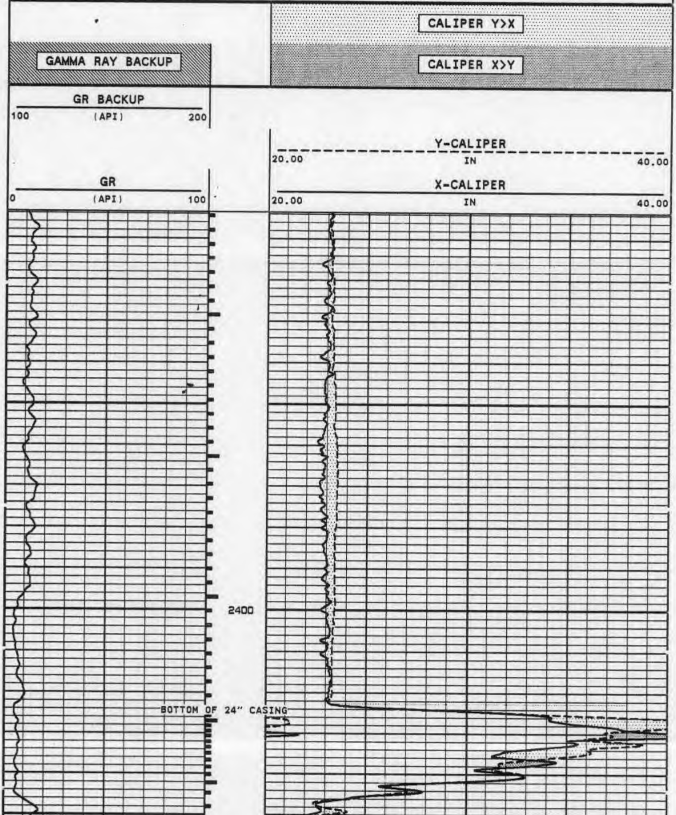
REMARKS

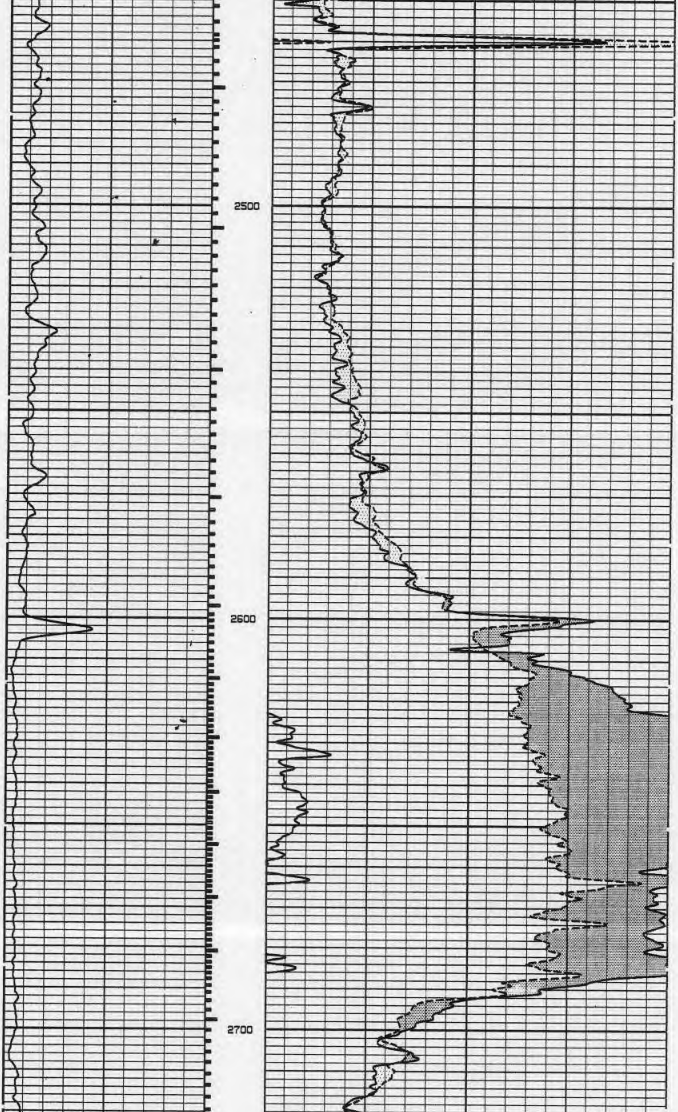
MAIN PASS
TOOL WAS RECALIBRATED AFTER LOGGING AND ALL CURVES WERE RECOMPUTED

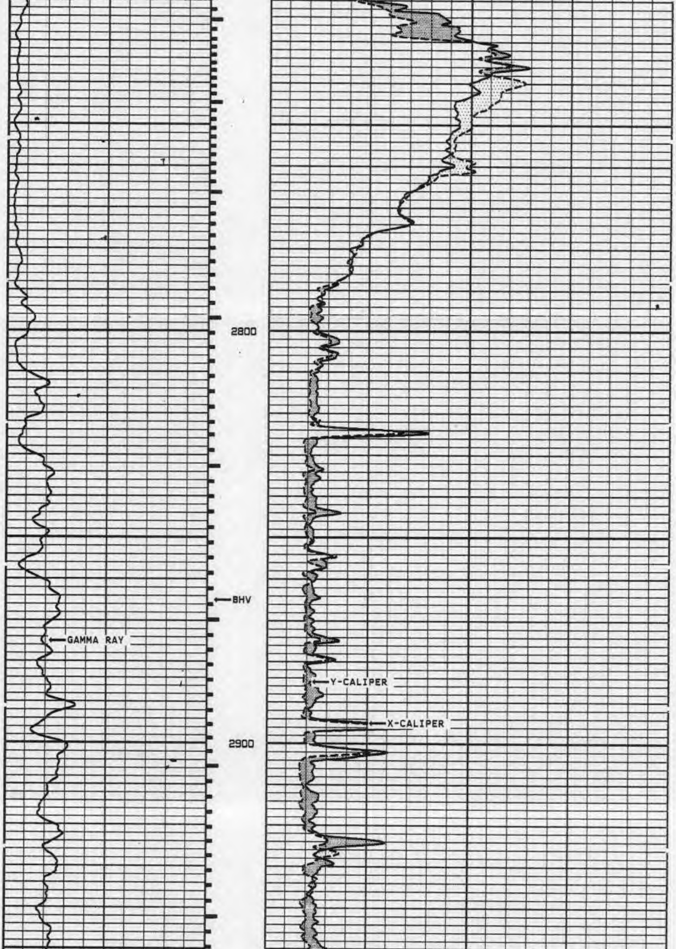
VERSION: **2.16**

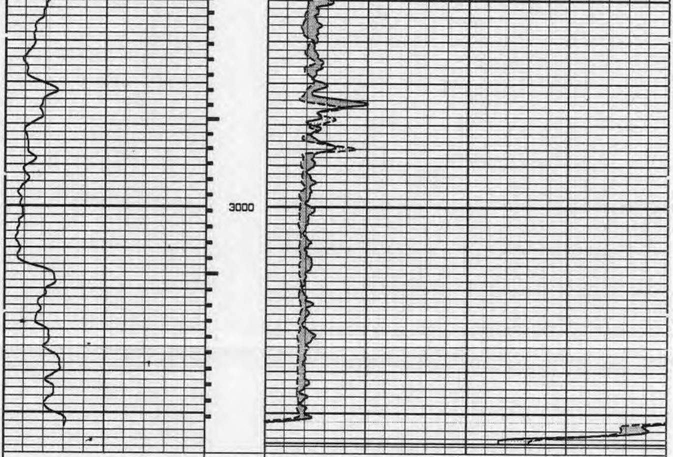
IW167XY2

FINISH DEPTH: **2303.8** FEET DIRECTION: **UP** DATE: **07/23/94** TIME: **09:14:32** MODE: **RECOMPUTE**









GR
0 (API) 100

X-CALIPER
20.00 IN 40.00

Y-CALIPER
20.00 IN 40.00

GR BACKUP
100 (API) 200

GAMMA RAY BACKUP

CALIPER X>Y

CALIPER Y>X

START DEPTH: **3060.0** FEET DIRECTION: **UP** DATE: **07/23/94** TIME: **08:50:35** MODE: **RECOMPUTE**

IW167XY2

VERSION: 2.16

REMARKS

REPEAT SECTION
TOOL WAS RECALIBRATED AFTER LOGGING AND ALL CURVES WERE RECOMPUTED

VERSION: 2.16

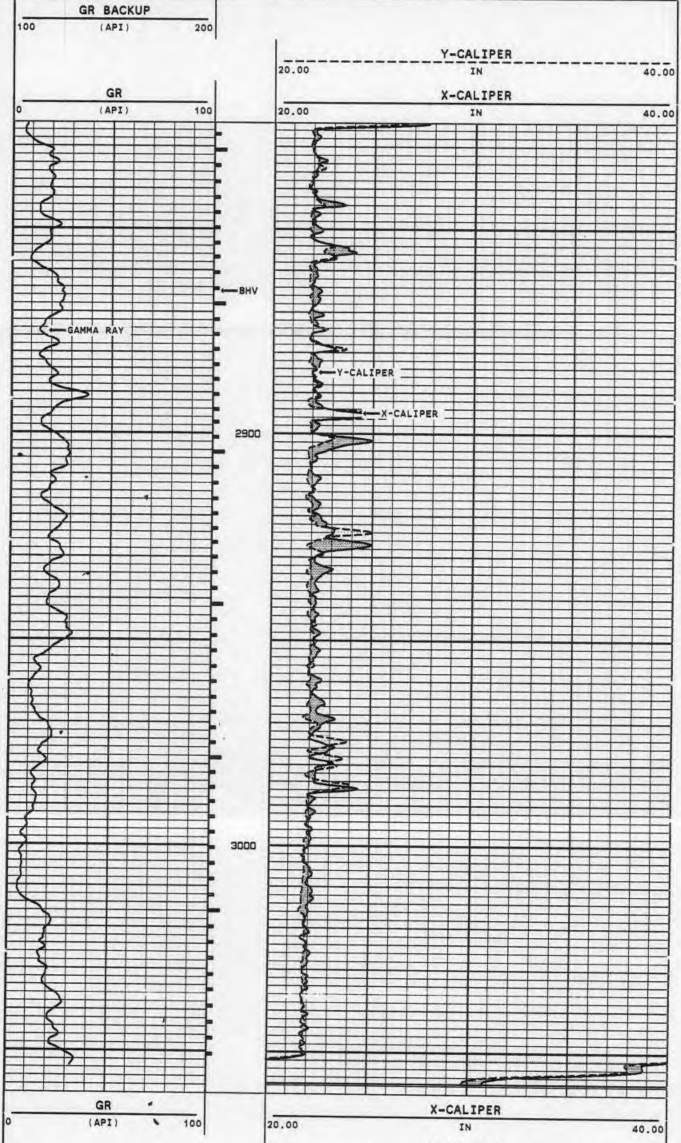
IW167XY3

FINISH DEPTH: **2824.5** FEET DIRECTION: **UP** DATE: **07/23/94** TIME: **09:31:55** MODE: **RECOMPUTE**

CALIPER Y>X

GAMMA RAY BACKUP

CALIPER X>Y



Y-CALIPER
20.00 IN 40.00

GR BACKUP
100 (API) 200

GAMMA RAY BACKUP

CALIPER X>Y

CALIPER Y>X

START DEPTH: **3060.2** FEET DIRECTION: **UP** DATE: **07/23/94** TIME: **09:24:25** MODE: **RECOMPUTE**

IW167XY3

VERSION: 2.16

MASTER CALIBRATION SUMMARY

FILE: DATE: 07/23/94 TIME: 22:29 VERSION: 2.16

X-CALIPER

DATE: 07/23/94 TIME: 10:06

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
ZERO	450.7	CPS	20.0	19.4	20.4	0.47	IN
PLUS	656.7	CPS	40.5	39.7	41.0	0.25	IN

Y-CALIPER

DATE: 07/23/94 TIME: 10:06

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
ZERO	479.0	CPS	20.0	19.9	20.1	0.00	IN
PLUS	685.7	CPS	40.5	40.1	41.0	0.16	IN

GR API CAL #12

DATE: 07/23/94 TIME: 08:03

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
SHOP: BACKGROUND	21.3	CPS	0.0	7.8	30.6	4.77	API
SHOP: CALIBRATOR	149.8	CPS	120.0	110.7	175.2	12.97	API

COMPANY YOUNGQUIST BROTHERS INC.
SOUTH DISTRICT WWTP
WELL IW-16
FIELD MIAMI-DADE STATE FLORIDA

RECEIVED
JUL - 6 1994
DEPT OF ENV PROTECTION
WEST PALM BEACH

SONIC VIL LOG

digital logging, inc.

File No. : 28-JUNE-1994
Company : YOUNGQUIST BROTHERS INC.
Well : IW-#16
Field : S. DISTRICT WASTEWATER TREATMENT PLANT
County : DADE
State : FLORIDA
Country : USA

Location : MIAMI-DADE WATER & SEWER
SOUTH DISTRICT WWTP

Sect : Twp : Rge :

Recorded By : RANDY NITZ
Witnessed By : C. CAUSARA'S

Date : 28-JUNE-94
Run No. : 5

Permanent Datum : PAD
Drilling Measured From : PAD
Log Measured From: PAD
Above Permanent Datum : 0.0 FT

Depth--Driller : 2500.0 FT
Depth--Logger : 2478.0 FT
Bottom Log Interval : 2464.0 FT
Top Log Interval : 1875.0 FT

Casing Depth--Driller : 1900.0 FT
Casing Depth--Logger : 1900.0 FT
Casing Diameter : 34.000 IN

Bit Size : 12.250 IN
Unit No. : LU #78
Location : TULSA, OKLAHOMA

Elevations :
KB : 0.0 FT
DF : 0.0 FT
GL : 0.0 FT

Additional Services

GRT
SDT

GRT
CST

GRT
MST
DIT

The customer is hereby warned that by providing the log data herein, Digital Logging,Inc. does not agree to provide any interpretation of log data, conversion of log data to physical rock parameters or recommendations. Digital Logging,Inc. does not guarantee or warrant either expressly or impliedly, the accuracy of any interpretation of log data, conversion of log data to physical rock parameters or recommendations which may be given by Digital Logging,Inc. personnel. Any interpretation, conversion or recommendation is not part of the consideration for the agreement between the parties and is not part of any part of the charge by Digital Logging,Inc. for its services. Any user of the log data is warned that said user is not entitled to rely on intepretations, conversions or recommendations as aforesaid.

Run Number 5

Depth To Fluid 0.0 FT
Fluid Type In Hole : NATIVE WATER
Density : 0.000 LB/GAL
Viscosity : 0.000 SEC.
pH : 0.000
Fluid Loss : 0.000 CC
Salinity : 0.000 PPM

RM Source : PIT
RM : 0.180 OHMM at 85 F
RM at BHT : 0.160 OHMM at 99 F

RMF Source : CALCULATED
RMF : 0.140 OHMM at 85 F
RMF at BHT : 0.120 OHMM at 99 F

RMC Source : CALCULATED
RMC : 0.220 OHMM at 85 F
RMC at BHT : 0.190 OHMM at 99 F

Max Recorded Temp. : 99 F
Time Circulation Stopped : 10:00 6/28/94
Operating Rig Time, Hrs. : 4.0

- Sonde Serial Numbers -

GRTB	GRT-B-01
CEN	Not Calibrated
CST	22000014
CEN	Not Calibrated

Casing Strings

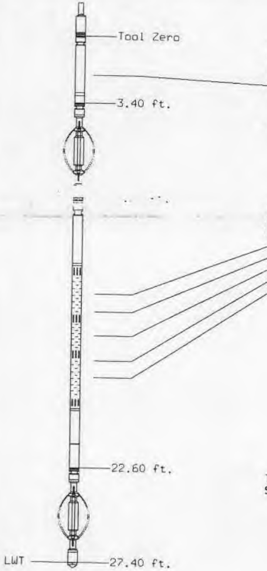
Size (IN)	Weight (LB/FT)	Bottom (FT)
34.000	0.00	190.00
44.000	0.00	980.00
54.000	0.00	160.00

- Comments -

HOLE DEVIATED LESS THAN 5 DEGREES.
SONDE STRING GRT/CEN/CST/CEN
LOGGING SPEED 30'/MIN.
SONIC POROSITY USED 189 FLUID TT AND 47.5 MATRIX TT.
MUD INFORMATION N/A.
WELL SPOT LOCATION N/A.
DEPTH SAMPLE INT. = 0.2'.
10 LBS/GAL. NaCL PLUG PUMPED IN AT SURFACE TO KILL WELL.
12.250" IS USED FOR A PILOT HOLE.
REPEAT #3 CALIPERS WERE CLOSED FROM 2420'-2422' DUE TO PULLING 1700 LBS OVER STRING WEIGHT. CABLE HEAD DEPTH WAS AT 2404.9'.

Tool String Schematic

Total Tool Length - 27.40 **ft.**
Maximum Outside diameter - 3.60 **in.**
Net Weight in Air - 470.00 **lbs.**



Tool: GRTB **Length:** 3.40 **ft. O.D.:** 3.60 **in.**
Sonde ID : GRT-B-01

Measure Point	Stack Offset	Tool Offset
GRP	2.00	2.00

Tool: CEN **Length:** 4.80 **ft. O.D.:** 3.60 **in.**
Sonde ID : Not Calibrated

Tool: CST **Length:** 14.40 **ft. O.D.:** 3.60 **in.**
Sonde ID : 22000014

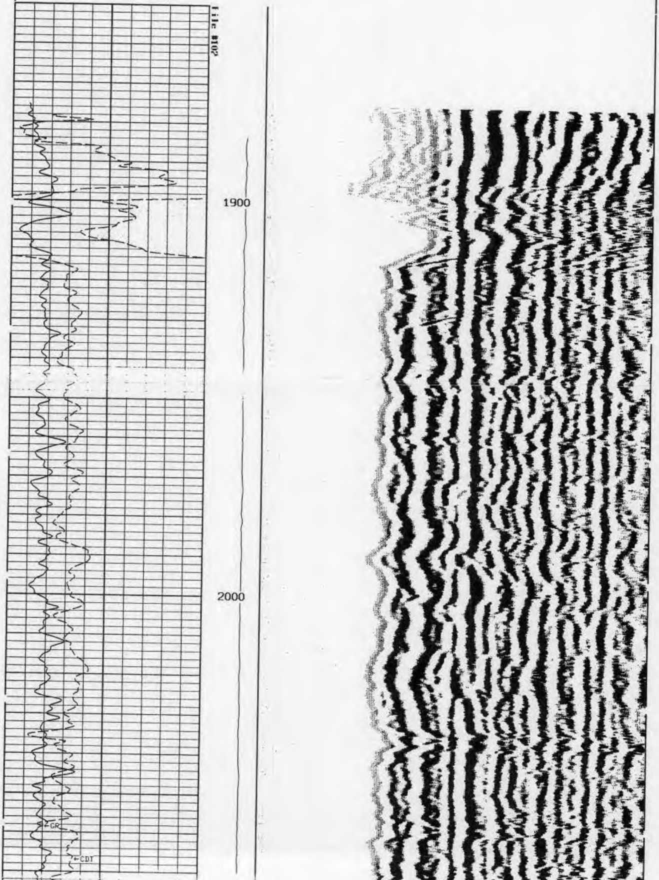
Measure Point	Stack Offset	Tool Offset
TT1	13.00	4.80
TT3	14.00	5.80
CDT	15.50	7.30
TT4	17.00	8.80
TT2	18.00	9.80

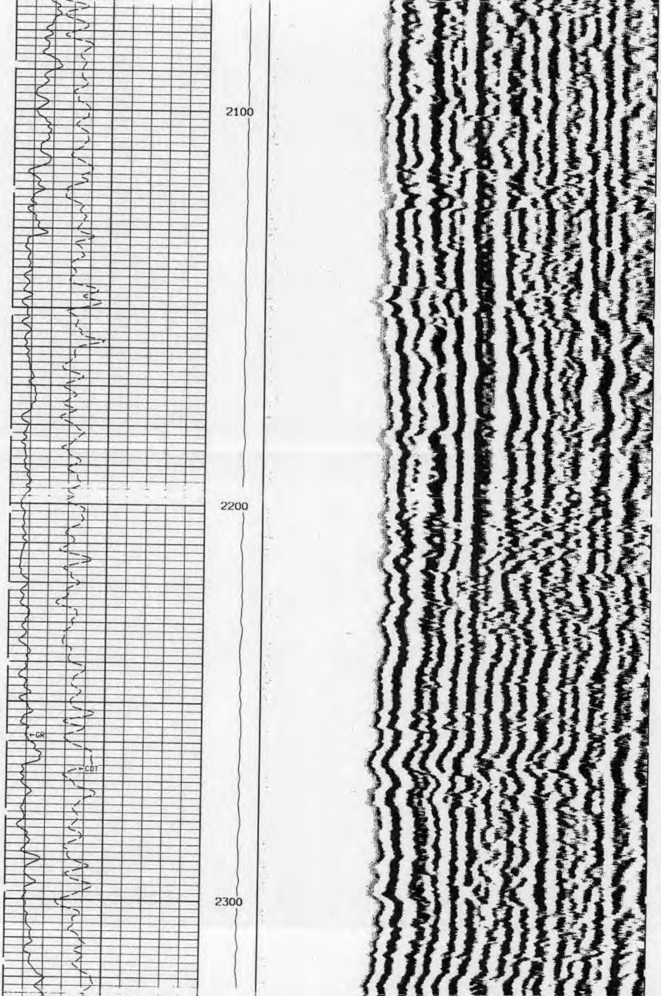
Tool: CEN **Length:** 4.80 **ft. O.D.:** 3.60 **in.**
Sonde ID : Not Calibrated

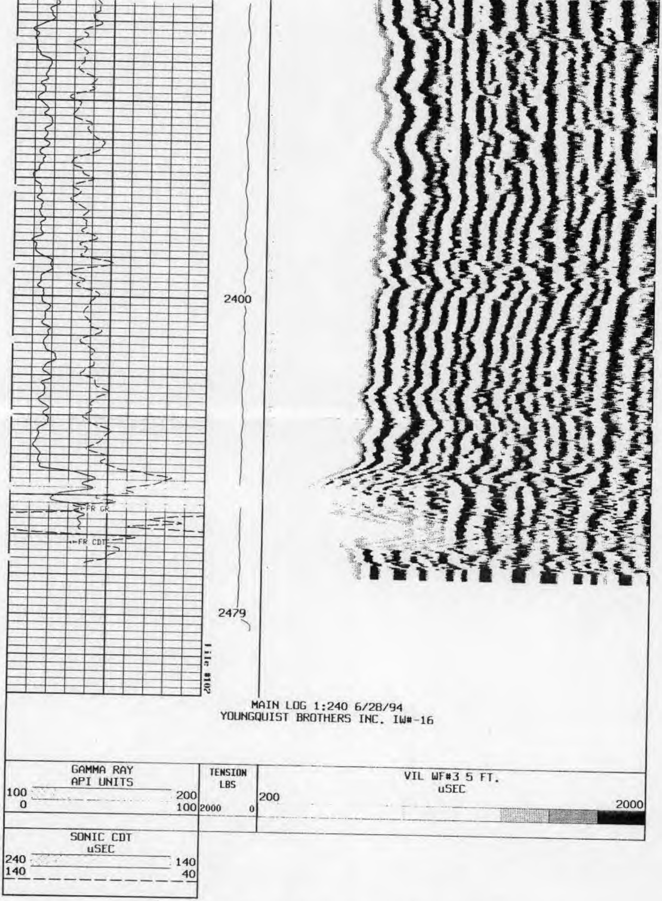
SONIC CDT
uSEC
240 140
140 40

GAMMA RAY API UNITS	TENSION LBS	VIL WF#3 5 FT. uSEC
100 — 200		200 — 2000
0 — 100	2000 — 0	

MAIN LOG 1:240 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16







MAIN LOG 1:240 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16

* Borehole Zone Factors *

Zone 1	99999.0 to 0.0 F
VIL Cutoff 0	-500.000
VIL Cutoff 1	-250.000
VIL Cutoff 2	[illegible]
VIL Cutoff 3	-10.000
VIL Cutoff 4	10.000
VIL Cutoff 5	100.000
VIL Cutoff 6	250.000
VIL Cutoff 7	500.000

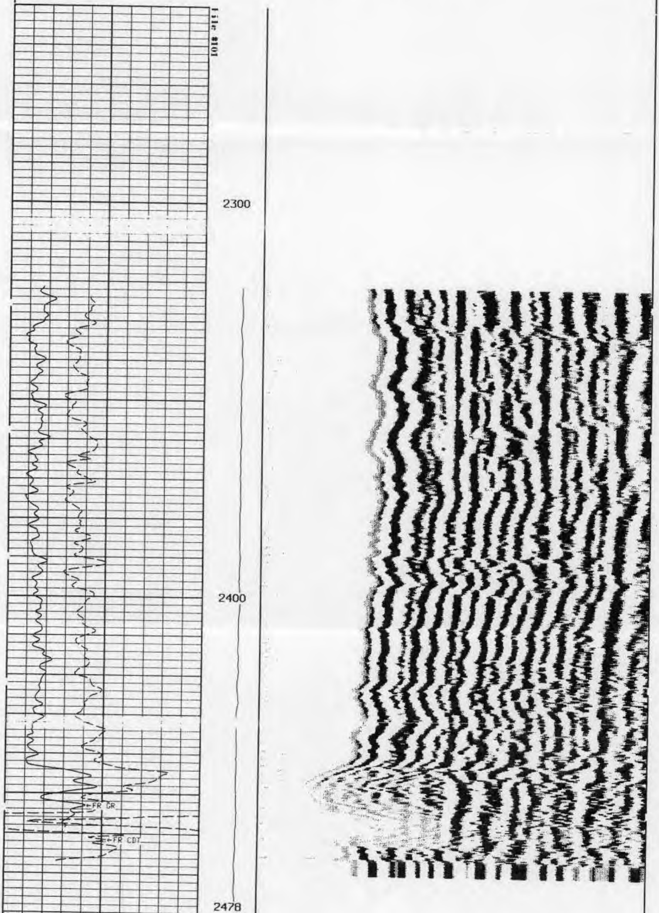
SONIC CDT
uSEC
240 140
140 40

GAMMA RAY
API UNITS
100 200
0 100

TENSION
LBS
2000 0

VIL WF#3.5 FT.
uSEC
200 2000

REPEAT SECTION 1:240 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16



REPEAT SECTION 1:240 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16

GAMMA RAY
API UNITS
100 200
0 100

TENSION
LBS
2000 0

VIL WF#3 5 FT.
uSEC
200 2000

SONIC CDT
uSEC
240 140
140 40

* Borehole Zone Factors *

Zone 1 99999.0 to 0.0 F

VIL Cutoff 0	-500.000
VIL Cutoff 1	-250.000
VIL Cutoff 2	-100.000
VIL Cutoff 3	-10.000
VIL Cutoff 4	10.000
VIL Cutoff 5	100.000
VIL Cutoff 6	250.000
VIL Cutoff 7	500.000

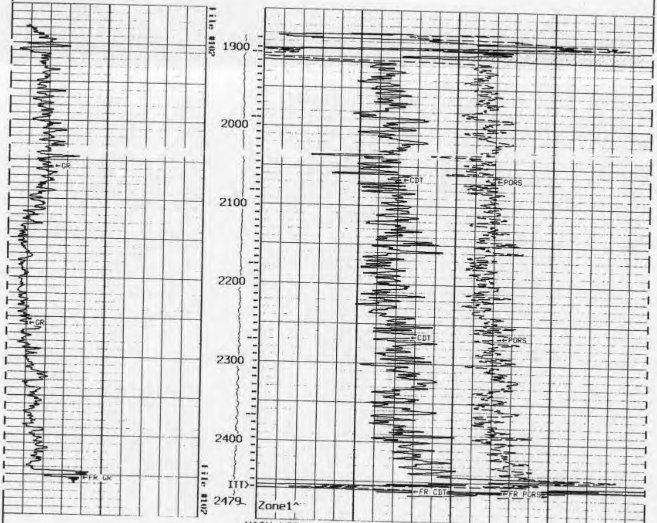
SONIC POROSITY
PERCENT
100 0

GAMMA RAY
API UNITS
100 200
0 100

TENSION
LBS
2000 0

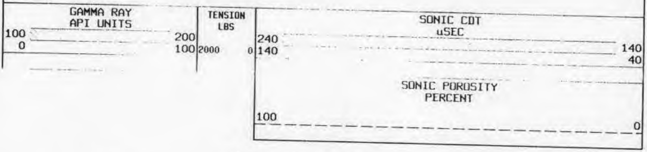
SONIC CDT
uSEC
240 140
140 40

MAIN LOG 1:1200 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16



MAIN LOG 1:1200 6/28/94

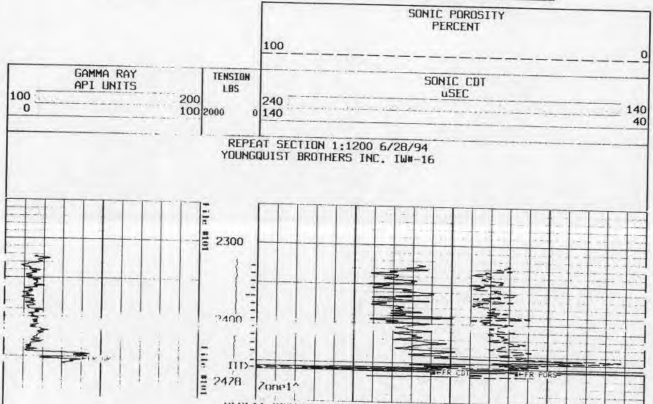
YOUNGQUIST BROTHERS INC. IW#-16



* Borehole Zone Factors *

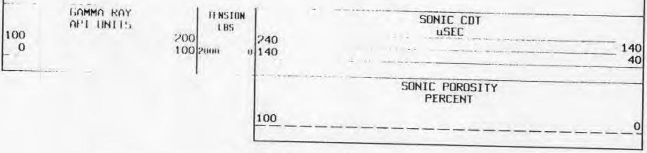
Zone 1 99999.0 to 0.0 F

Matrix Transit Time	47.5	US/F
Fluid Transit Time	189.0	US/F



REPEAT SECTION 1:1200 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16

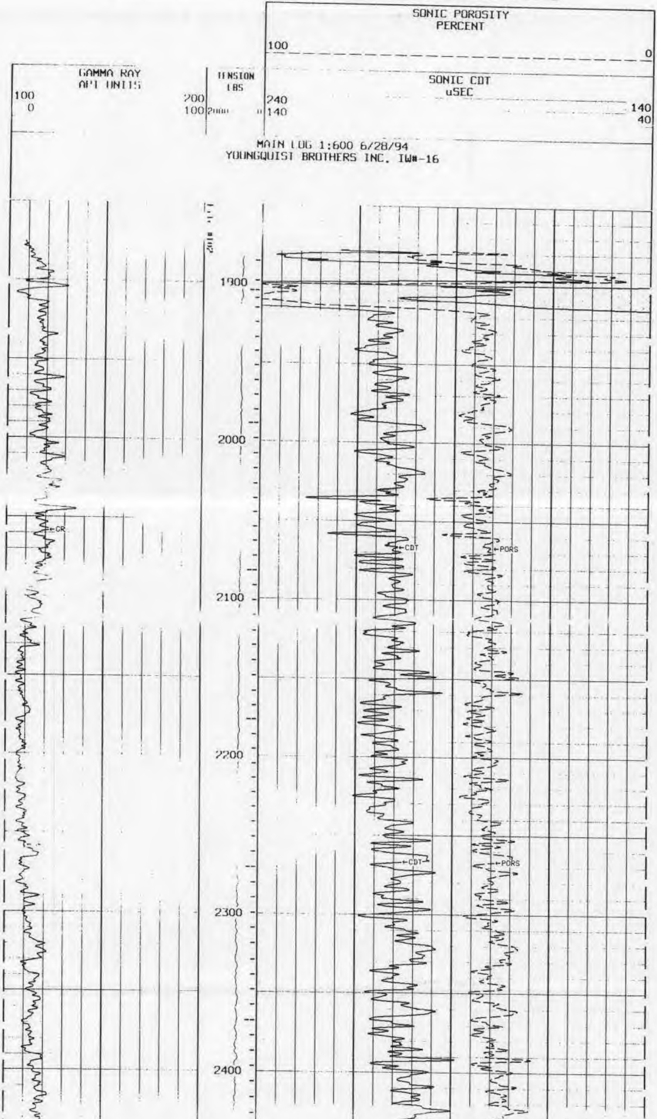
REPEAT SECTION 1:1200 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16



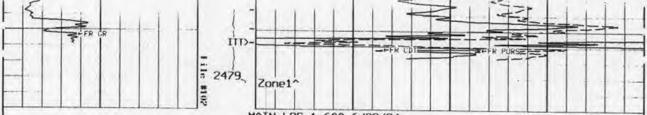
* Borehole Zone Factors *

Zone 1 99999.0 to 0.0 F

Matrix Transit Time	47.5	US/F
Fluid Transit Time	189.0	US/F



MAIN LOG 1:600 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16



MAIN LOG 1:600 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16

GAMMA RAY
API UNITS
100 200
0 100

TENSION
LBS
2000 0

SONIC CDT
uSEC
240 140
140 40

SONIC POROSITY
PERCENT
100 0

* Borehole Zone Factors *

Zone 1 99999.0 to 0.0 F

Matrix Transit Time_______________	47.5	US/F
Fluid Transit Time_______________	189.0	US/F

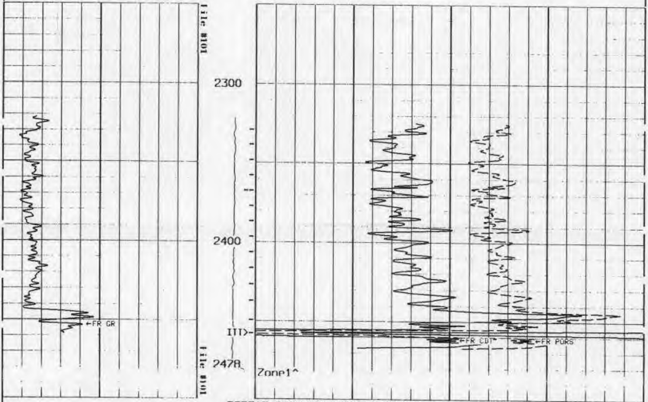
SONIC POROSITY
PERCENT
100 0

GAMMA RAY
API UNITS
100 200
0 100

TENSION
LBS
2000 0

SONIC CDT
uSEC
240 140
140 40

REPEAT SECTION 1:600 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16



REPEAT SECTION 1:600 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16

GAMMA RAY
API UNITS
100 200
0 100

TENSION
LBS
2000 0

SONIC CDT
uSEC
240 140
140 40

SONIC POROSITY
PERCENT
100 0

* Borehole Zone Factors *

Zone 1 99999.0 to 0.0 F

Matrix Transit Time______________	47.5	US/F
Fluid Transit Time______________	189.0	US/F

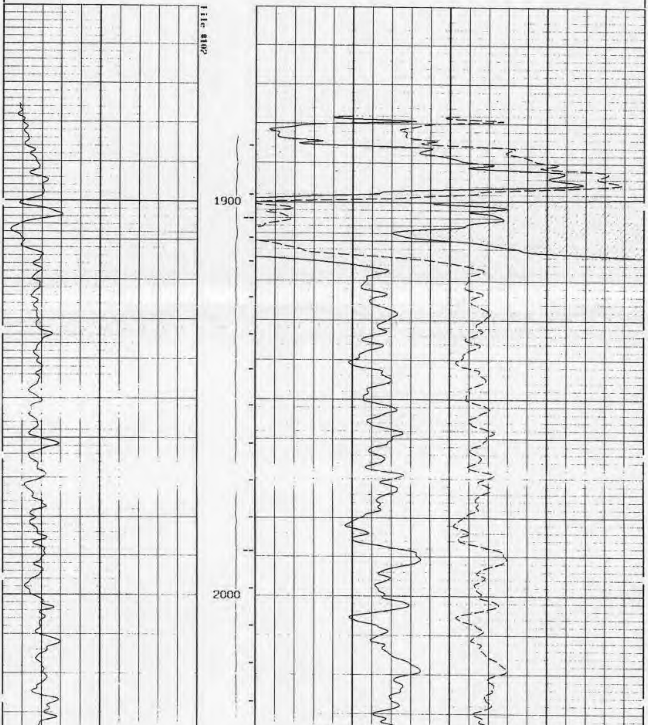
SONIC POROSITY
PERCENT
100 0

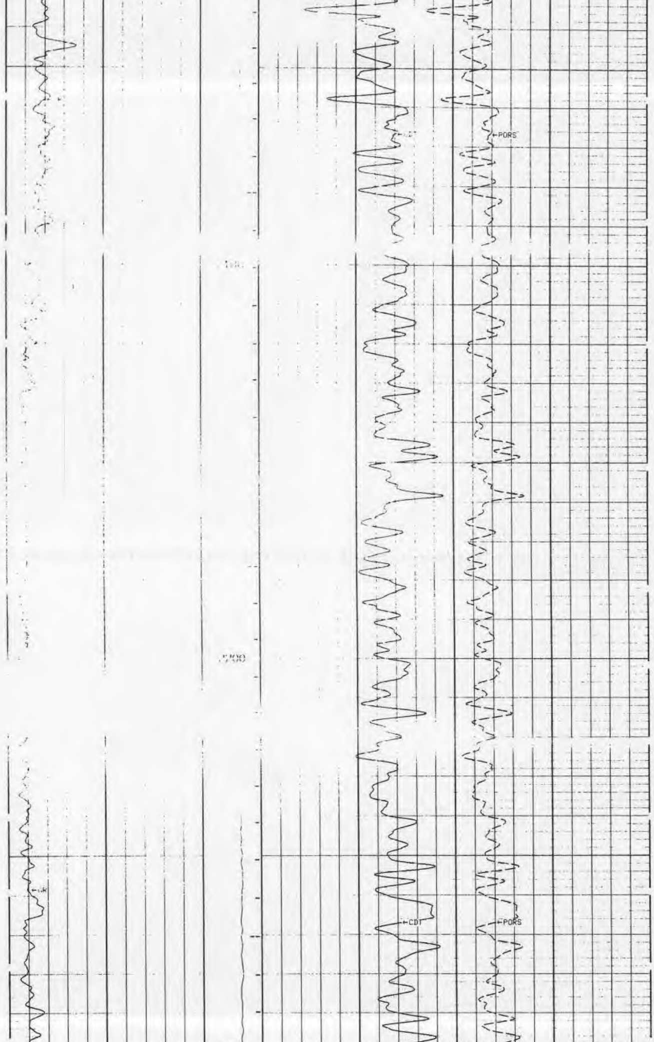
GAMMA RAY
API UNITS
100 200
0 100

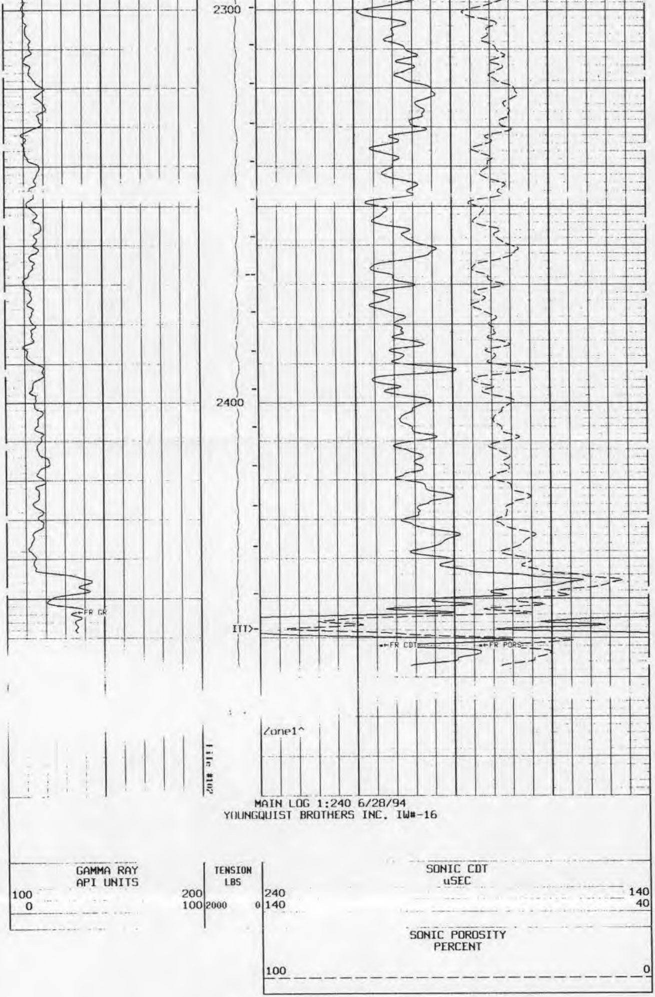
TENSION
LBS
2000 0

SONIC CDT
uSEC
240 140
140 40

MAIN LOG 1:240 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16





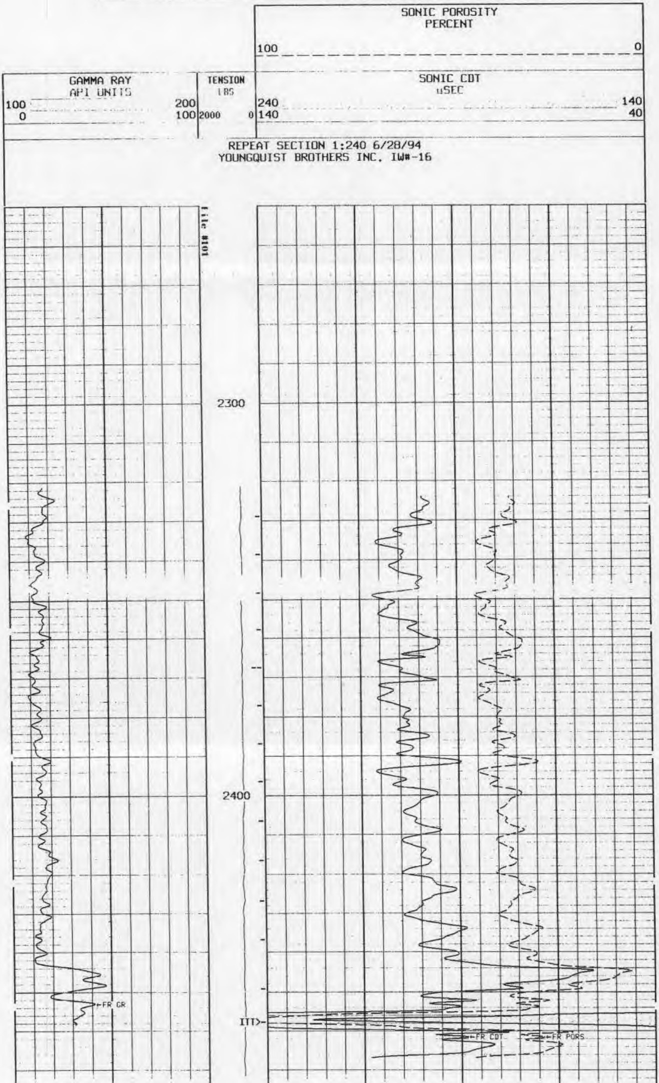


MAIN LOG 1:240 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16

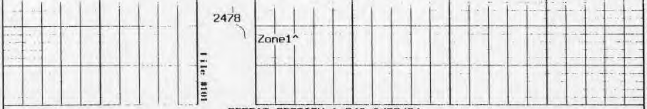
* Borehole Zone Factors *

Zone 1 99999.0 to 0.0 F

Matrix Transit Time______________ 47.5 US/F
Fluid Transit Time______________ 189.0 US/F



REPEAT SECTION 1:240 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16



REPEAT SECTION 1:240 6/28/94
YOUNGQUIST BROTHERS INC. IW#-16

GAMMA RAY API UNITS	TENSION LBS	SONIC CDT uSEC
100 — 200		240 — 140
0 — 100	2000 — 0	140 — 40
		SONIC POROSITY PERCENT
		100 — 0

* Borehole Zone Factors *

Zone 1 99999.0 to 0.0 F

Matrix Transit Time	47.5	US/F
Fluid Transit Time	189.0	US/F

* Calibration Summary *

Shop Calibration
GRTB

Performed : 27 [illegible]-1994 Time : 20:52
[illegible] : [illegible] [illegible] : [illegible]

	Background	Measured Jig	Units	Calibrated Jig	Units
GR	60	389	CPS	200	GRAPI

Before Survey Verification
GRTB

Performed : 28-JUN-1994 Time : 12:44
Sensor Suite : GR-GR5 ID : GRT-B-01

	Shop Jig	Before Jig	Units
GR	200	205	GRAPI

After Survey Verification
GRTB

Performed : 28-JUN-1994 Time : 21:00
Sensor Suite : GR-GR5 ID : GRT-B-01

	Before Jig	After Jig	Units
GR	205	209	GRAPI

Shop Calibration
CST

Performed : 23-JUN-1994 Time : 20:54
Sensor Suite : SON-ANA ID : 22000014

Transit Time

T/R Pair	Measured	Calibrated	Units
T1R1	245.9	265.0	uS
T2R2	250.4	265.0	uS
T1R2	358.2	379.0	uS
T2R1	361.5	379.0	uS

Amplitude

T/R Pair	Measured	Calibrated	Units
T1R1	90.00	90.00	mV
T2R2	90.00	90.00	mV
T1R2	78.00	78.00	mV
T2R1	78.00	78.00	mV

FLORIDA GEOPHYSICAL LOGGING, INC.

DUAL INDUCTION
LL-3
GAMMA RAY

FILE NO. ____________

COMPANY YOUNGQUIST BROTHERS INC.
WELL IW-16
FIELD MIAMI-DADE
COUNTY DADE STATE FLORIDA
LOCATION
SEC.______ TWP______ RGE______

RECEIVED
AUG 5 1994
DEPT OF ENV PROTECTION
WEST PALM BEACH

OTHER SERVICES:
XYCALGR
CBL
FRTD
BHC

PERMANENT DATUM PAD ELEV.______
LOG MEASURED FROM PAD ______ FT.ABOVE PERMANENT DATUM
DRILLING MEASURED FROM PAD

ELEV.:K.B.______
D.F.______
G.L.______

DATE	23-JUL-94	
RUN NO.	SEVEN	
TYPE LOG	FRTD	
DEPTH-DRILLER	3055'	
DEPTH-LOGGER	3056'	
LOGGED INTERVAL	3056' TO 2423'	TO
OPERATING RIG TIME	4 HRS	
TYPE FLUID IN HOLE	WATER	
SALINITY, PPM CL	NATIVE	
DENSITY-VISCOSITY	8.5	
LEVEL	FULL	
MAX. REC. TEMP, DEG F.	75 DEG F	
EQUIPMENT-LOCATION	101 - FTM	
RECORDED BY	WILLIAMS	
WITNESSED BY	CAUSARA'S	

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
ONE	52 1/2"	190'	SURF	54"	.5" WT.	160'	SURF
TWO	12 1/4"	990'	SURF	44"	.5" WT.	980'	SURF
THREE	12 1/4"	1930'	SURF	34"	.5" WT.	1900'	SURF
FIVE	12 1/4"	2500'	SURF	24"	.5" WT.	2450'	SURF
SEVEN	22"	3055'	SURF				

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REMARKS

DUAL INDUCTION/LATERLOG3/GAMMA RAY TOOL STRING CONFIGURATION

-- GAMMA RAY -- 3 FT. LONG
MEASURE POINT 25.5 FT. FROM BOT

-- DUAL INDUCTION/LATERLOG3
24 FT LONG

-- TOTAL TOOL STRING LENGTH = 27 FT. --

-- SP MEASURE POINT --16.3 FT. FROM BOT
-- ILD MEASURE POINT --16.3 FT. FROM BOT

-- ILM MEASURE POINT --11.5 FT. FROM BOT

-- LL3 MEASURE POINT --3.2 FT. FROM BOT

-- BOT

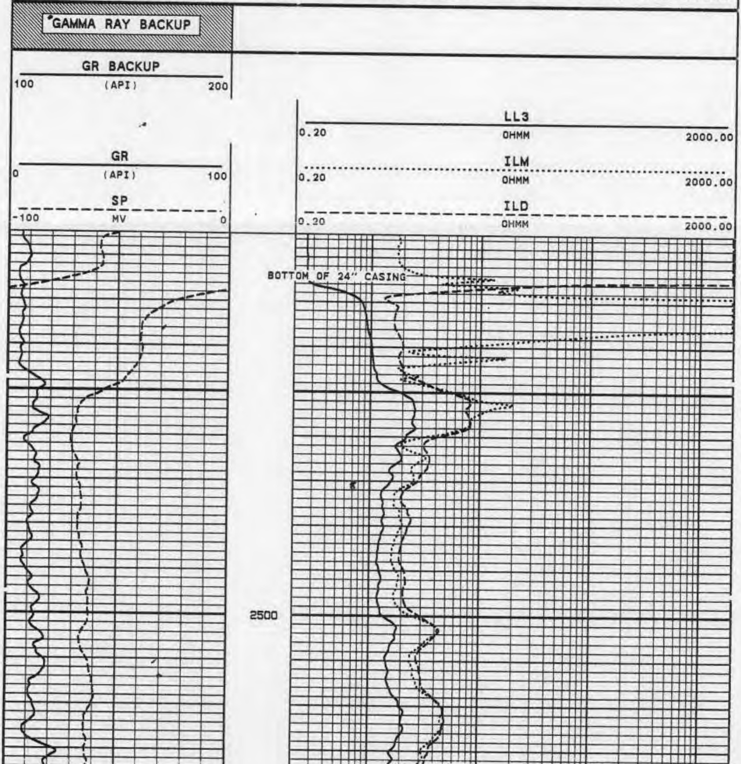
REMARKS

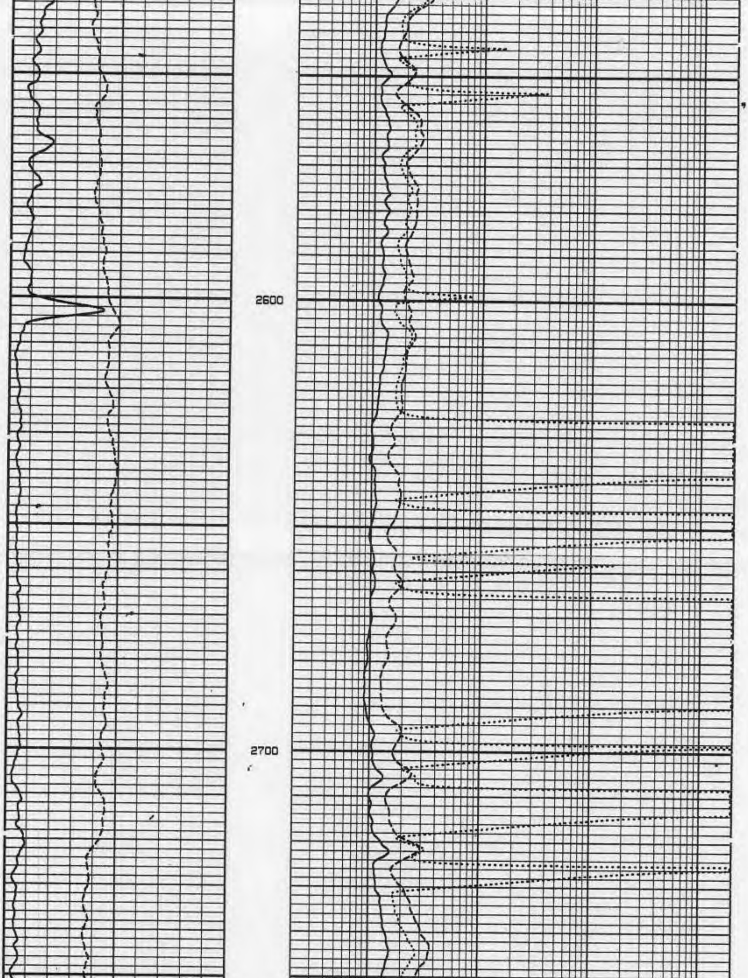
MAIN PASS
20 MMHO OF BOREHOLE CORRECTION APPLIED

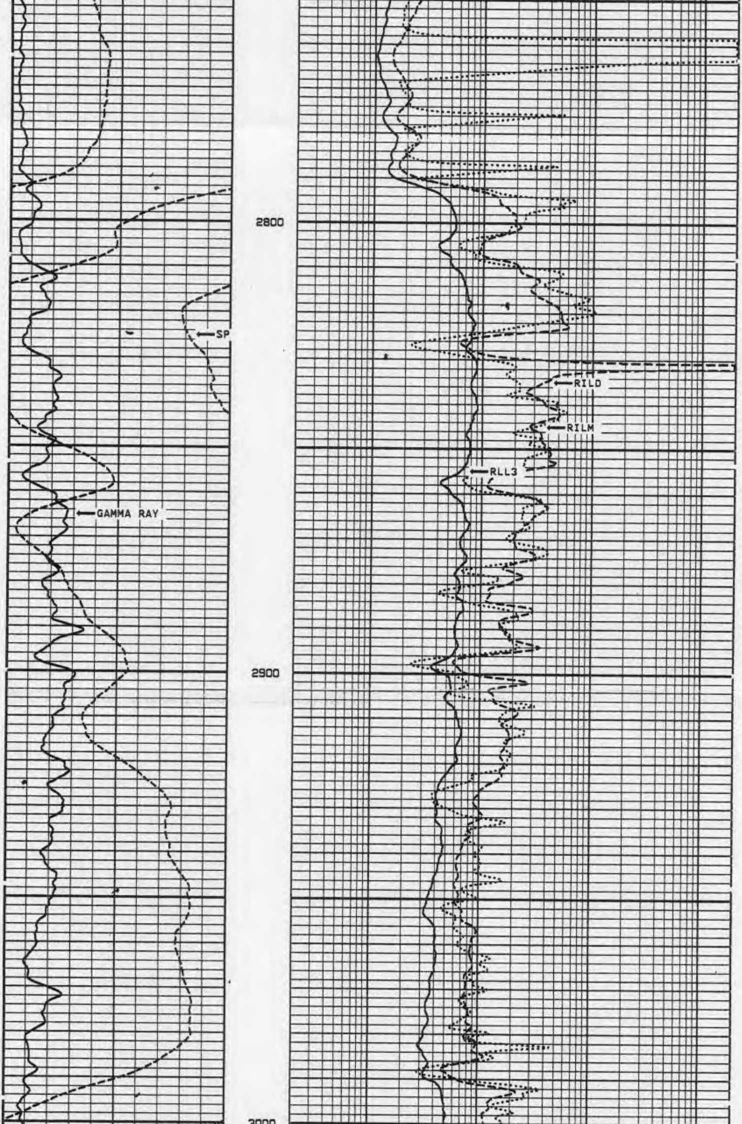
VERSION: 2.16

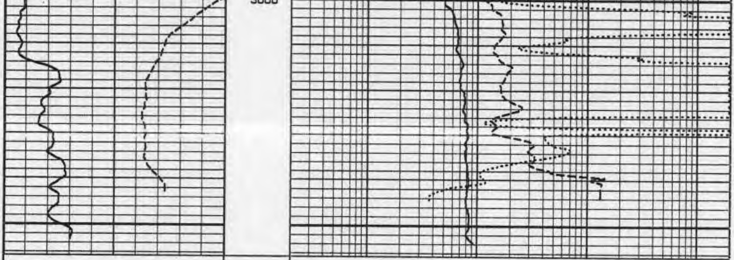
IW167DIL3

FINISH DEPTH: **2414.5** FEET DIRECTION: **UP** DATE: **07/23/94** TIME: **18:06:28** MODE: **TRACE PLAYBACK**









SP
-100 MV 0

GR
0 (API) 100

ILD
0.20 OHMM 2000.00

ILM
0.20 OHMM 2000.00

LL3
0.20 OHMM 2000.00

GR BACKUP
100 (API) 200

GAMMA RAY BACKUP

START DEPTH: **3056.2** FEET DIRECTION: **UP** DATE: **07/23/94** TIME: **17:52:21** MODE: **TRACE PLAYBACK**

IW167DIL3

VERSION: 2.16

REMARKS

REPEAT SECTION
20 MMHO OF BOREHOLE CORRECTION APPLIED

VERSION: 2.16

IW167DIL2

FINISH DEPTH: **0.0** FEET DIRECTION: **UP** DATE: TIME: MODE: **RECOMPUTE**

GAMMA RAY BACKUP

GR BACKUP
100 (API) 200

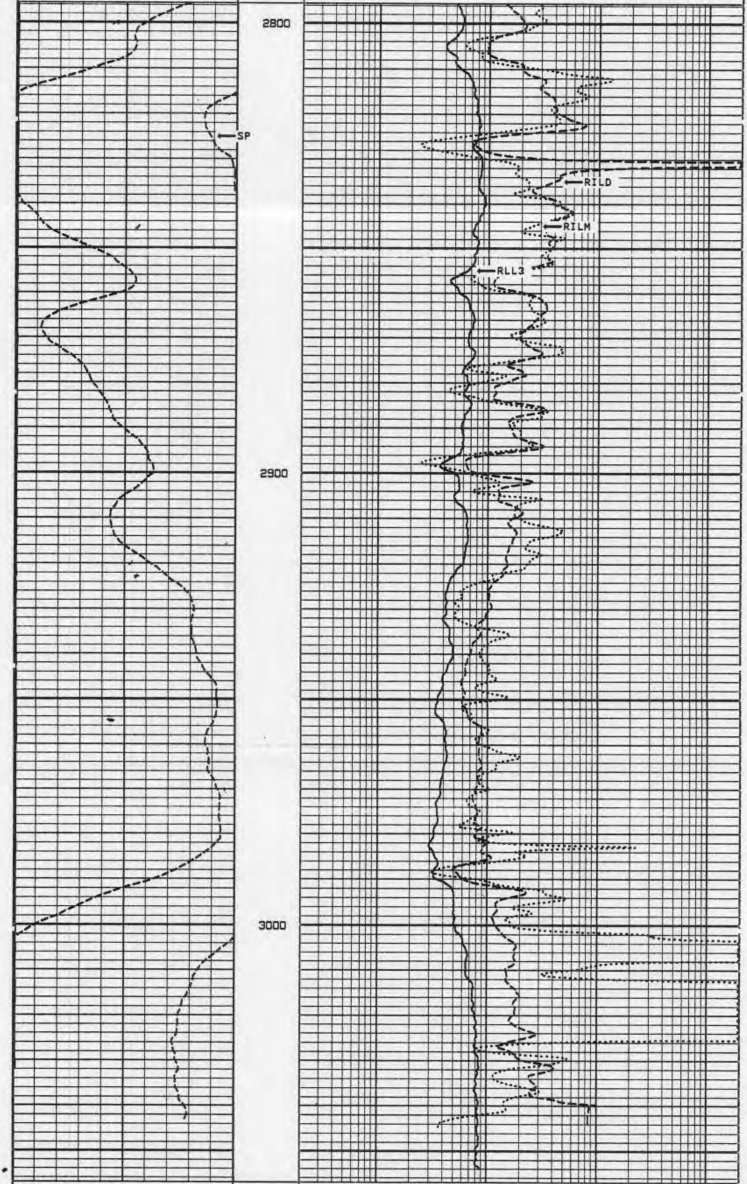
LL3
0.20 OHMM 2000.00

GR
0 (API) 100

ILM
0.20 OHMM 2000.00

SP
-100 MV 0

ILD
0.20 OHMM 2000.00



SP
-100 MV 0

GR
0 (API) 100

GR BACKUP
100 (API) 200

ILD
0.20 OHMM 2000.00

ILM
0.20 OHMM 2000.00

LL3
0.20 OHMM 2000.00

GAMMA RAY BACKUP

START DEPTH: **3056.4** FEET DIRECTION: **UP** DATE: **07/23/94** TIME: **17:36:39** MODE: **RECOMPUTE**

IW167DIL2

VERSION: 2.16

MASTER CALIBRATION SUMMARY

```
     FILE:                  DATE: 07/23/94       TIME: 22:42         VERSION: 2.16


                                     ILD TOOL #PEN

                            DATE: 07/12/94        TIME: 10:28

                  MEASURED   UNITS   STANDARD   MINIMUM    MAXIMUM   DEVIATION   UNITS
                  --------   -----   --------   --------   --------  ---------   -----
LOOP OPEN             84.2   MV           2.0       -1.2        3.7       0.83   MMHO
LOOP CLOSED          688.6   MV         350.0      341.1      352.0       2.00   MMHO


                                     ILM TOOL #PEN

                            DATE: 07/12/94        TIME: 10:29

                  MEASURED   UNITS   STANDARD   MINIMUM    MAXIMUM   DEVIATION   UNITS
                  --------   -----   --------   --------   --------  ---------   -----
LOOP OPEN             99.1   MV           2.0       -1.3        4.0       1.21   MMHO
LOOP CLOSED          824.3   MV         472.0      467.3      476.8       2.82   MMHO


                                     LL3 TOOL #PEN

                            DATE: 07/12/94        TIME: 15:56

                  MEASURED   UNITS   STANDARD   MINIMUM    MAXIMUM   DEVIATION   UNITS
                  --------   -----   --------   --------   --------  ---------   -----
INTERNAL ZERO         27.1   MV           2.0      -16.5       18.3       6.90   OHMS
INTERNAL CAL.        433.0   MV         500.0      493.9      507.9       3.59   OHMS


                                     GR API CAL #12

                            DATE: 07/23/94        TIME: 08:03

                  MEASURED   UNITS   STANDARD   MINIMUM    MAXIMUM   DEVIATION   UNITS
                  --------   -----   --------   --------   --------  ---------   -----
SHOP: BACKGROUND      21.3   CPS          0.0        7.8       30.6       4.77   API
SHOP: CALIBRATOR     149.8   CPS        120.0      110.7      175.2      12.97   API
```

COMPANY YOUNGQUIST BROTHERS INC.
SOUTH DISTRICT WWTP
WELL IW-16
FIELD MIAMI-DADE STATE FLORIDA

FLORIDA GEOPHYSICAL LOGGING, INC.

FLUID
RESISTIVITY
FLUID DENSITY
TEMPERATURE

FILE NO. ____

COMPANY YOUNGQUIST BROTHERS INC.
WELL IW-16
FIELD MIAMI-DADE
COUNTY DADE STATE FLORIDA

RECEIVED
AUG 5 1994
DEPT OF ENV PROTECTION
WEST PALM BEACH

LOCATION
SEC. ____ TWP ____ RGE ____

OTHER SERVICES:
XYCALGR
CBL
DIL/LL3
BHC

PERMANENT DATUM PAD ELEV. ____
LOG MEASURED FROM PAD FT. ABOVE PERMANENT DATUM
DRILLING MEASURED FROM PAD

ELEV.: K.B. ____
D.F. ____
G.L. ____

DATE	23-JUL-94	
RUN NO.	SEVEN	
TYPE LOG	FRTD	
DEPTH-DRILLER	3055'	
DEPTH-LOGGER	3056'	
LOGGED INTERVAL	3056' TO 2423'	TO
OPERATING RIG TIME	2 HRS	
TYPE FLUID IN HOLE	WATER	
SALINITY, PPM CL	NATIVE	
DENSITY-VISCOSITY	8.5	
LEVEL	FULL	
MAX. REC. TEMP. DEG F.	75 DEG F	
EQUIPMENT-LOCATION	101 - FTM	
RECORDED BY	WILLIAMS	
WITNESSED BY	CAUSARA'S	

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
ONE	52 1/2"	190'	SURF	54"	.5" WT.	160'	SURF
TWO	12 1/4"	990'	SURF	44"	.5" WT.	980'	SURF
THREE	12 1/4"	1930'	SURF	34"	.5" WT.	1900'	SURF
FIVE	12 1/4"	2500'	SURF	24"	.5" WT.	2450'	SURF
SEVEN	22"	3055'	SURF				

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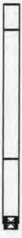
REMARKS

FLUID RESISTIVITY/TEMPERATURE TOOL STRING CONFIGURATION



-- 1 3/8" 7 TO 1 ADAPTER -- 1 FT. LONG

-- TOTAL TOOL STRING LENGTH = 9.5 FT. --

-- 1 11/16" WEIGHT -- 5 FT. LONG

-- FLUID RESISTIVITY/TEMPERATURE
3.5 FT. LONG

---MEASURE POINT (BOT)

REMARKS

MAIN PASS
LOGGED GOING DOWN

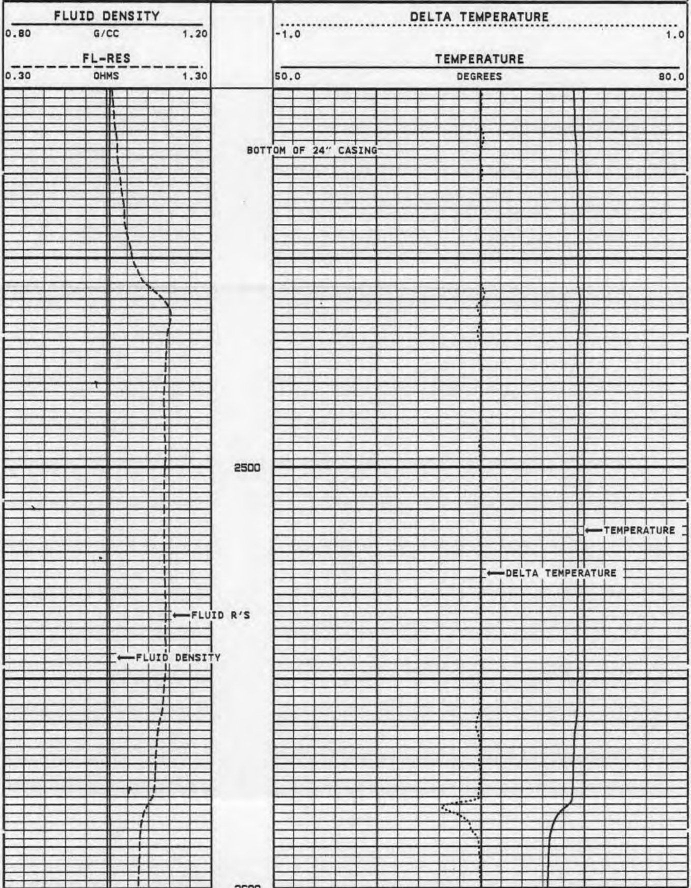
NO REPEAT ON FILM DUE TO COMPUTER LOCKUP

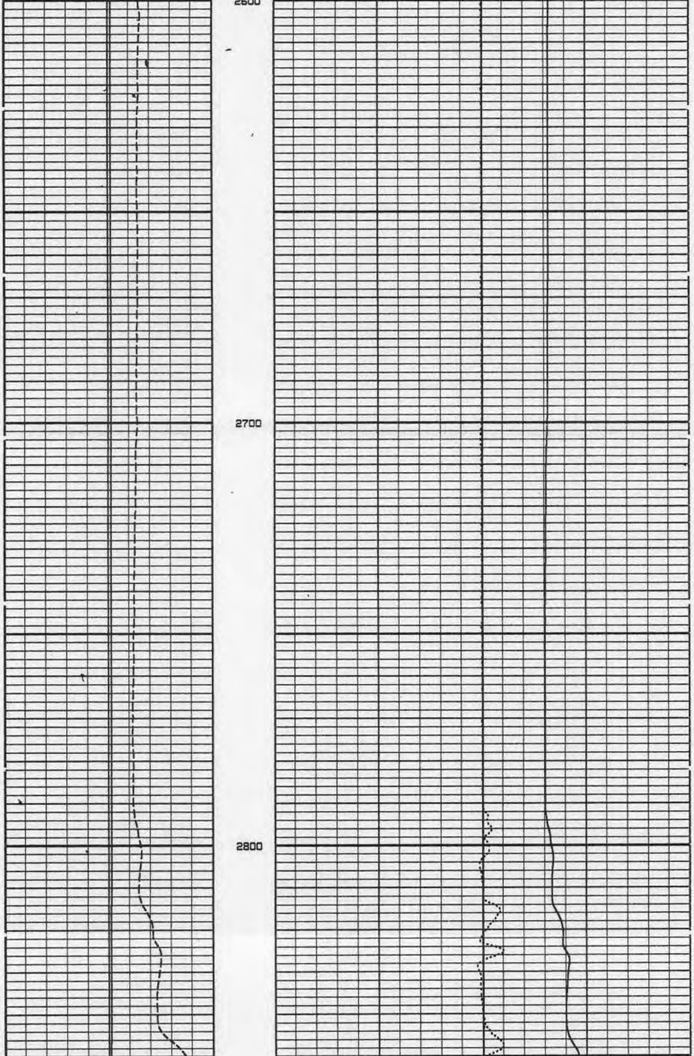
REPEAT WITNESSED BY JASMINE

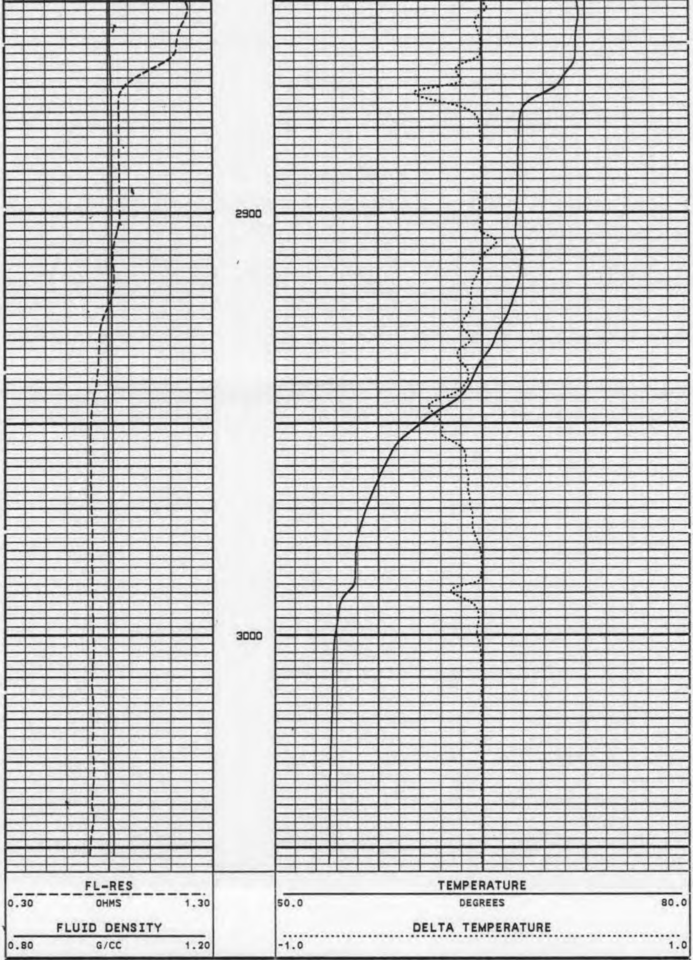
VERSION: 2.16

IW167FRT2

FINISH DEPTH: **3055.9** FEET DIRECTION: **DOWN** DATE: **07/23/94** TIME: **11:54:44** MODE: **TRACE PLAYBACK**







START .DEPTH: **2384.0** FEET DIRECTION: **DOWN** DATE: **07/23/94** TIME: **11:36:58** MODE: **TRACE PLAYBACK**

IW167FRT2

VERSION: **2.16**

MASTER CALIBRATION SUMMARY

FILE: DATE: 07/23/94 TIME: 21:54 VERSION: 2.16

TEMPERATURE

DATE: 02/21/94 TIME: 00:19

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
ZERO	1682.6	CPS	64.4	60.9	65.5	0.86	DEGF
PLUS	2147.1	CPS	104.0	97.8	106.5	1.59	DEGF

FL-RES

DATE: 07/23/94 TIME: 10:44

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
ZERO	176.9	CPS	0.0	0.0	0.0	0.00	OHMS
PLUS	448.6	CPS	15.5	15.5	15.5	0.00	OHMS

COMPANY YOUNGQUIST BROTHERS INC.
SOUTH DISTRICT WWTP
WELL IW-16
FIELD MIAMI-DADE STATE FLORIDA

FLORIDA GEOPHYSICAL LOGGING, INC.

BHC SONIC
W/VDL
GAMMA RAY

FILE NO. ______

COMPANY YOUNGQUIST BROTHERS INC.
WELL IW-16
FIELD MIAMI-DADE
COUNTY DADE STATE FLORIDA

LOCATION

RECEIVED
AUG 5 1994
DEPT OF ENV PROTECTION
WEST PALM BEACH

SEC. ______ TWP ______ RGE ______

OTHER SERVICES:
XYCALGR
FRTD
DIL/LL3
CBL

PERMANENT DATUM PAD ELEV. ______
LOG MEASURED FROM PAD FT. ABOVE PERMANENT DATUM
DRILLING MEASURED FROM PAD

ELEV.: K.B. ______
D.F. ______
G.L. ______

DATE	23-JUL-94	
RUN NO.	SEVEN	
TYPE LOG	BHCGR	
DEPTH-DRILLER	3055'	
DEPTH-LOGGER	3056'	
LOGGED INTERVAL	3056' TO 2410'	TO
OPERATING RIG TIME	4 HRS	
TYPE FLUID IN HOLE	WATER	
SALINITY, PPM CL	NATIVE	
DENSITY-VISCOSITY	8.5	
LEVEL	FULL	
MAX. REC. TEMP. DEG F.	75 DEG F	
EQUIPMENT-LOCATION	101 - FTM	
RECORDED BY	WILLIAMS	
WITNESSED BY	CAUSARA'S	

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
ONE	52 1/2"	190'	SURF	54"	.5" WT.	160'	SURF
TWO	12 1/4"	990'	SURF	44"	.5" WT.	980'	SURF
THREE	12 1/4"	1930'	SURF	34"	.5" WT.	1900'	SURF
FIVE	12 1/4"	2500'	SURF	24"	.5" WT.	2450'	SURF
SEVEN	22"	3055'	SURF				

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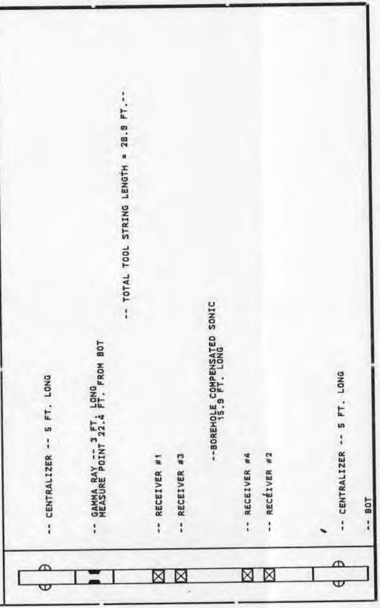
REMARKS

- BOREHOLE COMPENSATED SONIC/GAMMA RAY TOOL STRING CONFIGURATION


-- CENTRALIZER -- 5 FT. LONG
-- GAMMA RAY -- 3 FT. LONG
MEASURE POINT 22.4 FT. FROM BOT
-- TOTAL TOOL STRING LENGTH = 28.9 FT.--
-- RECEIVER #1
-- RECEIVER #3
--BOREHOLE COMPENSATED SONIC
15.9 FT. LONG
-- RECEIVER #4
-- RECEIVER #2
-- CENTRALIZER -- 5 FT. LONG
-- BOT

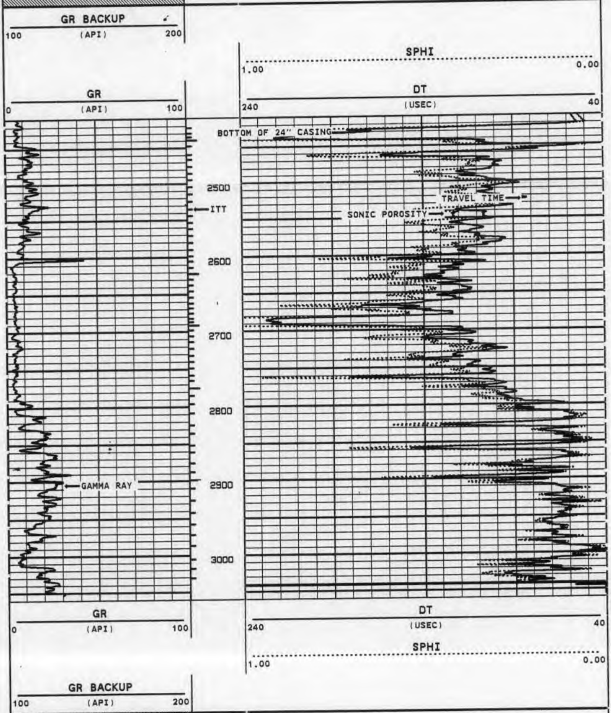
REMARKS

MAIN PASS
BOTTOM OF 24" CASING AT 2423 FT.

VERSION: 2.16

FINISH DEPTH: **2414.9** FEET DIRECTION: **UP** DATE: **07/23/94** TIME: **16:20:49** MODE: **TRACE PLAYBACK**

GAMMA RAY BACKUP



GAMMA RAY BACKUP

START DEPTH: **3059.9** FEET DIRECTION: **UP** DATE: **07/23/94** TIME: **16:18:00** MODE: **TRACE PLAYBACK**

VERSION: 2.16

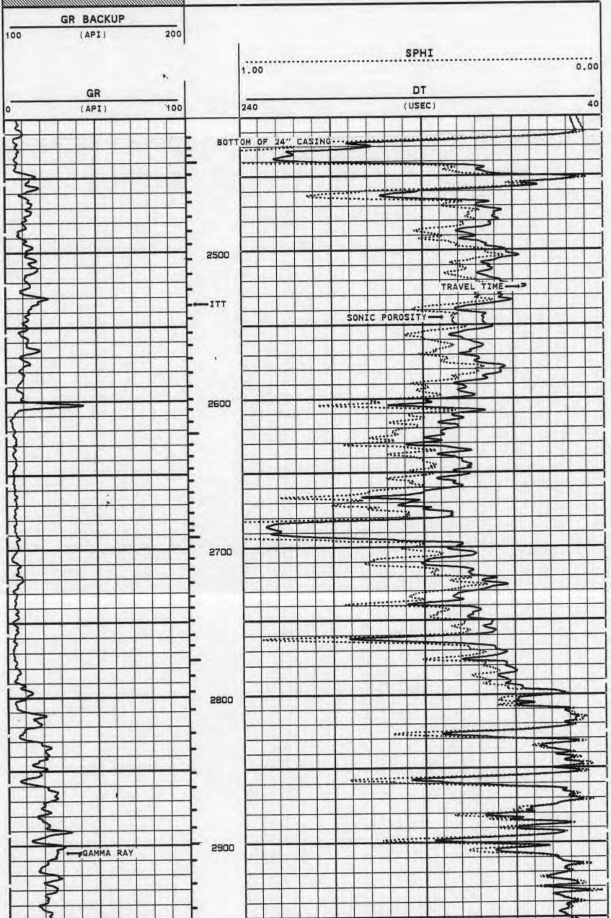
REMARKS

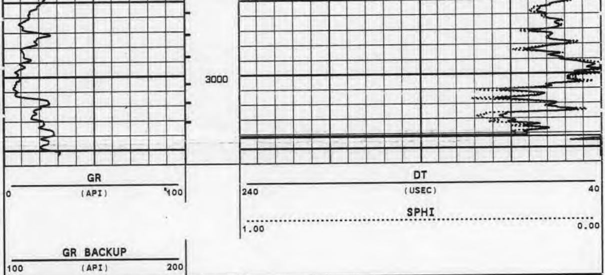
MAIN PASS
BOTTOM OF 24" CASING AT 2423 FT.

VERSION: 2.16

FINISH DEPTH: **2414.9** FEET DIRECTION: **UP** DATE: **07/23/94** TIME: **16:16:14** MODE: **TRACE PLAYBACK**

GAMMA RAY BACKUP





GAMMA RAY BACKUP

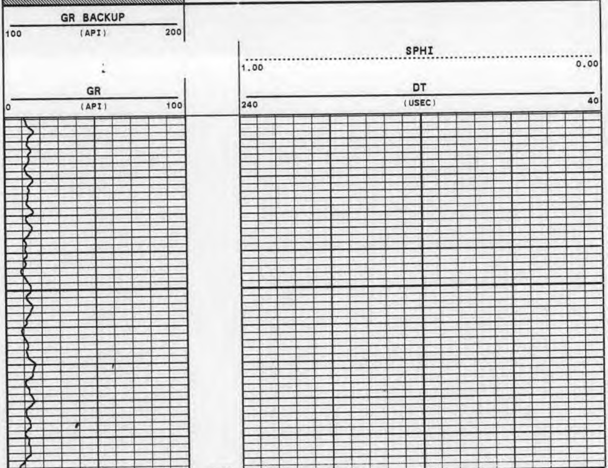
START DEPTH: **3059.9** FEET DIRECTION: **UP** DATE: **07/23/94** TIME: **16:13:23** MODE: **TRACE PLAYBACK**
VERSION: **2.16**

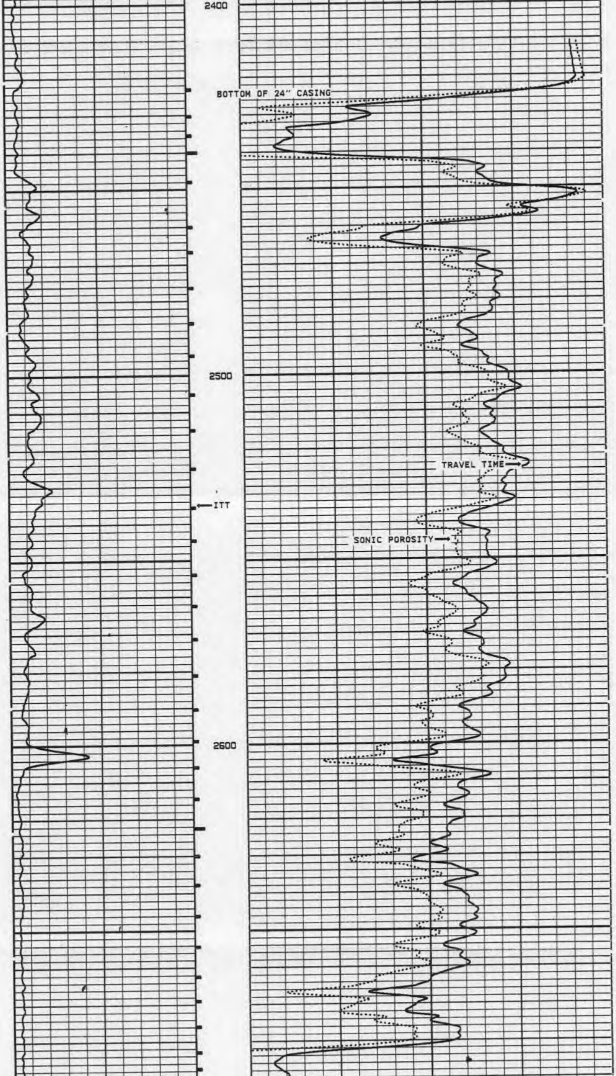
REMARKS

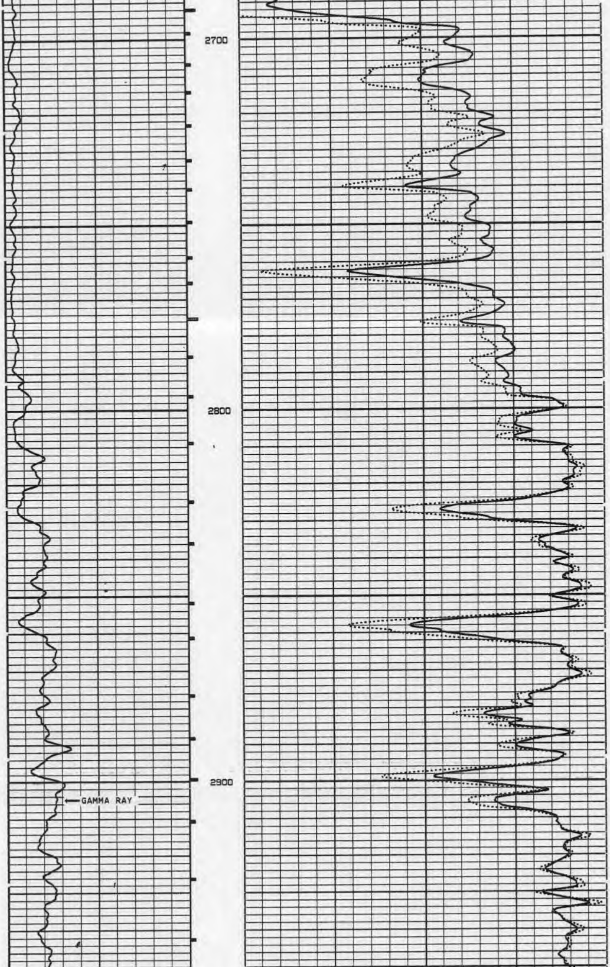
MAIN PASS
BOTTOM OF 24" CASING AT 2423 FT.

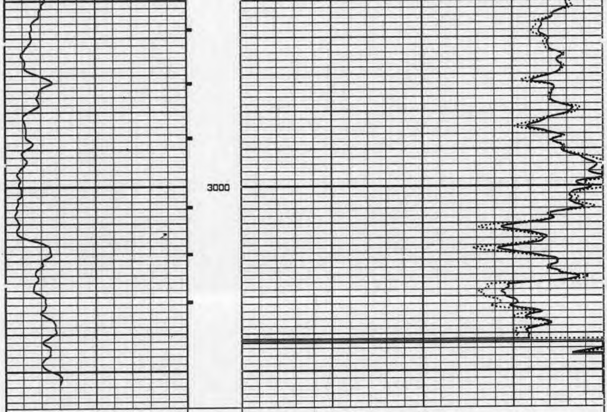
VERSION: **2.16**
FINISH DEPTH: **2308.7** FEET DIRECTION: **UP** DATE: **07/23/94** TIME: **16:12:20** MODE: **TRACE PLAYBACK**

GAMMA RAY BACKUP









GR

0 (API) 100

DT

240 (USEC) 40

SPHI

1.00 0.00

GR BACKUP

100 (API) 200

GAMMA RAY BACKUP

START DEPTH: **3059.9** FEET DIRECTION: **UP** DATE: **07/23/94** TIME: **16:09:03** MODE: **TRACE PLAYBACK**

VERSION: 2.16

REMARKS

REPEAT SECTION

VERSION: 2.16

FINISH DEPTH: **2852.3** FEET DIRECTION: **UP** DATE: **07/23/94** TIME: **16:04:48** MODE: **TRACE PLAYBACK**

GAMMA RAY BACKUP

GR BACKUP

100 (API) 200

SPHI

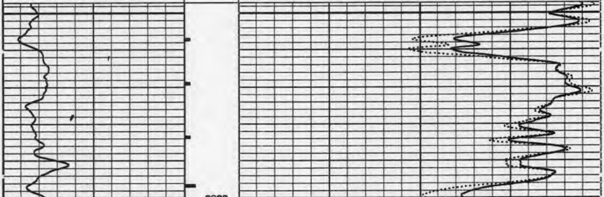
1.00 0.00

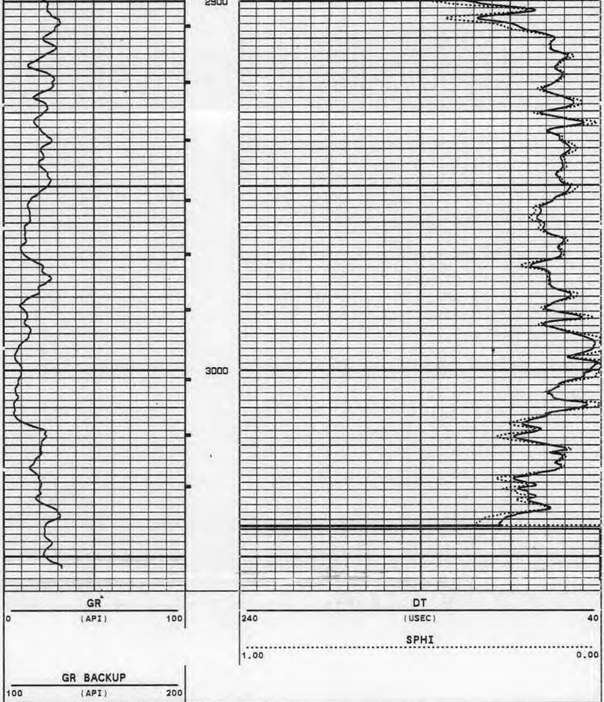
GR

0 (API) 100

DT

240 (USEC) 40





GAMMA RAY BACKUP

START DEPTH: **3059.7** FEET DIRECTION: **UP** DATE: **07/23/94** TIME: **16:03:38** MODE: **TRACE PLAYBACK**

VERSION: **2.16**

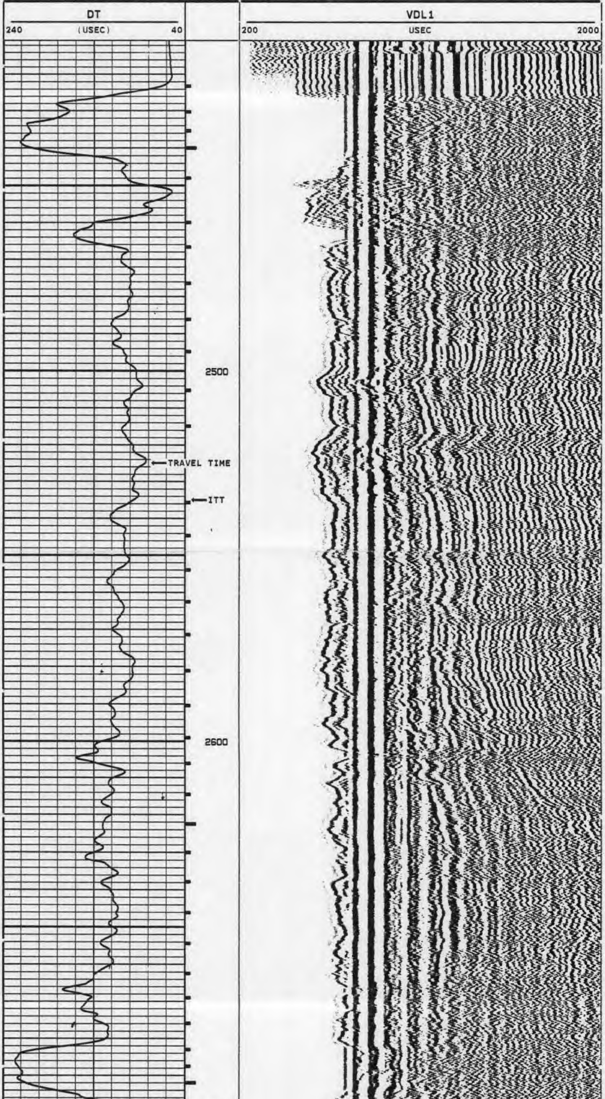
REMARKS

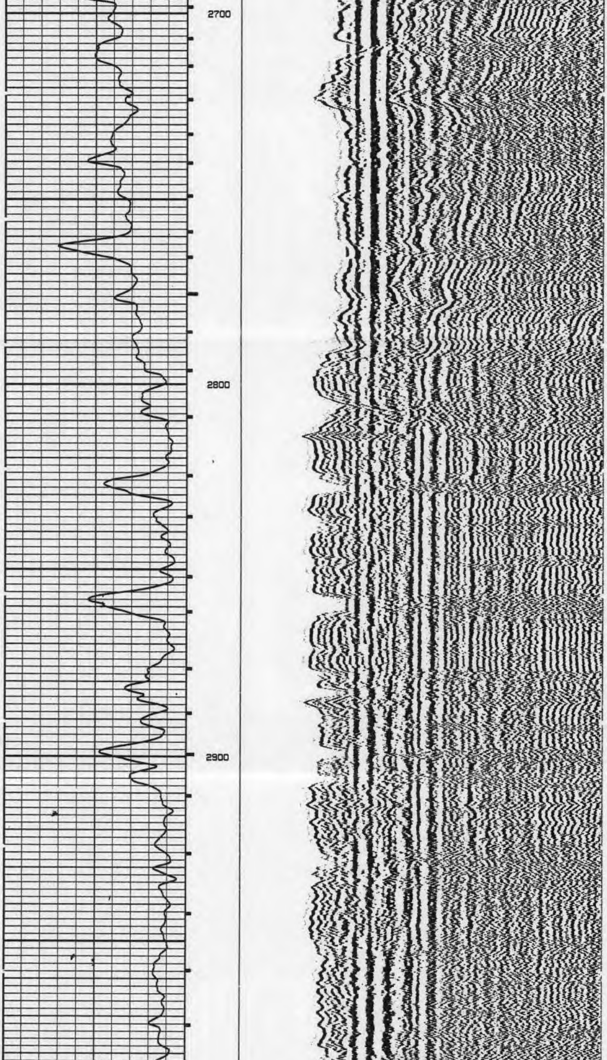
MAIN PASS
BOTTOM OF 24" CASING AT 2423 FT.

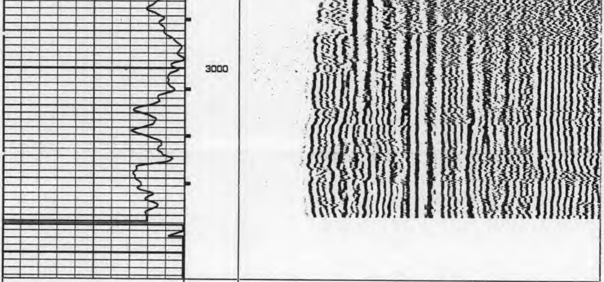
VERSION: **2.16**

IW167BHC2

FINISH DEPTH: **2410.2** FEET DIRECTION: **UP** DATE: **07/23/94** TIME: **15:24:32** MODE: **ORIGINAL**







DT
240 (USEC) 40

VDL1
200 USEC 2000

START DEPTH: **3056.3** FEET DIRECTION: **UP** DATE: **07/23/94** TIME: **15:04:45** MODE: **ORIGINAL**

IW167BHC2

VERSION: 2.16

REMARKS

REPEAT SECTION

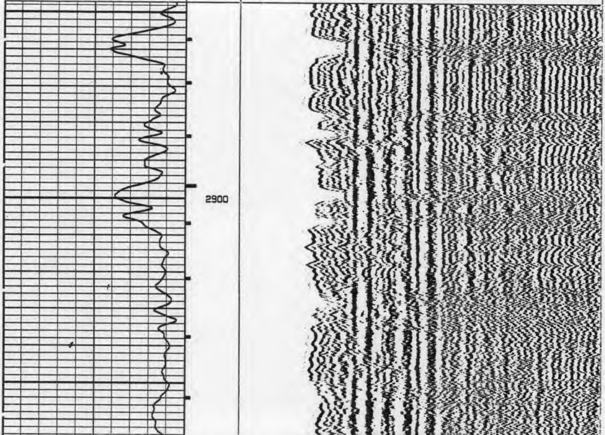
VERSION: 2.16

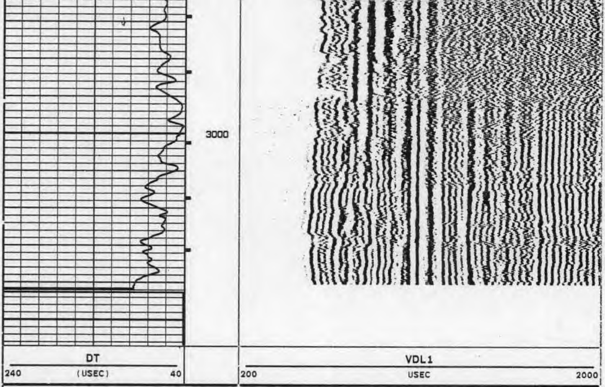
IW167BHC1

FINISH DEPTH: **2846.6** FEET DIRECTION: **UP** DATE: **07/23/94** TIME: **15:00:49** MODE: **ORIGINAL**

DT
240 (USEC) 40

VDL1
200 USEC 2000





START DEPTH: 3056.4 FEET DIRECTION: UP DATE: 07/23/94 TIME: 14:54:06 MODE: ORIGINAL

IW167BHC1

VERSION: 2.16

COMPANY YOUNGQUIST BROTHERS INC.
SOUTH DISTRICT WWTP
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FIELD MIAMI-DADE STATE FLORIDA