FLORIDA GEOPHYSICAL LOGGING, INC.

FLOWMETER LOG

FILE NO. ______

COMPANY CITY OF MIRAMAR
WELL IW-1
FIELD MIRAMAR
COUNTY BROWARD STATE FLORIDA
LOCATION
OTHER SERVICES: CAMERA
SEC. ______ TWP ______ RGE ______

PERMANENT DATUM PAD ELEV. 7
LOG MEASURED FROM PAD ______ FT. ABOVE PERMANENT DATUM
DRILLING MEASURED FROM PAD
ELEV.: K.B. ______
D.F. ______
G.L. ______

DATE	29-OCT-94	
RUN NO.	ELEVEN	
TYPE LOG	FLOWMETER	
DEPTH-DRILLER	3128'	
DEPTH-LOGGER	3121'	
LOGGED INTERVAL	3121' TO 2170'	TO
OPERATING RIG TIME	6 HRS	
TYPE FLUID IN HOLE	WATER	
SALINITY, PPM CL	NA	
DENSITY-VISCOSITY	9 PPG	
LEVEL	FULL	
MAX. REC. TEMP, DEG F.	NA	
EQUIPMENT-LOCATION	102 - FTM	
RECORDED BY	NITZ	
WITNESSED BY	B. COCKE	

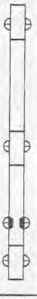
BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
TWO	48"	197'	SURF	42"	.5" WT.	190'	SURF
SIX	12 1/4"	2400'	CSG	36"	.5" WT.	1080'	SURF
EIGHT	32 1/2"	2066'	CSG	26"	.5" WT.	2050'	SURF
NINE	12 1/4"	3048'	CSG				
TEN	12 1/4"	3128'	CSG				

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: FLOW METER LOGGED IN STAGES DUE TO HOLE CONDITIONS.
SEE REMARKS SECTIONS OF EACH LOGGED SECTION FOR MORE INFORMATION.

REMARKS

FLOWMETER TOOL STRING CONFIGURATION



-- CENTRALIZER -- 2 FT. LONG

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

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

-- CENTRALIZER -- 2 FT. LONG

-- FLOWMETER -- 3 FT. LONG

-- SPINNER MEASURE POINT
2.5 FT. FROM BOT

-- CENTRALIZER -- 2 FT. LONG

----------------BOT

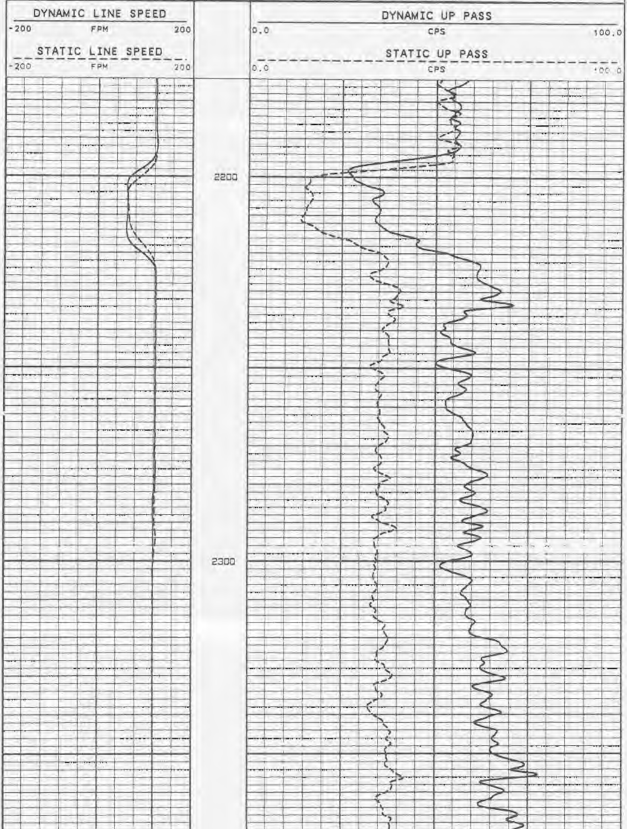
REMARKS

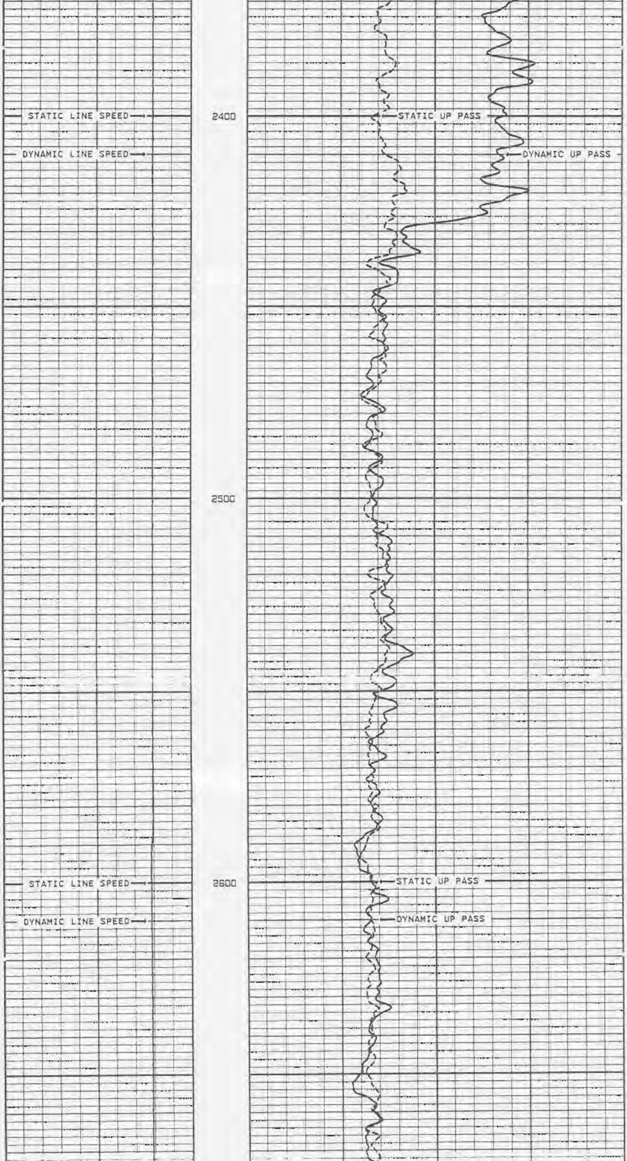
UP PASS LOGGED AT 125 FPM.
DYNAMIC FLOW RATE 600 GPM.
LOGGED STOPPED AT 2848' DUE TO HITTING BRIDGE.
HIT LEDGE AT 2730' ON DYNAMIC PASS.
6" ID DRILL PIPE SET AT 2202',

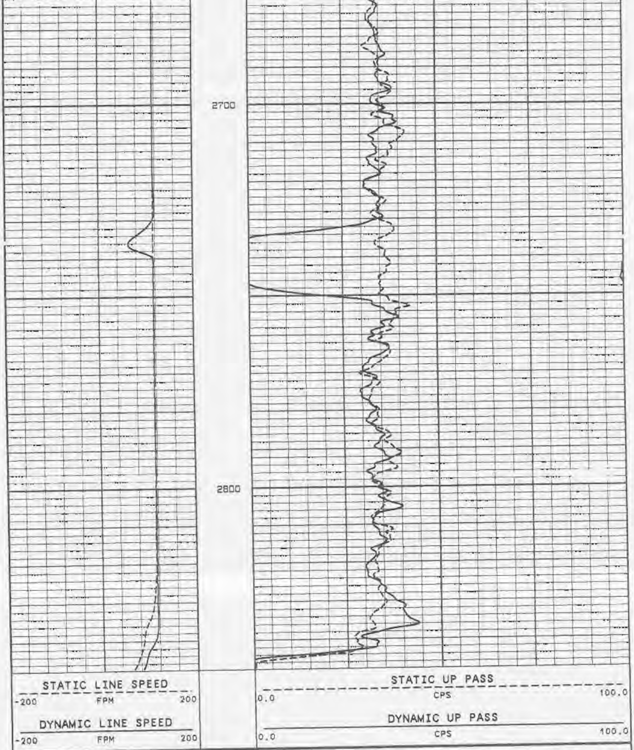
VERSION: 2.16

MIW111FM15

FINISH DEPTH: **2179.3** FEET DIRECTION: **UP** DATE: **10/29/94** TIME: **21:53:33** MODE: **TRACE PLAYBACK**







START DEPTH: **2848.0** FEET DIRECTION: **UP** DATE: **10/29/94** TIME: **21:51:44** MODE: **TRACE PLAYBACK**

MIW111FM15

VERSION: 2.16

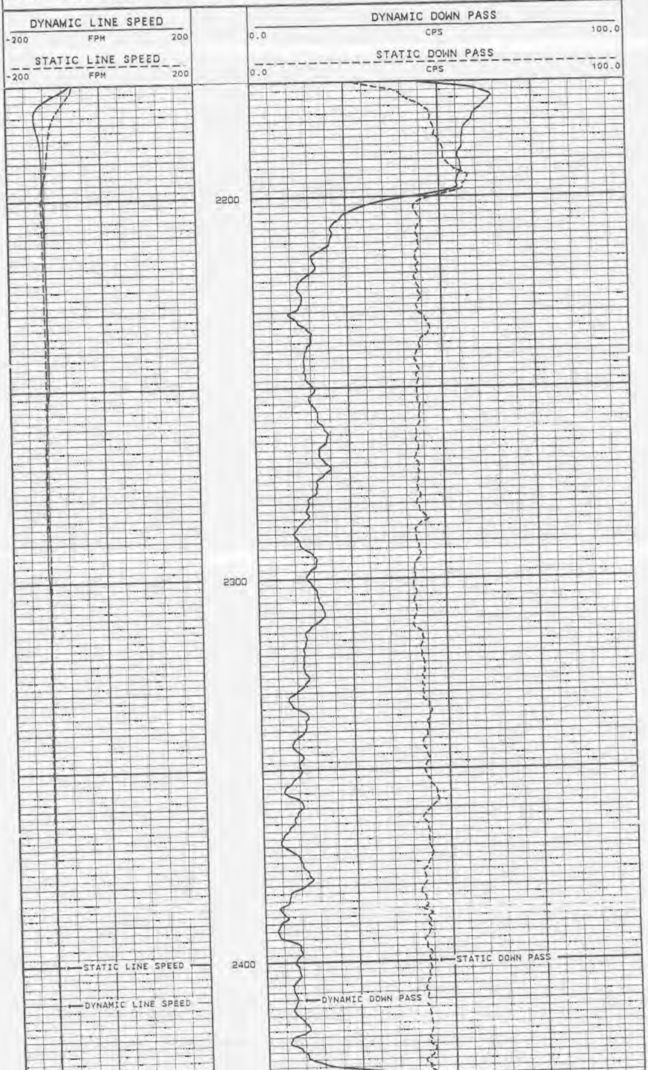
REMARKS

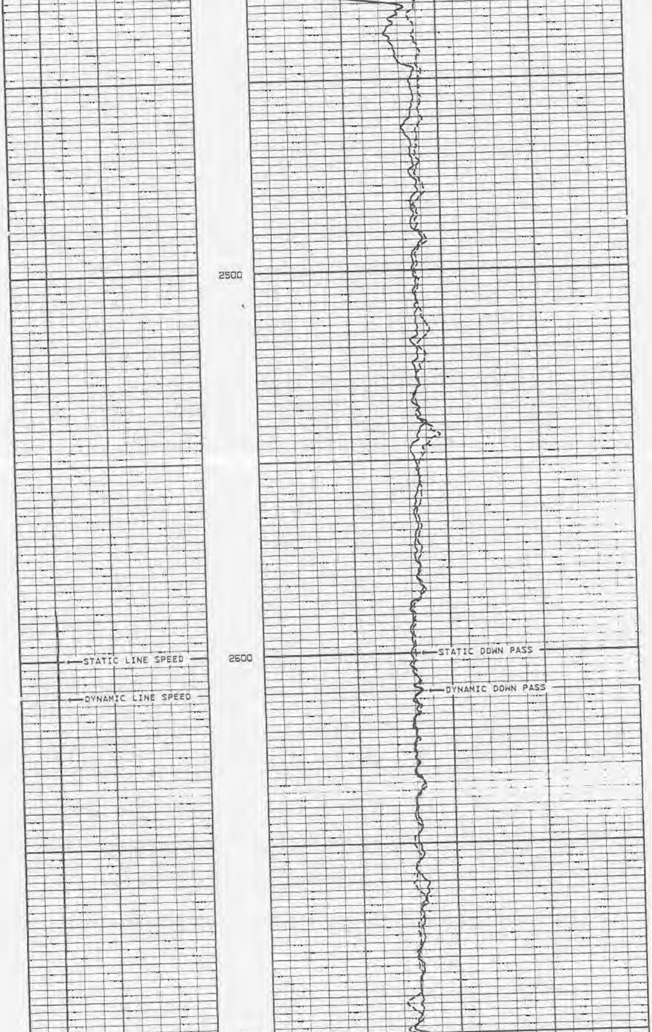
DOWN PASS LOGGED AT 125 FPM.
DYNAMIC FLOW RATE 600 GPM.
LOG STOPPED AT 2848' DUE TO HITTING BRIDGE.
6" ID DRILL PIPE SET AT 2202'.

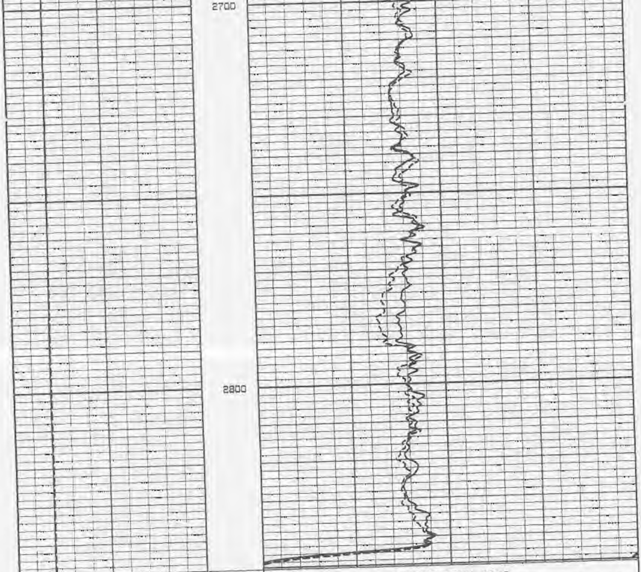
VERSION: 2.16

MIW111FM14

FINISH DEPTH: **2174.9** FEET DIRECTION: **UP** DATE: **10/29/94** TIME: **21:42:21** MODE: **TRACE PLAYBACK**







STATIC LINE SPEED
-200 FPM 200

DYNAMIC LINE SPEED
-200 FPM 200

STATIC DOWN PASS
0.0 CPS 100.0

DYNAMIC DOWN PASS
0.0 CPS 100.0

START DEPTH: **2848.0** FEET DIRECTION: **UP** DATE: **10/29/94** TIME: **21:40:28** MODE: **TRACE PLAYBACK**

MIW111FM14

VERSION: 2.16

REMARKS

UP PASS LOGGED AT 75 FPM.
DYNAMIC FLOW RATE 600 GPM.
DYNAMIC PASS DATA ONLY TO 3077' DUE TO HOLE CONDITIONS.
6" ID DRILL PIPE SET AT 2952'.

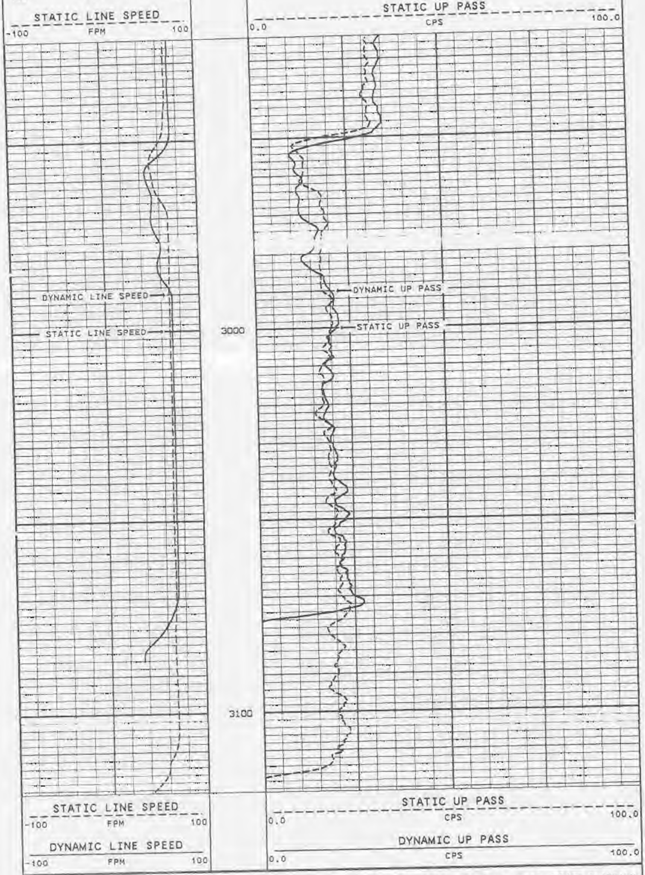
VERSION: 2.16

MIW111FM13

FINISH DEPTH: **2929.2** FEET DIRECTION: **UP** DATE: **10/29/94** TIME: **21:29:46** MODE: **TRACE PLAYBACK**

DYNAMIC LINE SPEED
-100 FPM 100

DYNAMIC UP PASS
0.0 CPS 100.0



START DEPTH: **3121.0** FEET DIRECTION: **UP** DATE: **10/29/94** TIME: **21:29:07** MODE: **TRACE PLAYBACK**

MIW111FM13

VERSION: 2.16

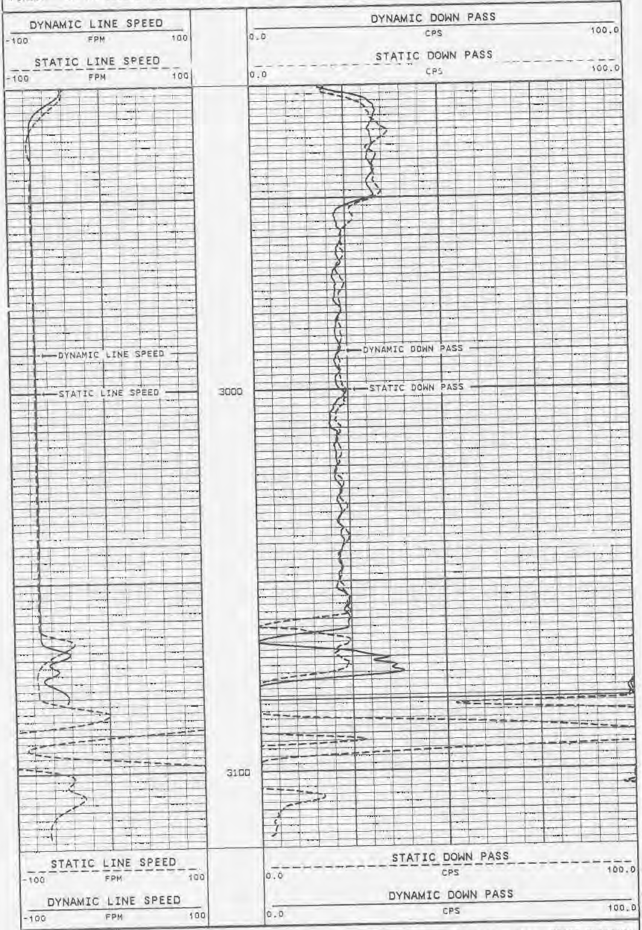
REMARKS

DOWN PASS LOGGED AT 75 FPM.
DYNAMIC FLOW RATE 600 GPM.
DYNAMIC PASS DATA ONLY TO 3077' DUE TO HOLE CONDITIONS.
STATIC PASS HITTING BRIDGES FROM 3060' TO 3021'.
6" ID DRILL PIPE SET AT 2952'.

VERSION: 2.16

MIW111FM12

FINISH DEPTH: 2924.9 FEET DIRECTION: UP DATE: 10/29/94 TIME: 21:16:25 MODE: TRACE PLAYBACK



START DEPTH: 3120.0 FEET DIRECTION: UP DATE: 10/29/94 TIME: 21:15:45 MODE: TRACE PLAYBACK

MIW111FM12

VERSION: 2.16

COMPANY CITY OF MIRAMAR

WELL IW-1

FIELD MIRAMAR STATE

FLORIDA GEOPHYSICAL LOGGING, INC.

X-Y CALIPER GAMMA RAY LOG

FILE NO. ________

COMPANY HAZEN & SAWYER
WELL MIRAMAR WWTP IW-1
FIELD MIRAMAR
COUNTY BROWARD STATE FLORIDA

LOCATION
MIRAMAR WWTP
SEC.____ TWP____ RGE____

OTHER SERVICES:
DIL/LL3
TEMPERATURE
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	15-NOVEMBER-1995	
RUN NO.	ELEVEN	
TYPE LOG	X-Y CALIPER/GR	
DEPTH-DRILLER	2955'	
DEPTH-LOGGER	2960'	
LOGGED INTERVAL	2960' TO 2250'	TO
OPERATING RIG TIME	1.5 HOUR	
TYPE FLUID IN HOLE	WATER	
SALINITY, PPM CL	NA	
DENSITY-VISCOSITY	NA	
LEVEL	FULL	
MAX. REC. TEMP. DEG F.	75 DEGF	
EQUIPMENT-LOCATION	101 FTM	
RECORDED BY	JONES/LEE	
WITNESSED BY	J.WHEATELY	

RECEIVED
NOV 17 1995
DEPT OF ENV PROTECTION
WEST PALM BEACH

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
EIGHT	41.5"	2312'	CASINGE	50"	.5 WT.	260'	SURFACE
				42"	.5 WT.	1000'	SURFACE
NINE				34"	.5 WT.	2300'	SURFACE
TEN	12.25"	2860'	CASING				
ELEVEN	32.5"	2955	CASING				

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REMARKS

XY CALIPER(LONG ARM)/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

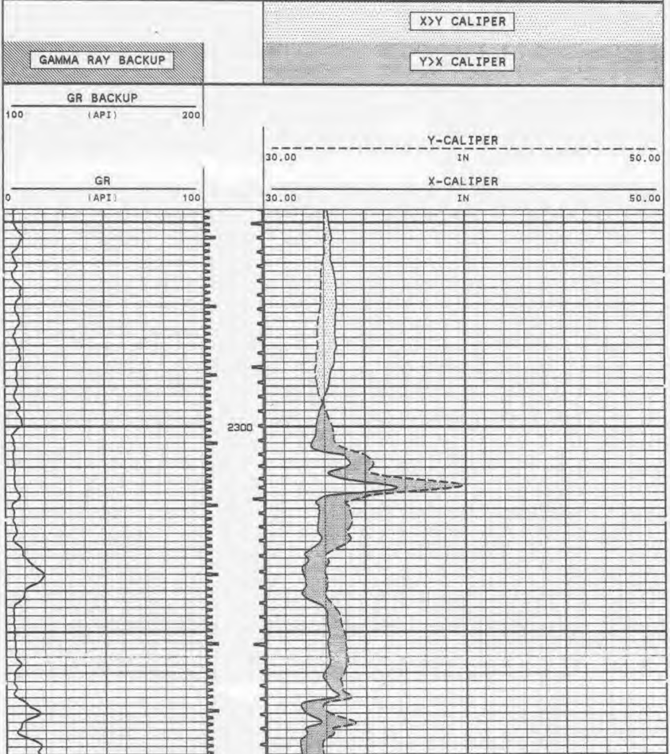
ABHV COMPUTED FOR 24" CASING AND IS RECORDED
ON THE RIGHT HAND SIDE OF THE DEPTH TRACK.

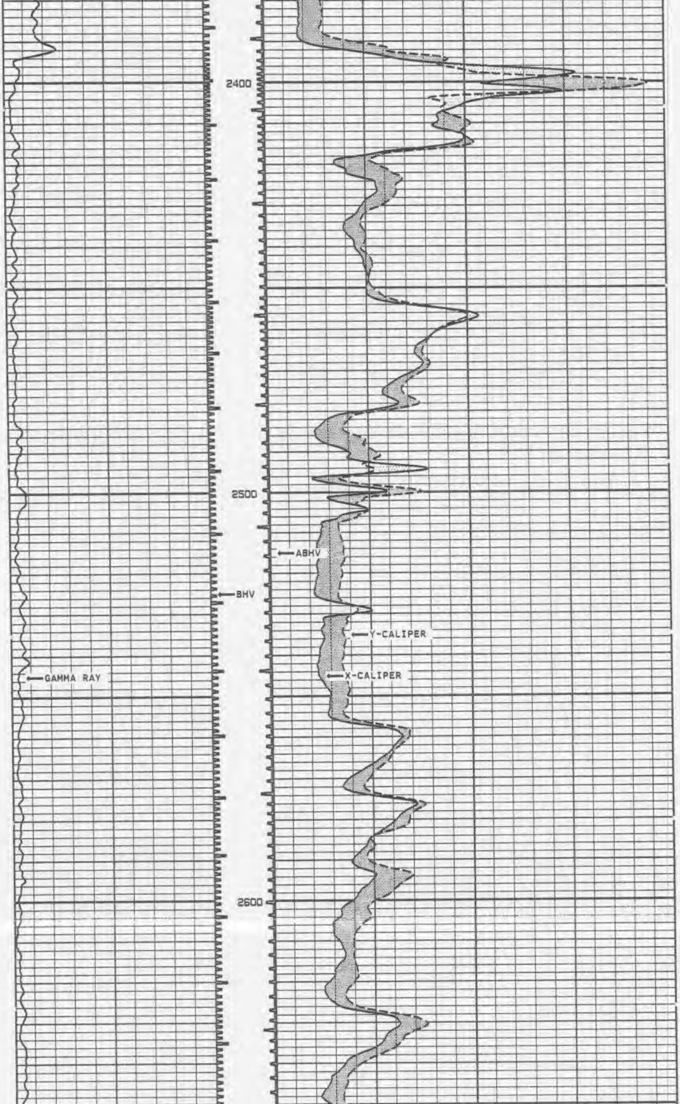
VERSION: 2.26

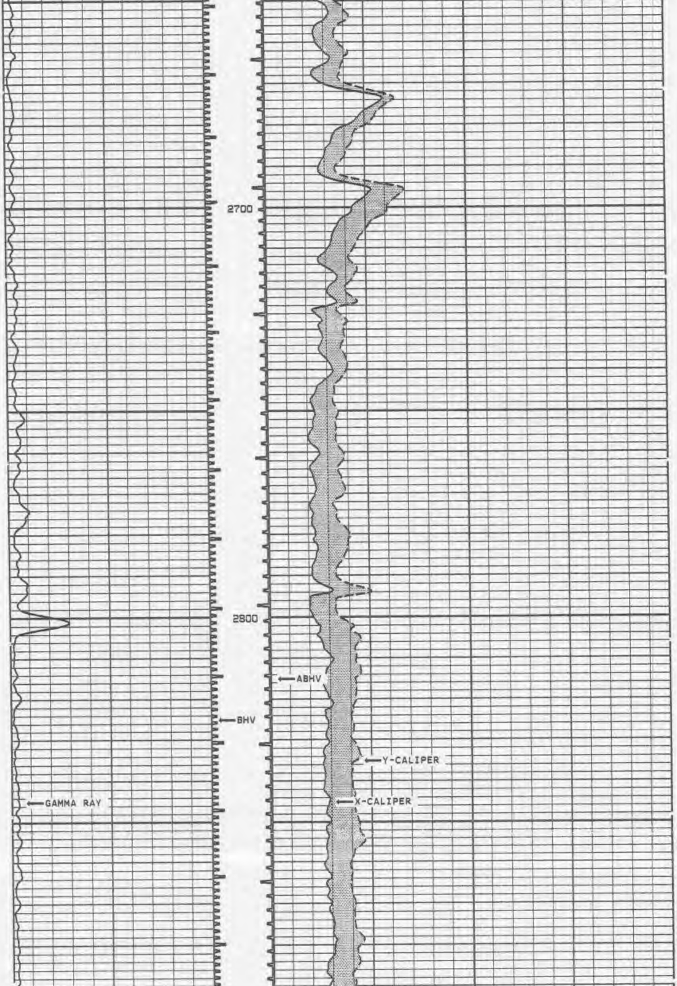
MAIN PASS

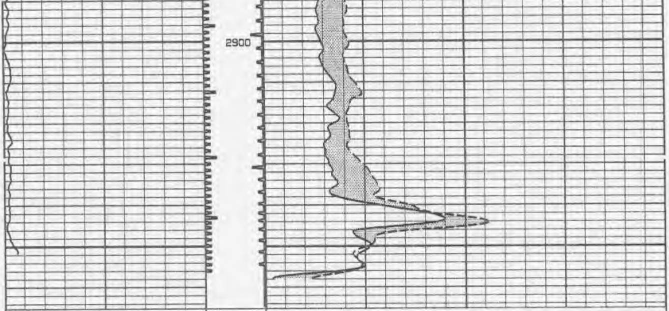
MIW111XY2

FINISH DEPTH: **2242.1** FEET DIRECTION: **UP** DATE: **11/15/95** TIME: **06:32:37** MODE: **RECOMPUTE**









GR
0 (API) 100

X-CALIPER
30.00 IN 50.00

Y-CALIPER
30.00 IN 50.00

GR BACKUP
100 (API) 200

▨ GAMMA RAY BACKUP

▨ Y>X CALIPER

▨ X>Y CALIPER

START DEPTH: **2960.3** FEET DIRECTION: **UP** DATE: **11/15/95** TIME: **06:29:56** MODE: **RECOMPUTE**

MIW111XY2

MAIN PASS

VERSION: 2.26

VERSION: 2.26

REPEAT SECTION

MIW111XY1

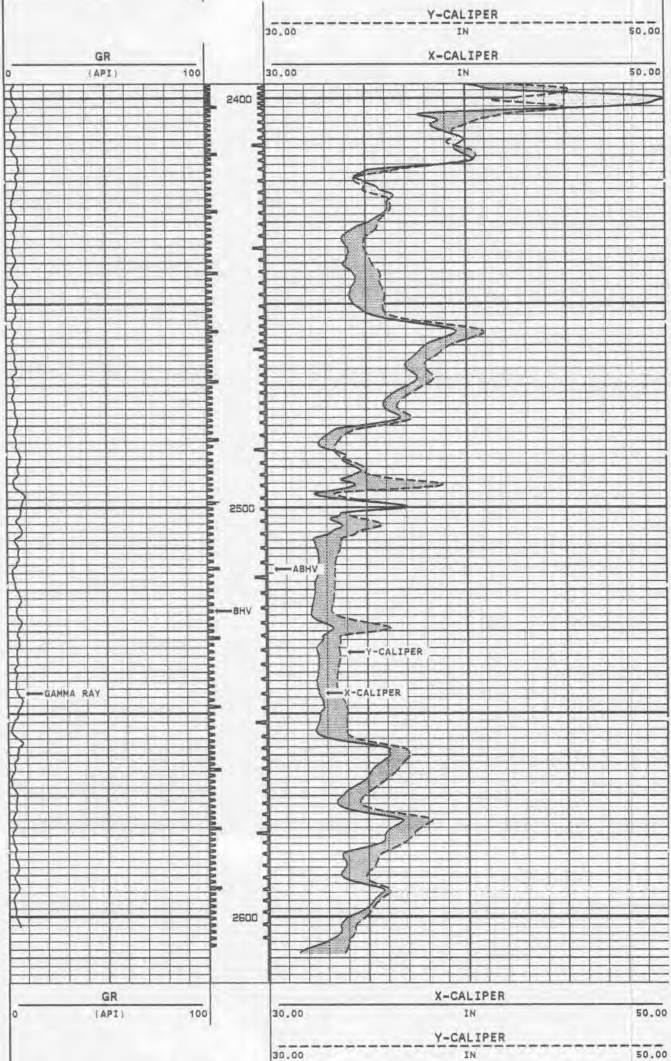
FINISH DEPTH: **2391.6** FEET DIRECTION: **UP** DATE: **11/15/95** TIME: **06:27:46** MODE: **RECOMPUTE**

▨ X>Y CALIPER

▨ Y>X CALIPER

▨ GAMMA RAY BACKUP

GR BACKUP
100 (API) 200



GR BACKUP

100 (API) 200

▨ GAMMA RAY BACKUP

Y>X CALIPER

X>Y CALIPER

START DEPTH: **2611.2 FEET** DIRECTION: **UP** DATE: **11/15/95** TIME: **06:26:45** MODE: **RECOMPUTE**

MIW111XY1

REPEAT SECTION

VERSION: 2.26

MASTER CALIBRATION SUMMARY

FILE: DATE: 11/15/95 TIME: 06:22 VERSION: 2.26

X-CALIPER TOOL #14

DATE: 11/15/95 TIME: 00:26

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
3.5" RING	321.1	CPS	3.5	3.1	3.8	0.14	IN
10" RING	410.7	CPS	10.0	9.9	10.2	0.08	IN
20" RING	521.7	CPS	20.0	19.8	20.1	0.08	IN
30" RING	657.0	CPS	30.0	29.9	30.0	0.06	IN
40" RING	803.9	CPS	40.0	39.9	40.1	0.07	IN

Y-CALIPER TOOL #14

DATE: 11/15/95 TIME: 00:26

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
3.5" RING	327.9	CPS	3.5	3.3	3.7	0.14	IN
10" RING	408.1	CPS	10.0	10.0	10.2	0.08	IN
20" RING	500.0	CPS	20.0	20.0	20.0	0.00	IN
30" RING	624.3	CPS	30.0	29.9	30.1	0.08	IN
40" RING	756.9	CPS	40.0	39.9	40.0	0.07	IN

GR API CAL #13

DATE: 10/03/95 TIME: 09:16

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
SHOP: BACKGROUND	35.3	CPS	0.0	23.0	58.4	7.41	API
SHOP: CALIBRATOR	137.6	CPS	120.0	135.5	190.9	12.20	API

COMPANY HAZEN & SAWYER

MIRAMAR WWTP

WELL MIRAMAR WWTP IW-1

FIELD MIRAMAR STATE

FLORIDA GEOPHYSICAL LOGGING, INC.

TEMPERATURE LOG

FILE NO. ______

COMPANY HAZEN & SAWYER
WELL MIRAMAR WWTP IW-1
FIELD MIRAMAR
COUNTY BROWARD STATE FLORIDA

LOCATION
MIRAMAR WWTP

OTHER SERVICES:
X-Y CALIPER
DIL/LL3
FLOWMETER

SEC. ______ TWP ______ RGE ______

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

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

DATE	15-NOVEMBER-1995	
RUN NO.	ELEVEN	
TYPE LOG	TEMPERATURE	
DEPTH-DRILLER	2955'	
DEPTH-LOGGER	2960'	
LOGGED INTERVAL	2960' TO 2150'	TO
OPERATING RIG TIME	1 HOUR	
TYPE FLUID IN HOLE	WATER	
SALINITY, PPM CL	NA	
DENSITY-VISCOSITY	NA	
LEVEL	FULL	
MAX. REC. TEMP. DEG F.	75 DEGF	
EQUIPMENT-LOCATION	101 FTM	
RECORDED BY	JONES/LEE	
WITNESSED BY	J.WHEATELY	

BOREHOLE RECORD

RUN NO.	BIT	FROM	TO
EIGHT	41.5"	2312'	CASINGE
NINE			
TEN	12.25"	2860'	CASING
ELEVEN	32.5"	2955	CASING

CASING RECORD

SIZE	WGT.	FROM	TO
50"	.5 WT.	260'	SURFACE
42"	.5 WT.	1000'	SURFACE
34"	.5 WT.	2300'	SURFACE

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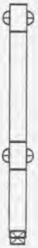
REMARKS

TEMPERATURE TOOL STRING CONFIGURATION



-- CENTRALIZER -- 2 FT. LONG

-- TOTAL TOOL STRING LENGTH = 11.5 FT.

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

-- CENTRALIZER -- 2 FT. LONG

-- TEMPERATURE -- 2.5 FT. LONG

-- TEMPERATURE MEASURE POINT AT BOT

REMARKS

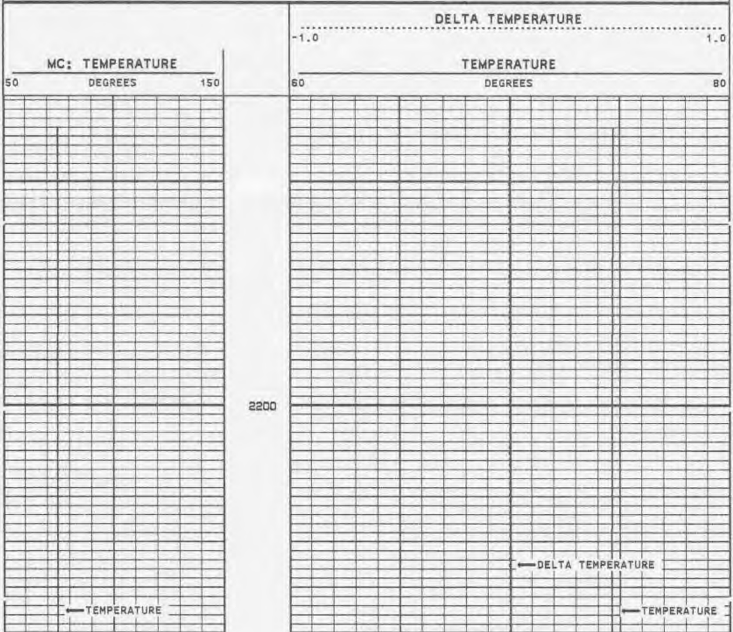
LOGGED GOING DOWN

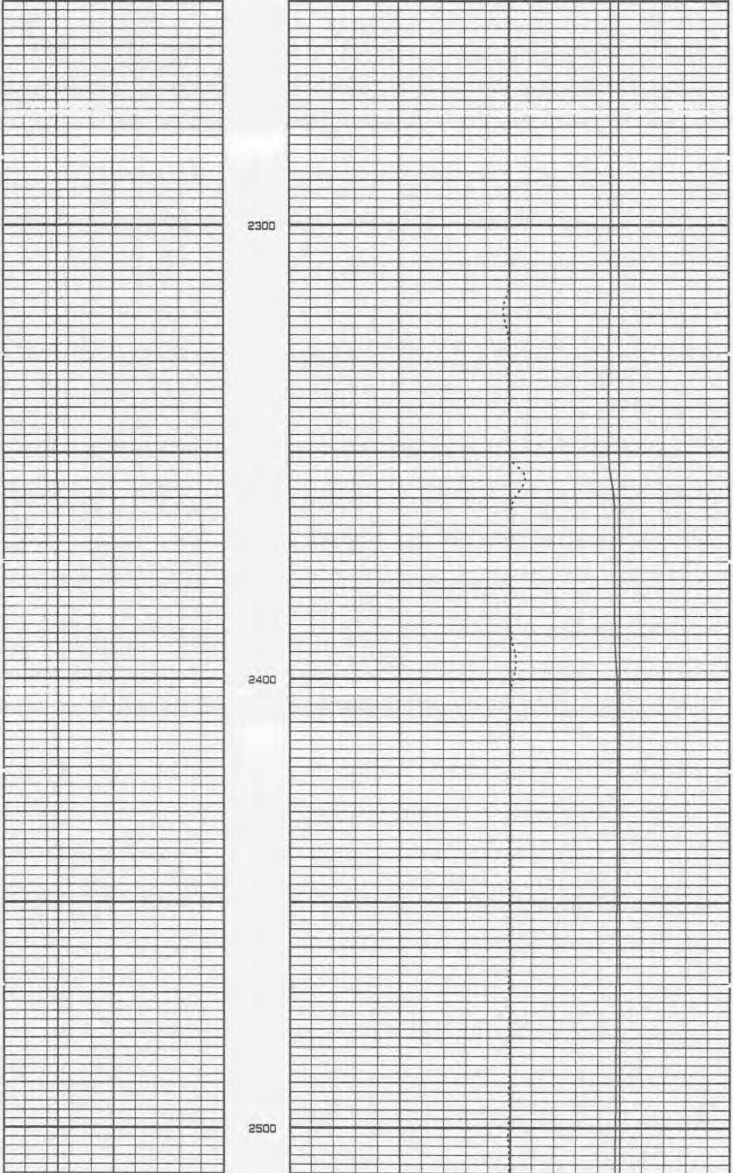
VERSION: 2.26

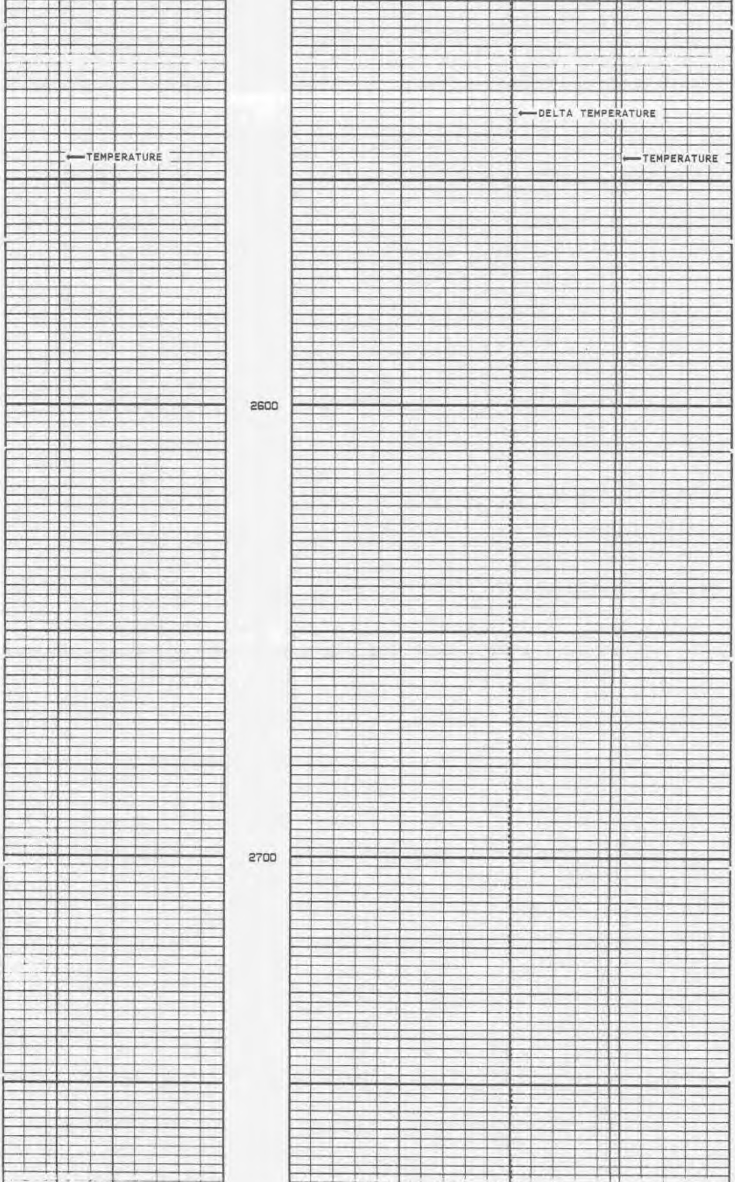
MAIN PASS

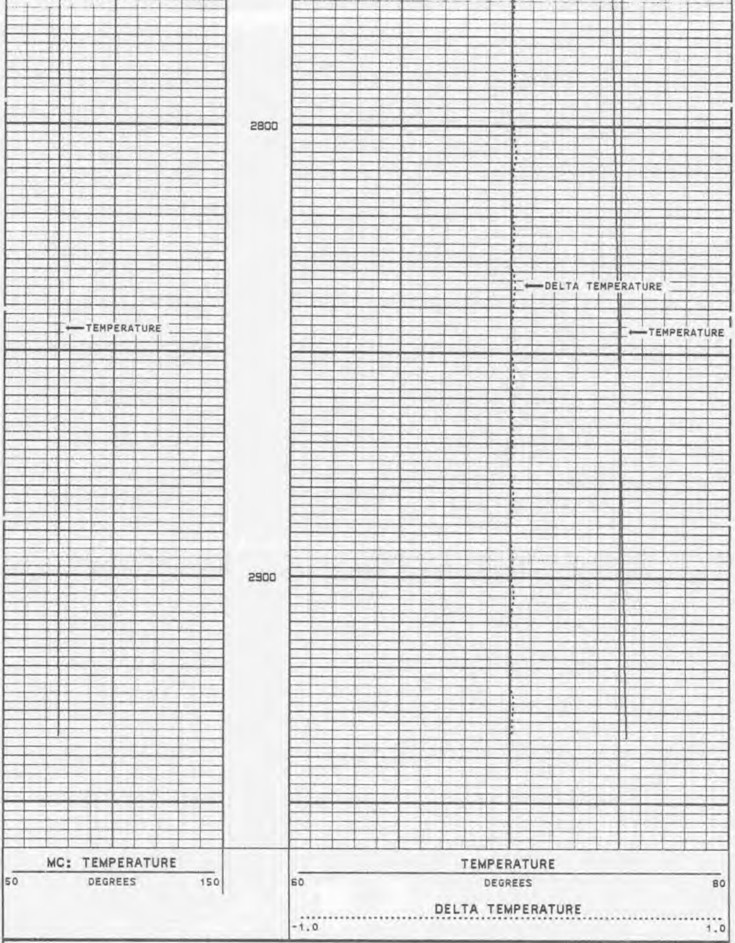
MIW111TMP

FINISH DEPTH: **2939.6** FEET DIRECTION: **DOWN** DATE: **11/15/95** TIME: **01:23:11** MODE: **TRACE PLAYBACK**









START DEPTH: **2142.0** FEET DIRECTION: **DOWN** DATE: **11/15/95** TIME: **01:04:49** MODE: **TRACE PLAYBACK**

MIW111TMP

MAIN PASS

VERSION: **2.25**

REMARKS

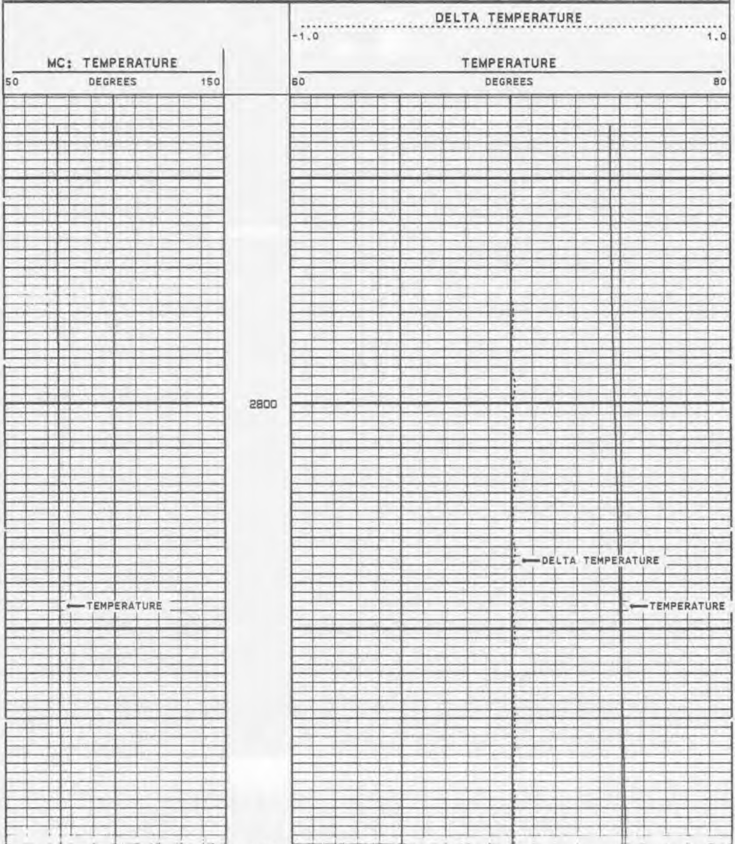
LOGGED GOING DOWN

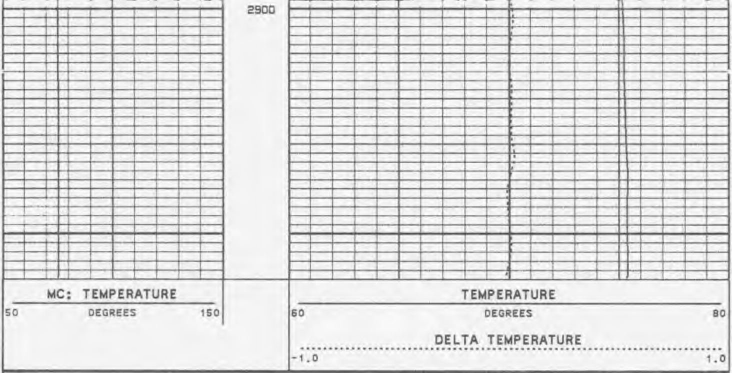
VERSION: 2.26

REPEAT SECTION

MIW111TRP

FINISH DEPTH: **2964.1** FEET DIRECTION: **DOWN** DATE: **11/15/95** TIME: **01:32:51** MODE: **TRACE PLAYBACK**





START DEPTH: **2742.4** FEET DIRECTION: **DOWN** DATE: **11/15/95** TIME: **01:26:50** MODE: **TRACE PLAYBACK**

MIW111TRP

REPEAT SECTION

VERSION: 2.26

MASTER CALIBRATION SUMMARY

FILE: DATE: 11/15/95 TIME: 05:58 VERSION: 2.26

TEMPERATURE #10

DATE: 10/25/95 TIME: 16:43

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
ZERO	457.4	CPS	69.0	68.7	69.4	0.26	DEGF
PLUS	724.5	CPS	122.9	122.7	123.1	0.14	DEGF

COMPANY HAZEN & SAWYER

MIRAMAR WWTP

WELL MIRAMAR WWTP IW-1

IRAMAR STATE

FLORIDA GEOPHYSICAL LOGGING, INC.

STATIC FLOWMETER LOG

RECEIVED
NOV 17 1995
DEPT OF ENV PROTECTION
WEST PALM BEACH

FILE NO. ______

COMPANY HAZEN & SAWYER
WELL MIRAMAR WWTP IW-1
FIELD MIRAMAR
COUNTY BROWARD STATE FLORIDA

LOCATION
MIRAMAR WWTP
SEC.______ TWP______ RGE______

OTHER SERVICES:
X-Y CALIPER
TEMPERATURE
DIL/LL3

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

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

DATE	15-NOVEMBER-1995	
RUN NO.	ELEVEN	
TYPE LOG	FLOWMETER	
DEPTH-DRILLER	2955'	
DEPTH-LOGGER	2960'	
LOGGED INTERVAL	2950' TO 2150'	TO
OPERATING RIG TIME	2 HOUR	
TYPE FLUID IN HOLE	WATER	
SALINITY, PPM CL	NA	
DENSITY-VISCOSITY	NA	
LEVEL	FULL	
MAX. REC. TEMP. DEG F.	75 DEGF	
EQUIPMENT-LOCATION	101 FTM	
RECORDED BY	JONES/LEE	
WITNESSED BY	J.WHEATELY	

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
EIGHT	41.5"	2312'	CASINGE	50"	.5 WT.	260'	SURFACE
				42"	.5 WT.	1000'	SURFACE
NINE				34"	.5 WT.	2300'	SURFACE
TEN	12.25"	2860'	CASING				
ELEVEN	32.5"	2955	CASING				

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REMARKS

1 5/8" FLOWMETER TOOL STRING CONFIGURATION

TOTAL TOOL STRING LENGTH = 8 FT.

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

-- 1 5/8" FLOWMETER -- 3 FT. LONG

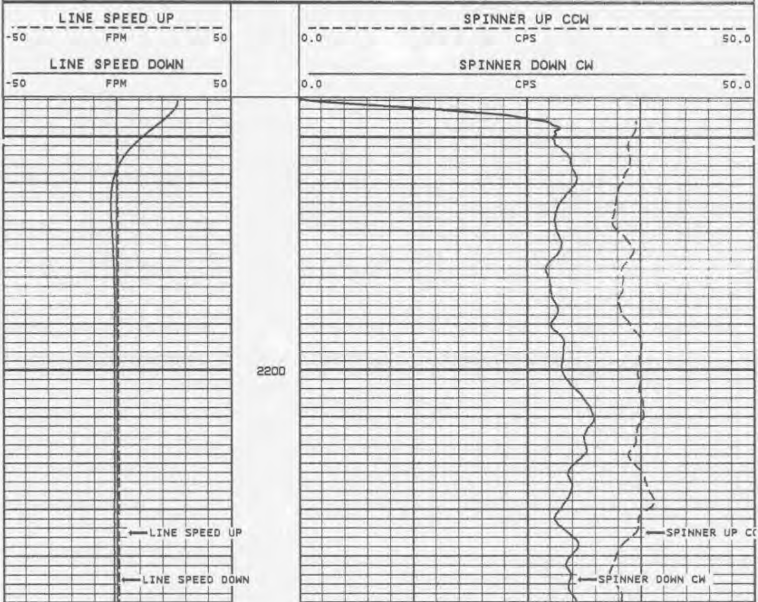
-- SPINNER MEASURE POINT AT BOT

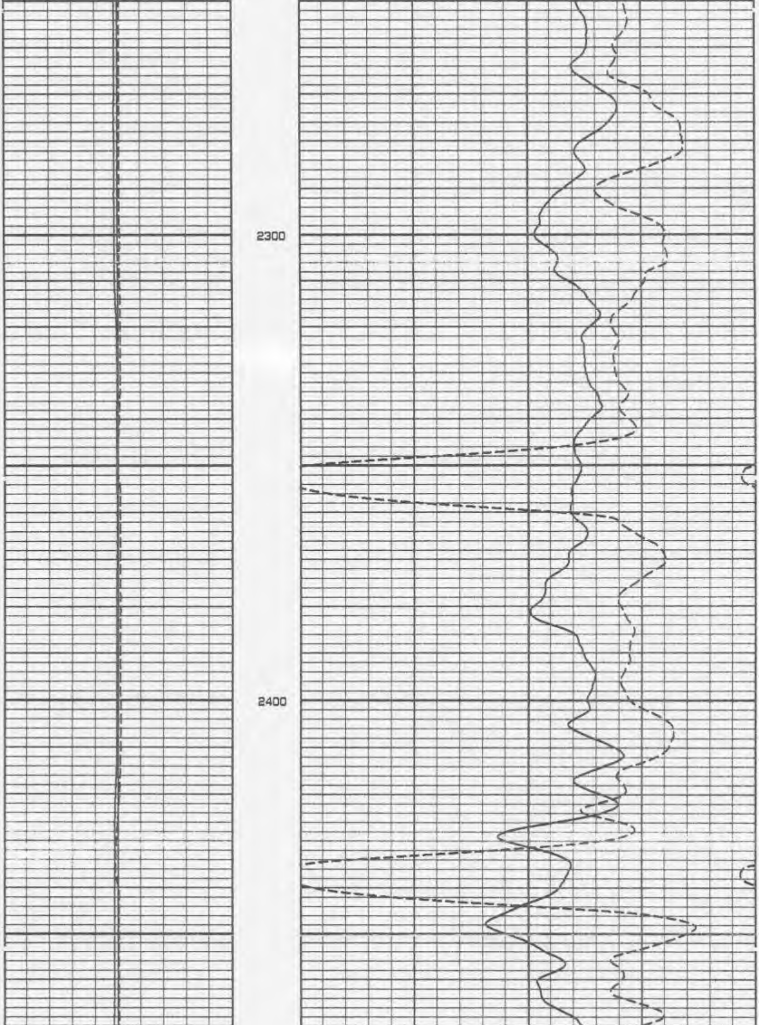
REMARKS

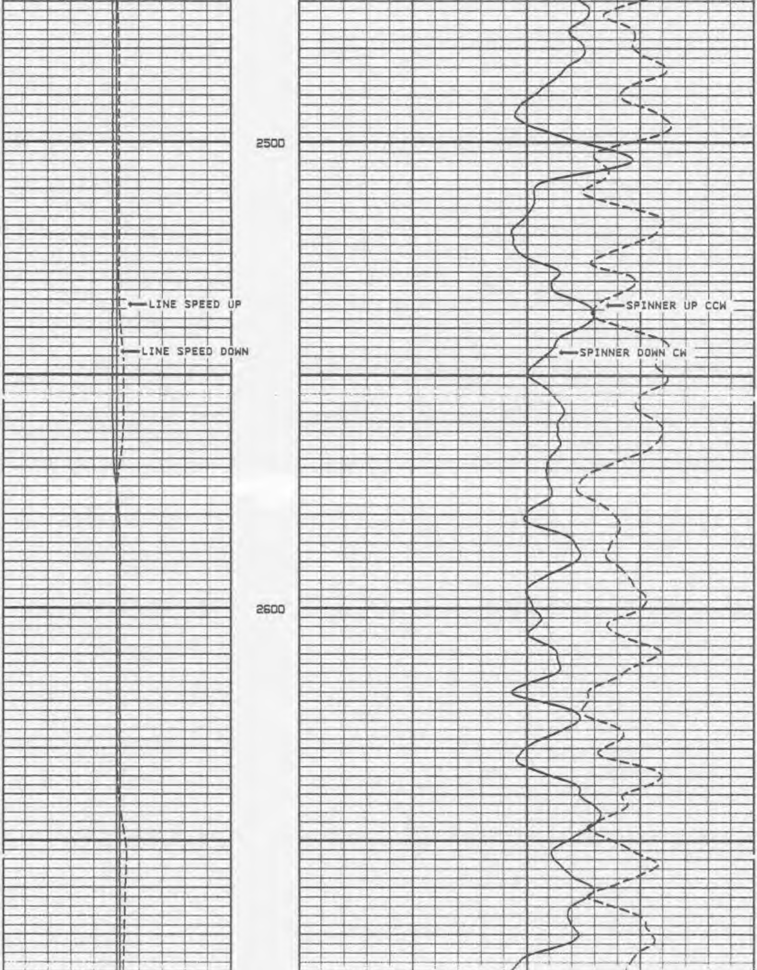
SPINNER STOPPED AT 2440' & 2355' DUE TO HOLE CONDITIONS.

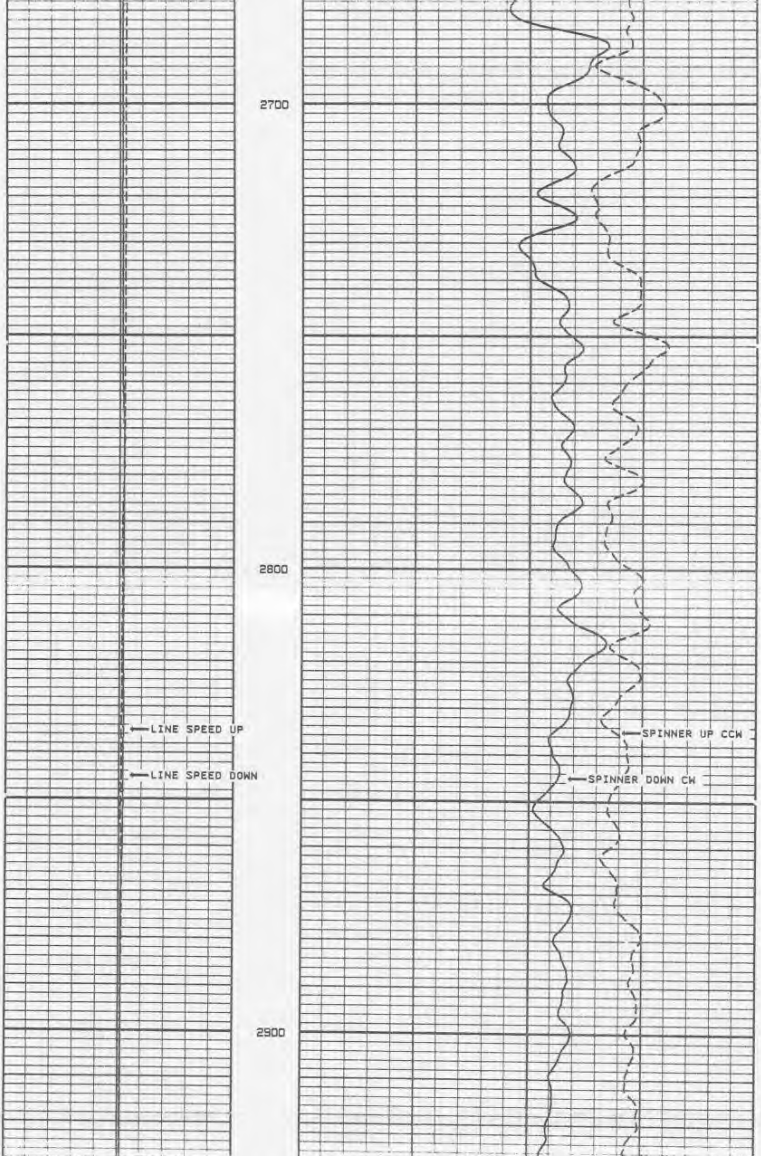
VERSION: 2.26

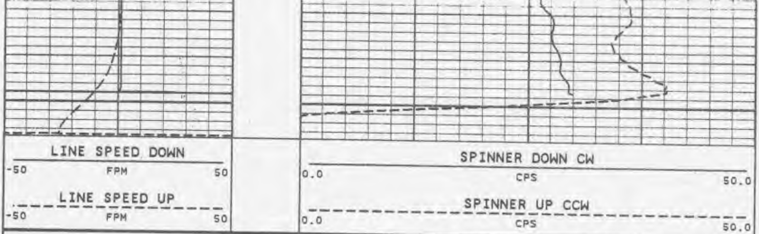
FINISH DEPTH: **2146.5** FEET DIRECTION: **UP** DATE: **11/15/95** TIME: **05:48:55** MODE: **TRACE PLAYBACK**











START DEPTH: 2957.6 FEET DIRECTION: UP DATE: 11/15/95 TIME: 05:46:58 MODE: TRACE PLAYBACK

VERSION: 2.26

COMPANY HAZEN & SAWYER

MIRAMAR WWTP

WELL MIRAMAR WWTP IW-1

FIELD MIRAMAR STATE

FLORIDA GEOPHYSICAL LOGGING, INC.

BOREHOLE COMPENSATED SONIC/VDL LOG

FILE NO. ____

COMPANY HAZEN & SAWYER
WELL MIRAMAR WWTP IW-1
FIELD MIRAMAR
COUNTY BROWARD STATE FLORIDA
LOCATION MIRAMAR WWTP
SEC. ____ TWP ____ RGE ____

OTHER SERVICES:
HRT/GYRO
X-Y CALIPER
FLOWMETER/GR
DIL/LL3/BHTV

PERMANENT DATUM PAD ELEV. ____
LOG MEASURED FROM PAD FT. ABOVE PERMANENT DATUM
DRILLING MEASURED FROM PAD
ELEV.: K.B. ____
D.F. ____
G.L. ____

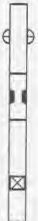
DATE	03-NOVEMBER-1995	
RUN NO.	TEN	
TYPE LOG	BHC/SONIC	
DEPTH-DRILLER	2860'	
DEPTH-LOGGER	2854'	
LOGGED INTERVAL	2854' TO 2290'	TO
OPERATING RIG TIME	1 HOUR	
TYPE FLUID IN HOLE	WATER	
SALINITY, PPM CL	NA	
DENSITY-VISCOSITY	NA	
LEVEL	FULL	
MAX. REC. TEMP. DEG F.	68 DEGF	
EQUIPMENT-LOCATION	101 FTM	
RECORDED BY	WILLIAMS/LEE	
WITNESSED BY	J.WHEATELY	

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
EIGHT	41.5"	2312'	CASINGE	50"	.5 WT.	260'	SURFACE
				42"	.5 WT.	1000'	SURFACE
NINE				34"	.5 WT.	2300'	SURFACE
TEN	12.25"	2860'	CASING				

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

BOREHOLE COMPENSATED SONIC/GAMMA RAY TOOL STRING CONFIGURATION

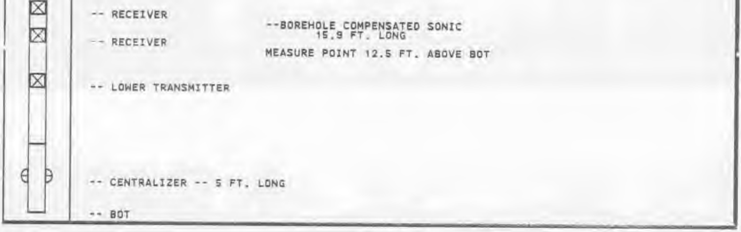


-- CENTRALIZER -- 5 FT. LONG

-- GAMMA RAY -- 3 FT. LONG
MEASURE POINT 22.4 FT. FROM BOT

-- TOTAL TOOL STRING LENGTH = 28.9 FEET

-- UPPER TRANSMITTER

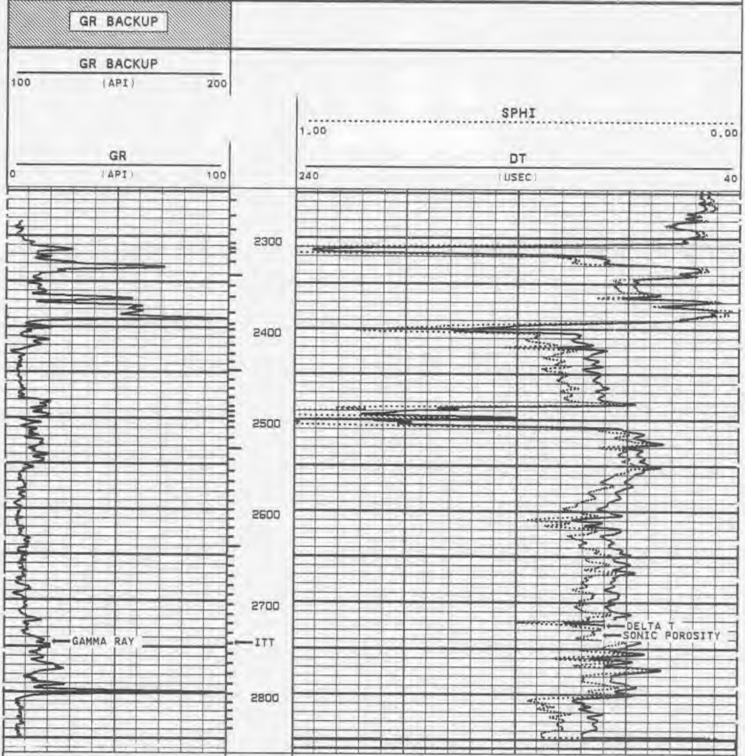

-- RECEIVER
-- RECEIVER
--BOREHOLE COMPENSATED SONIC
15.9 FT. LONG
MEASURE POINT 12.5 FT. ABOVE BOT
-- LOWER TRANSMITTER
-- CENTRALIZER -- 5 FT. LONG
-- BOT

REMARKS

SPHI COMPUTED WITH LIMESTONE MATRIX 47.6 USEC.

VERSION: 2.26

FINISH DEPTH: 2251.5 FEET DIRECTION: UP DATE: 11/03/95 TIME: 16:34:44 MODE: TRACE PLAYBACK



GR

0 (API) 100

DT

240 (USEC) 40

SPHI

1.00 0.00

GR BACKUP

100 (API) 200

GR BACKUP

START DEPTH: **2865.1** FEET DIRECTION: **UP** DATE: **11/03/95** TIME: **16:33:25** MODE: **TRACE PLAYBACK**

VERSION: 2.26

VERSION: 2.26

FINISH DEPTH: **2251.5** FEET DIRECTION: **UP** DATE: **11/03/95** TIME: **16:33:05** MODE: **TRACE PLAYBACK**

GR BACKUP

GR BACKUP

100 (API) 200

SPHI

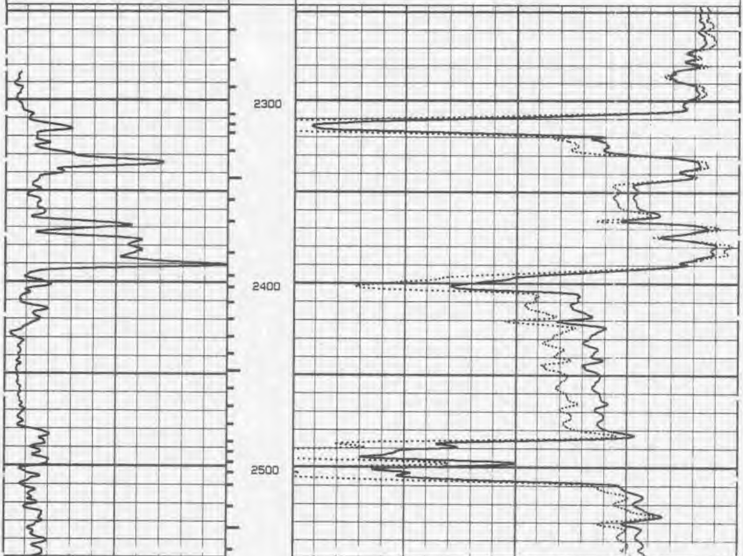
1.00 0.00

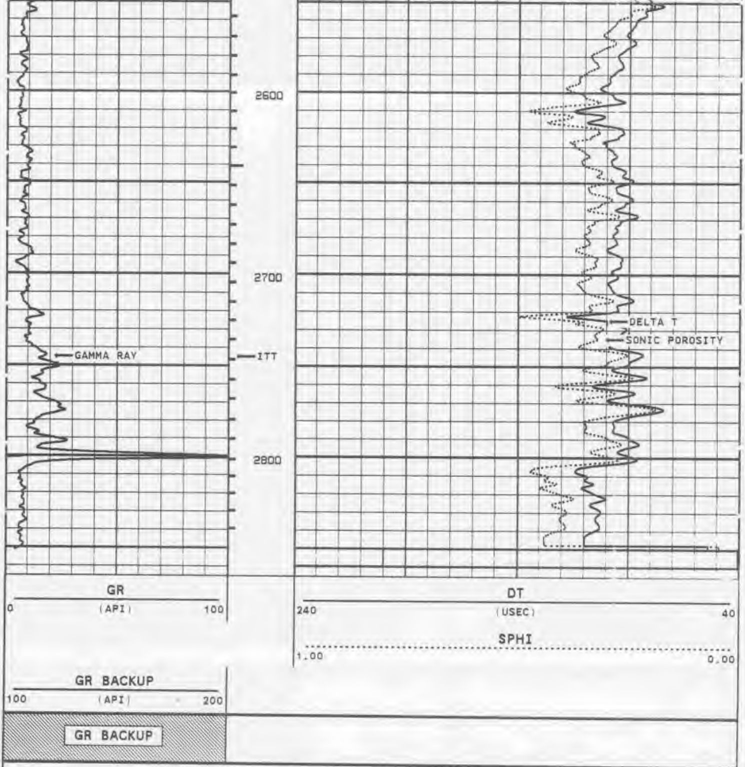
GR

0 (API) 100

DT

240 (USEC) 40



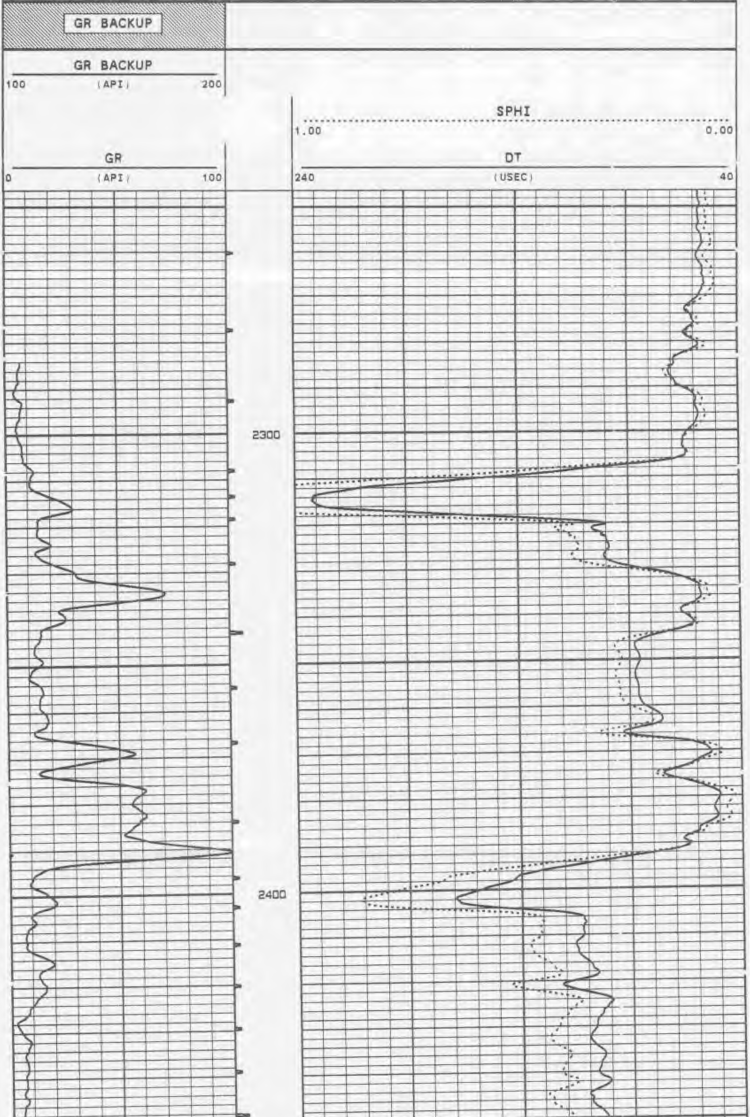


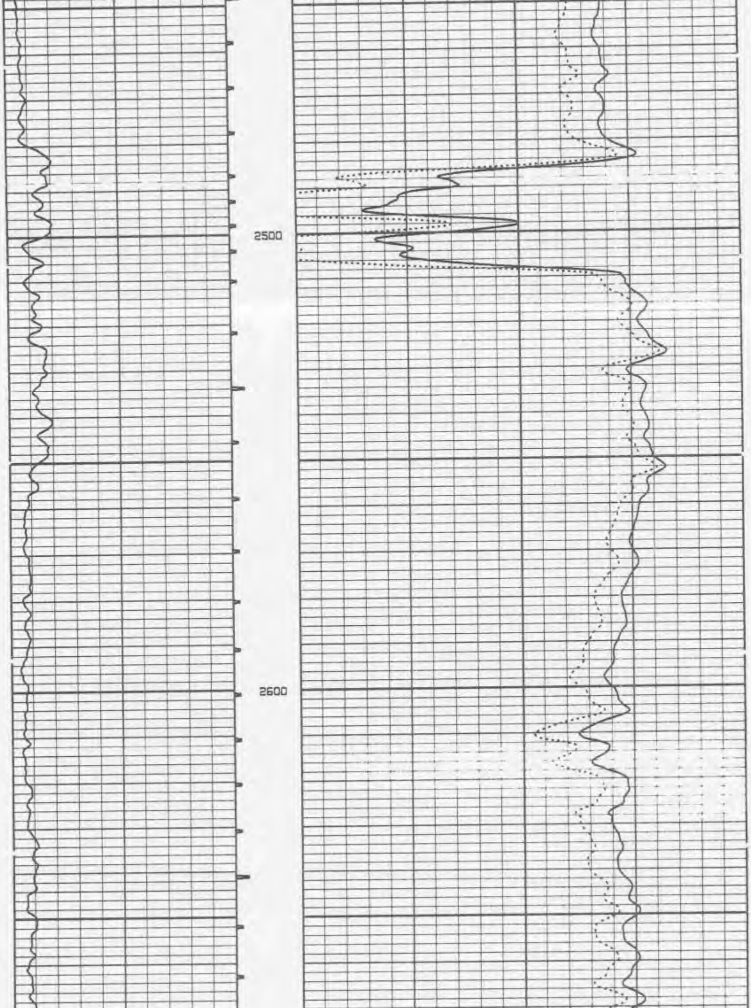
START DEPTH: **2865.1** FEET DIRECTION: **UP** DATE: **11/03/95** TIME: **16:31:41** MODE: **TRACE PLAYBACK**

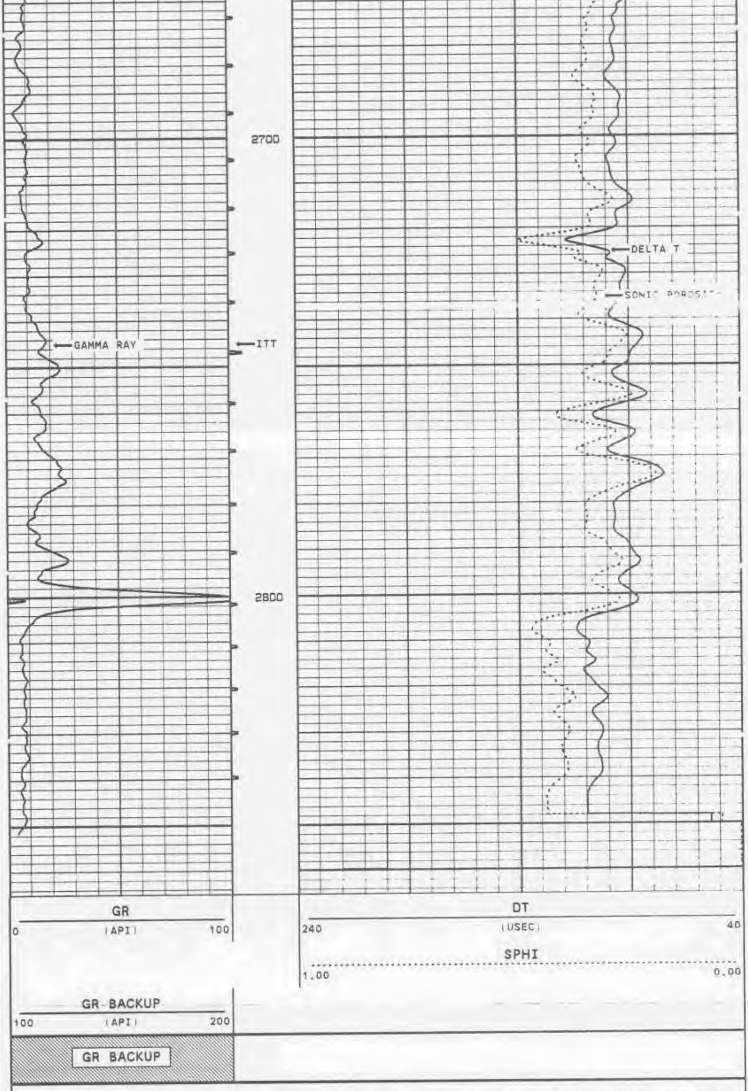
VERSION: **2.26**

VERSION: **2.26**

FINISH DEPTH: **2251.5** FEET DIRECTION: **UP** DATE: **11/03/95** TIME: **16:30:57** MODE: **TRACE PLAYBACK**





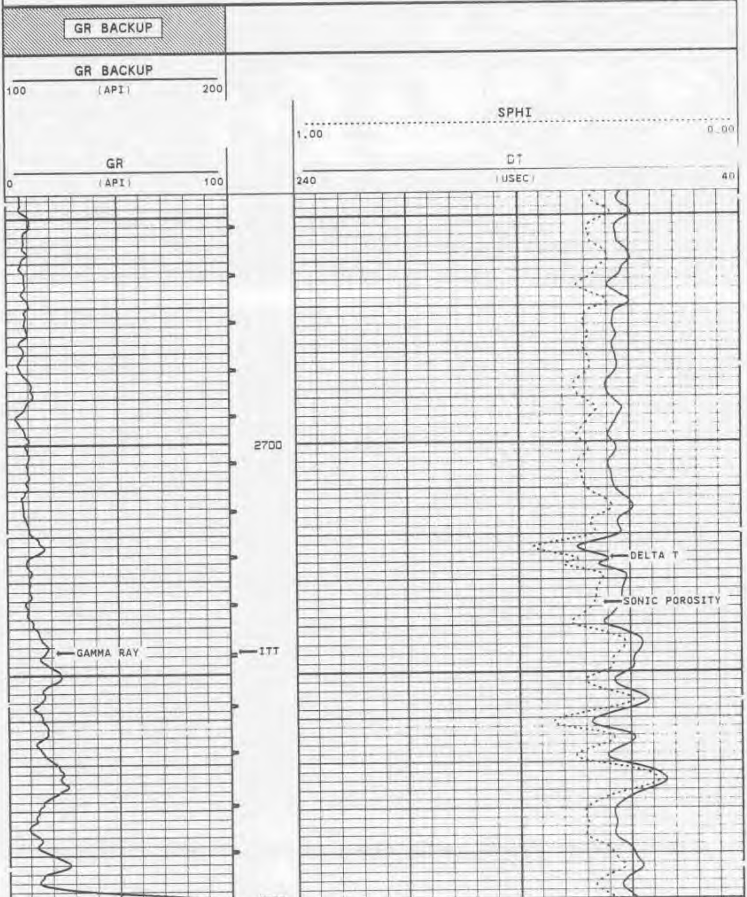


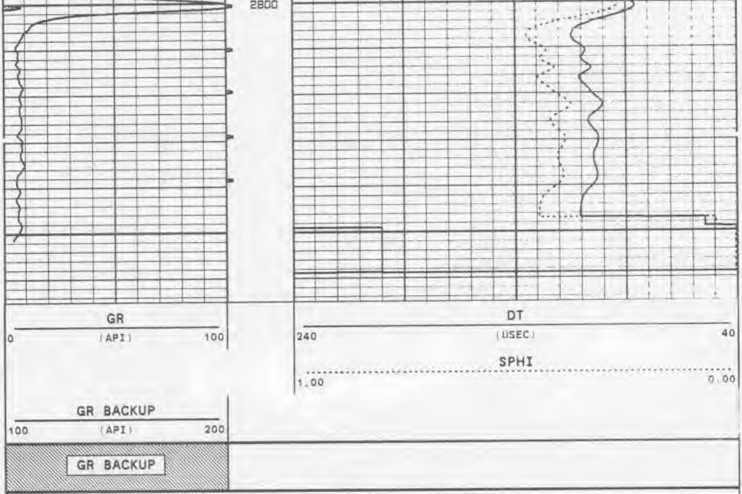
START DEPTH: **2865.1** FEET DIRECTION: **UP** DATE: **11/03/95** TIME: **16:29:14** MODE: **TRACE PLAYBACK**

VERSION: 2.26

VERSION: 2.26

FINISH DEPTH: **2649.9** FEET DIRECTION: **UP** DATE: **11/03/95** TIME: **16:25:57** MODE: **TRACE PLAYBACK**





START DEPTH: 2865.1 FEET DIRECTION: UP DATE: 11/03/95 TIME: 16:25:13 MODE: TRACE PLAYBACK

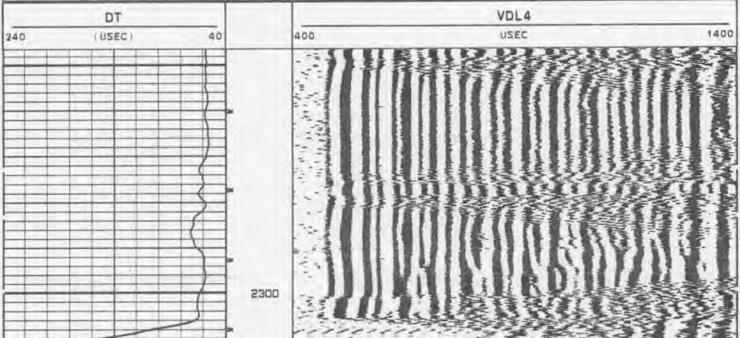
VERSION: 2.26

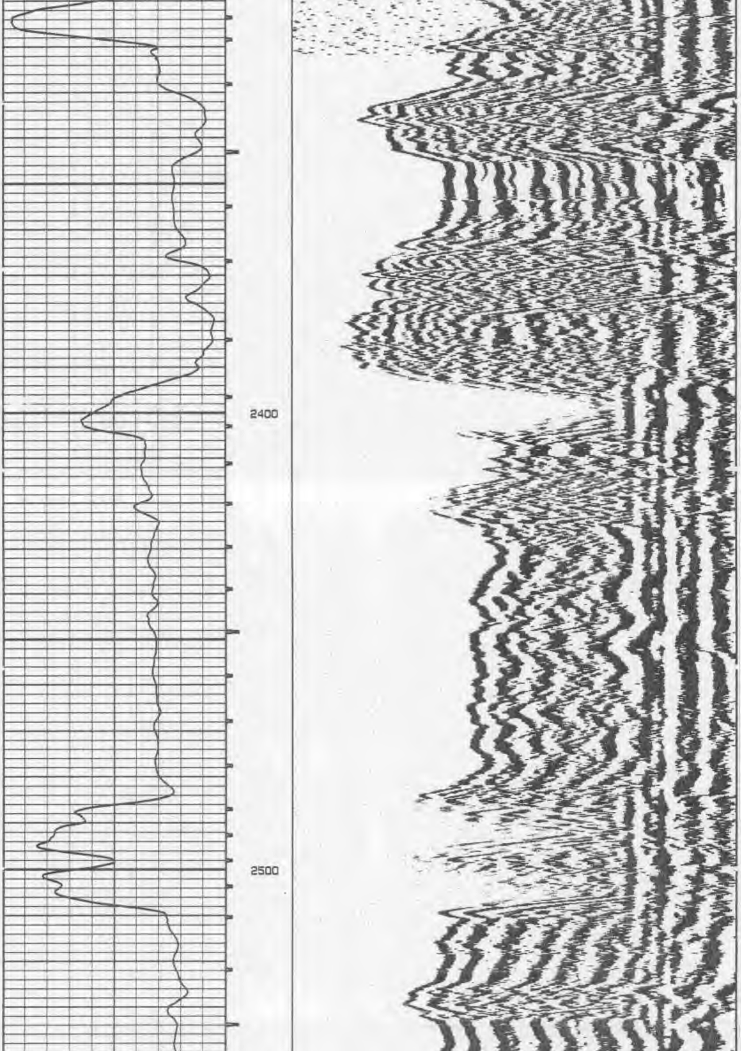
VERSION: 2.26

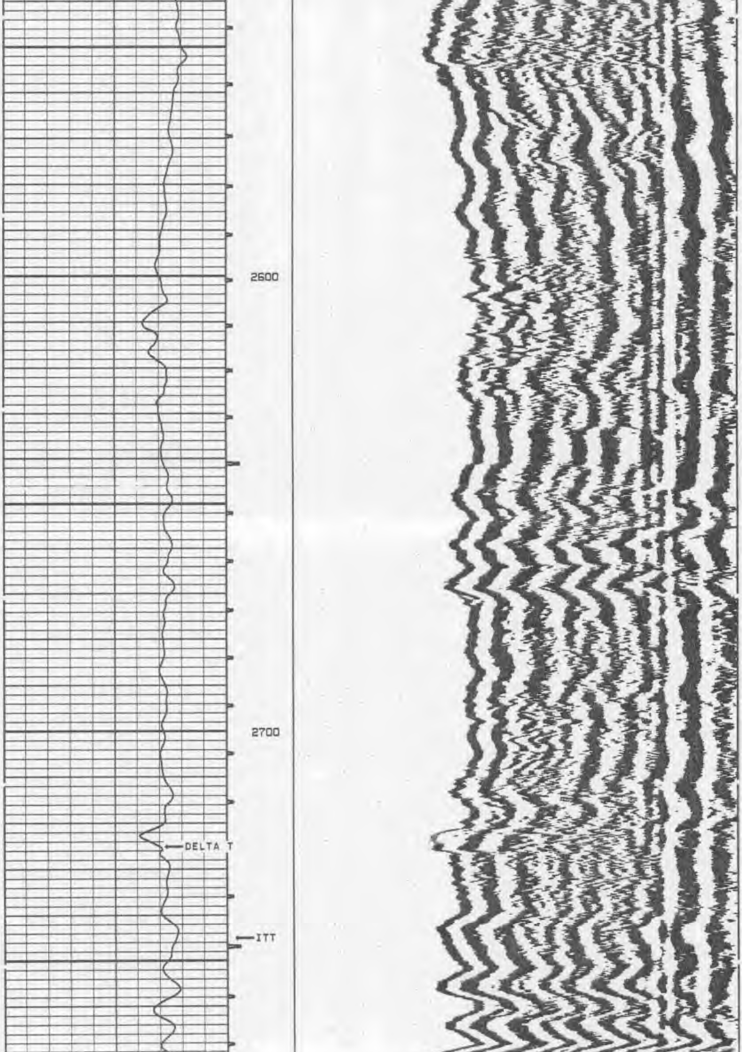
MAIN PASS

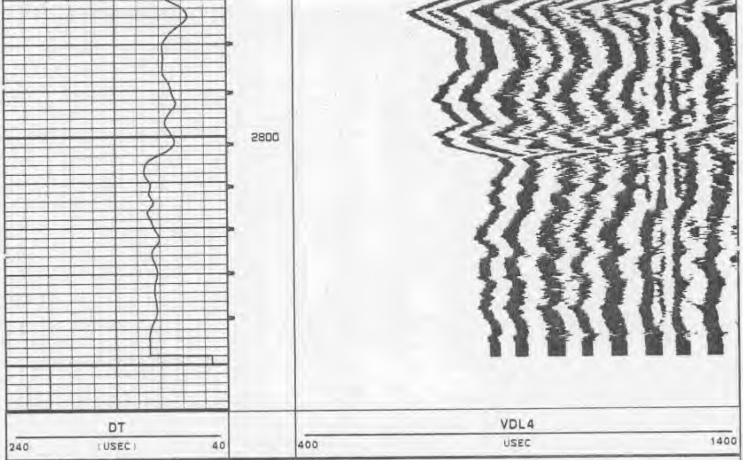
MIW110BHCM

FINISH DEPTH: 2248.5 FEET DIRECTION: UP DATE: 11/03/95 TIME: 16:19:25 MODE: ORIGINAL









START DEPTH: **2860.3** FEET DIRECTION: **UP** DATE: **11/03/95** TIME: **15:59:32** MODE: **ORIGINAL**

MIW110BHCM

MAIN PASS

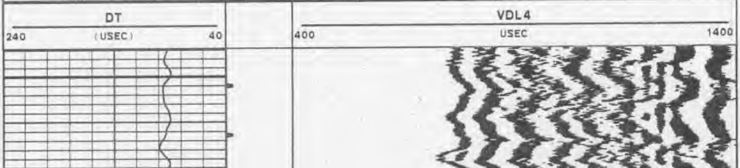
VERSION: 2.26

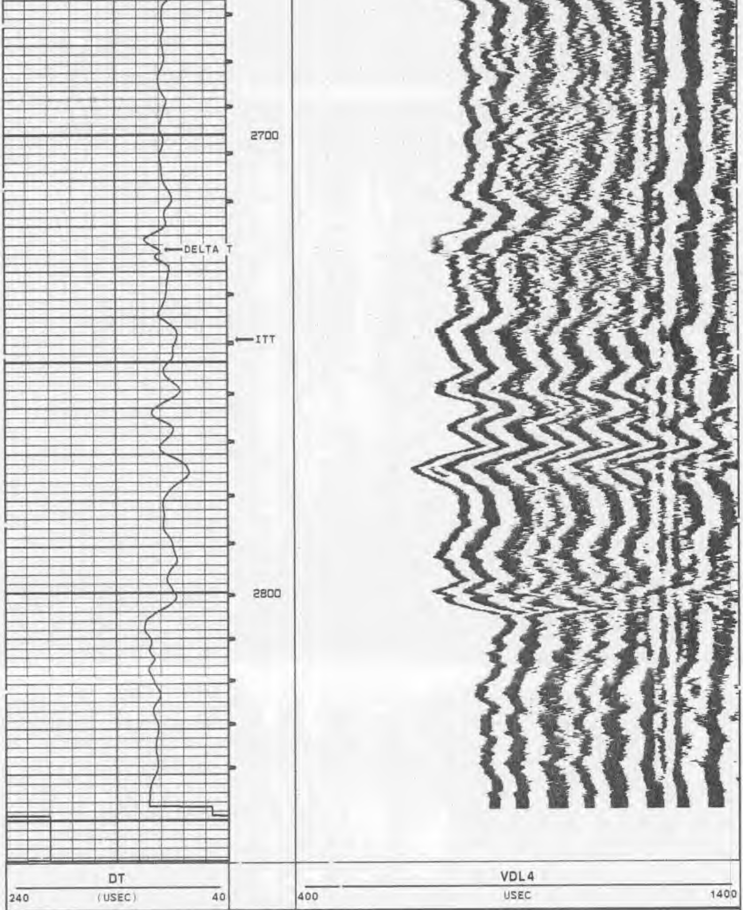
VERSION: 2.26

REPEAT SECTION

MIW110BHCR

FINISH DEPTH: **2643.8** FEET DIRECTION: **UP** DATE: **11/03/95** TIME: **15:56:04** MODE: **ORIGINAL**





START DEPTH: **2859.3** FEET DIRECTION: **UP** DATE: **11/03/95** TIME: **15:49:52** MODE: **ORIGINAL**

MIW110BHCR

REPEAT SECTION

VERSION: 2.28

COMPANY HAZEN & SAWYER
MIRAMAR WWTP
WELL MIRAMAR WWTP IW-1
FIELD MIRAMAR STATE FLORIDA

FLORIDA GEOPHYSICAL LOGGING, INC.

STATIC
FLOWMETER
LOG

FILE NO. ____

COMPANY HAZEN & SAWYER
WELL MIRAMAR WWTP IW-1
FIELD MIRAMAR
COUNTY BROWARD STATE FLORIDA

LOCATION
MIRAMAR WWTP

RECEIVED
OCT 13 1995
DEPT OF ENV PROTECTION
WEST PALM BEACH

SEC. ____ TWP ____ RGE ____

OTHER SERVICES:
DIL/LL3 GYRO
SONIC/VDL GR
TEMP.
BHTV X-Y CAL

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

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

DATE	04-OCTOBER-1995	
RUN NO.	SIX	
TYPE LOG	FLOWMETER	
DEPTH-DRILLER	2340'	
DEPTH-LOGGER	2340'	
LOGGED INTERVAL	2300' TO 1800'	1750' TO 890'
OPERATING RIG TIME	1.5 HOURS	
TYPE FLUID IN HOLE	WATER	
SALINITY, PPM CL	NA	
DENSITY-VISCOSITY	NA	
LEVEL	FULL	
MAX. REC. TEMP. DEG F.	81 DEGF	
EQUIPMENT-LOCATION	101 FTM	
RECORDED BY	DENTON/LEE	
WITNESSED BY	J.WHEATLY	

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
ONE	58"	265'	SURFACE	50"	.5 WT.	260'	SURFACE
TWO	48.5"	1010'	260'	42"	.5 WT.	1000'	SURFACE
THREE	12.25"	2340'	1000'				

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REMARKS

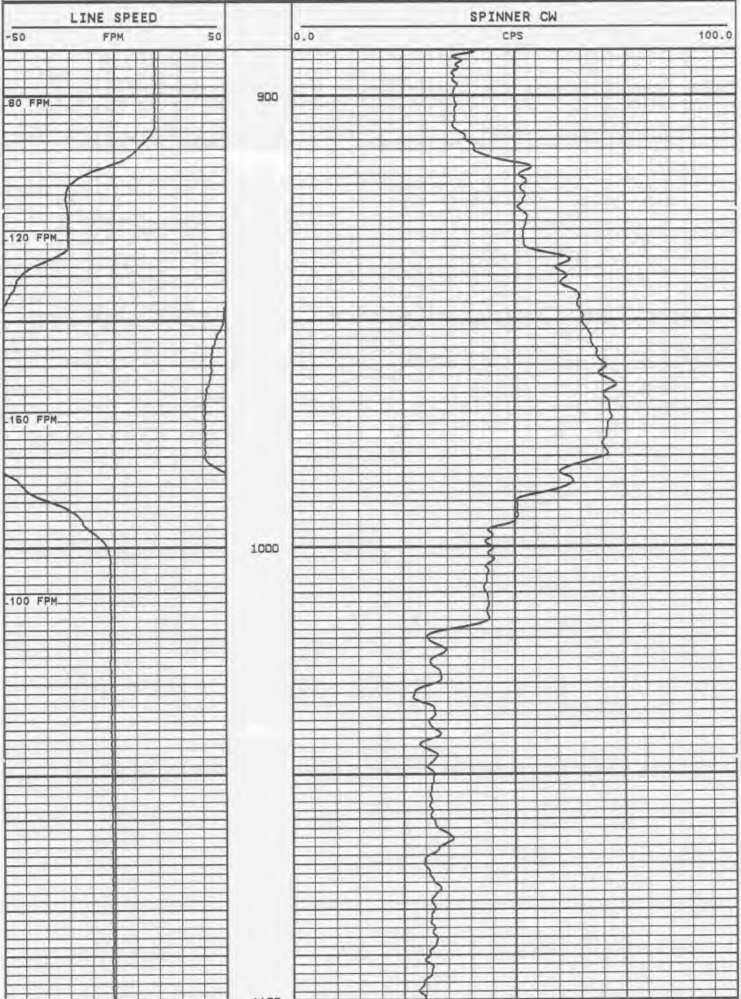
LOGGED DOWN AT 100 FEET PER MIN.
STATIC WELL.

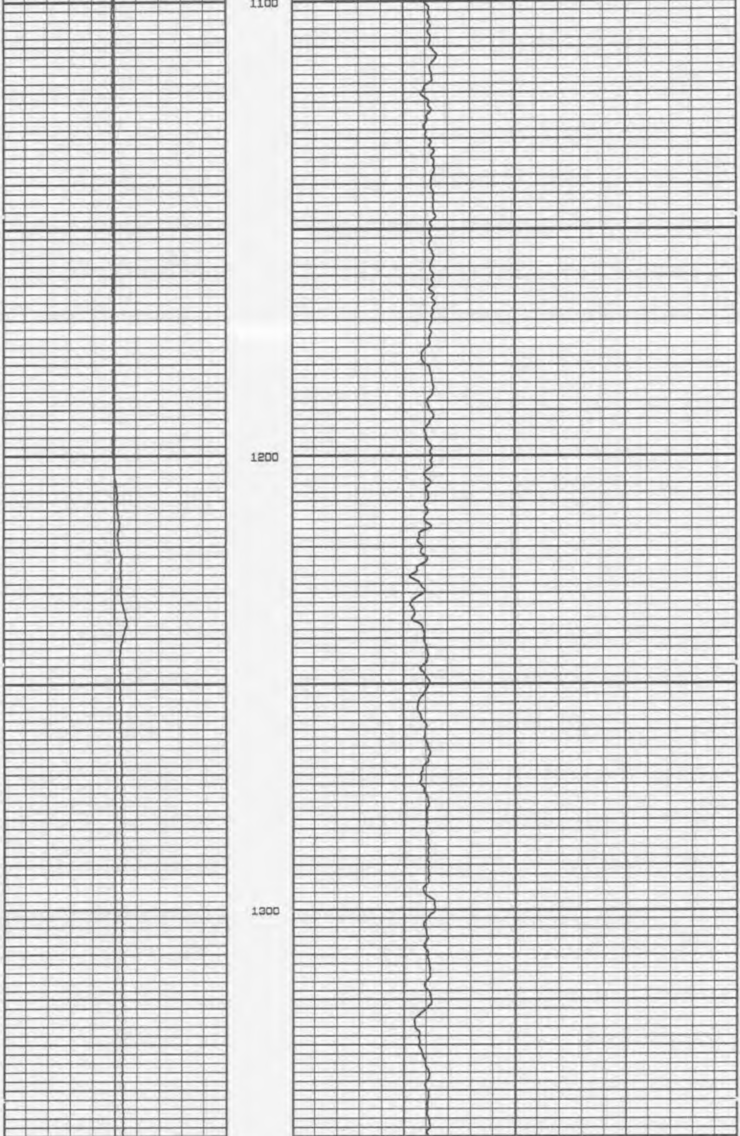
VERSION: 2.26

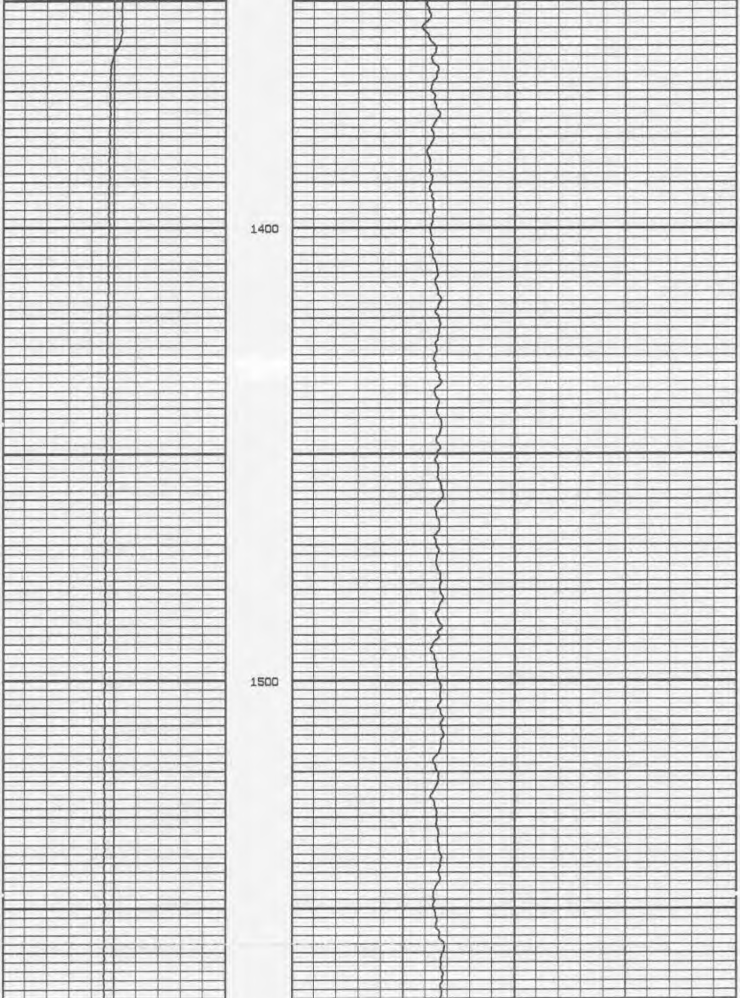
DOWN PASS

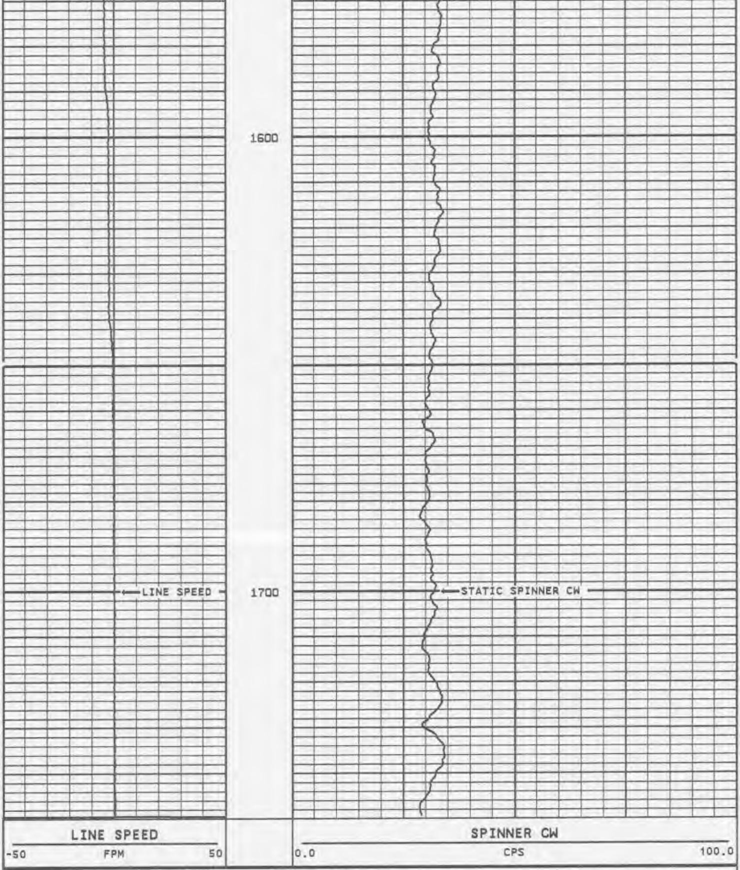
MIW16FLD1

FINISH DEPTH: 1753.6 FEET DIRECTION: DOWN DATE: 10/05/95 TIME: 17:17:06 MODE: TRACE PLAYBACK









START DEPTH: 889.7 FEET DIRECTION: **DOWN** DATE: **10/05/95** TIME: **17:15:21** MODE: **TRACE PLAYBACK**

MIW16FLD1

DOWN PASS

VERSION: 2.26

REMARKS

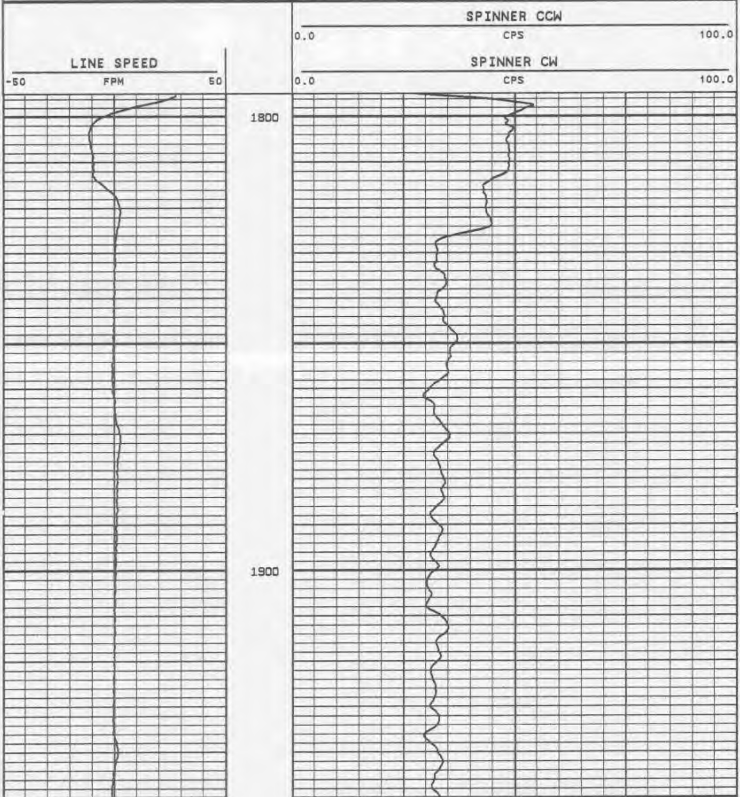
LOGGED DOWN AT 100 FEET PER MIN.
STATIC WELL.

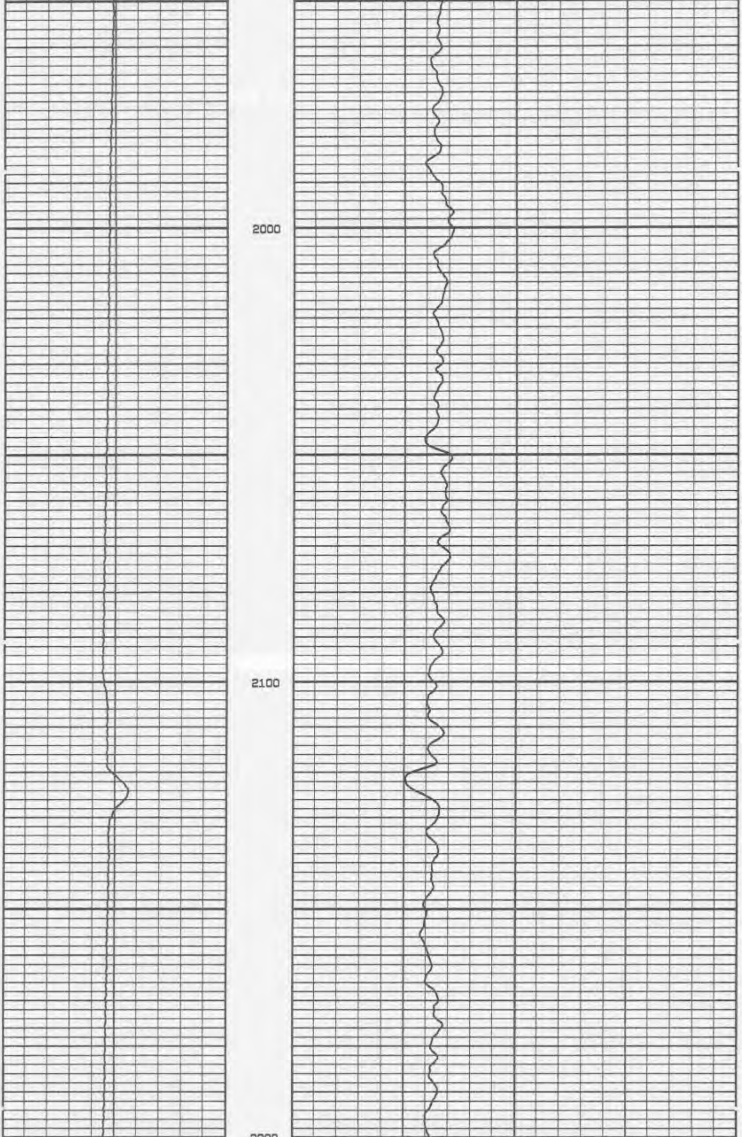
VERSION: 2.26

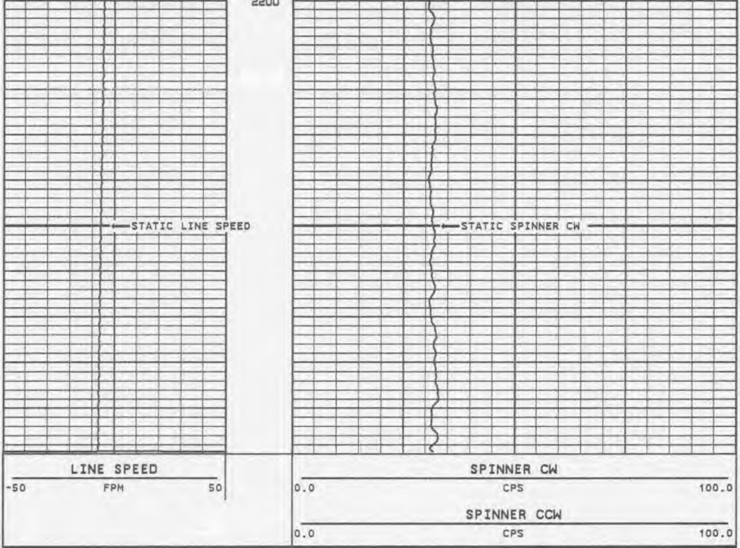
DOWN PASS

MIW16FL1

FINISH DEPTH: **2308.3** FEET DIRECTION: **DOWN** DATE: **10/05/95** TIME: **15:40:03** MODE: **TRACE PLAYBACK**







START DEPTH: **1798.1** FEET DIRECTION: **DOWN** DATE: **10/05/95** TIME: **15:34:42** MODE: **TRACE PLAYBACK**

MIW16FL1

DOWN PASS

VERSION: 2.26

COMPANY HAZEN & SAWYER

WELL MIRAMAR WWTP IW-1

FIELD MIRAMAR STATE

FLORIDA GEOPHYSICAL LOGGING, INC.

TEMPERATURE LOG

FILE NO. ______

COMPANY HAZEN & SAWYER
WELL MIRAMAR WWTP IW-1
FIELD MIRAMAR
COUNTY BROWARD STATE FLORIDA

LOCATION
MIRAMAR WWTP

RECEIVED
OCT 13 1995
DEPT OF ENV PROTECTION
WEST PALM BEACH

SEC. ______

OTHER SERVICES:
DIL/LL3 GYRO
SONIC/VDL GR
FLOWMETER
BHTV X-Y CAL

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

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

DATE	04-OCTOBER-1995	
RUN NO.	SIX	
TYPE LOG	TEMPERATURE	
DEPTH-DRILLER	2340'	
DEPTH-LOGGER	2340'	
LOGGED INTERVAL	2340' TO 970'	TO
OPERATING RIG TIME	1.5 HOURS	
TYPE FLUID IN HOLE	WATER	
SALINITY, PPM CL	NA	
DENSITY-VISCOSITY	NA	
LEVEL	FULL	
MAX. REC. TEMP. DEG F.	81 DEGF	
EQUIPMENT-LOCATION	101 FTM	
RECORDED BY	DENTON/LEE	
WITNESSED BY	J.WHEATLY	

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
ONE	58"	265'	SURFACE	50"	.5 WT.	260'	SURFACE
TWO	48.5"	1010'	260'	42"	.5 WT.	1000'	SURFACE
THREE	12.25"	2340'	1000'				

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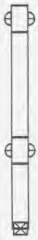
REMARKS

TEMPERATURE TOOL STRING CONFIGURATION



-- CENTRALIZER -- 2 FT. LONG

-- TOTAL TOOL STRING LENGTH = 11.5 FT.

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

-- CENTRALIZER -- 2 FT. LONG

-- TEMPERATURE -- 2.5 FT. LONG

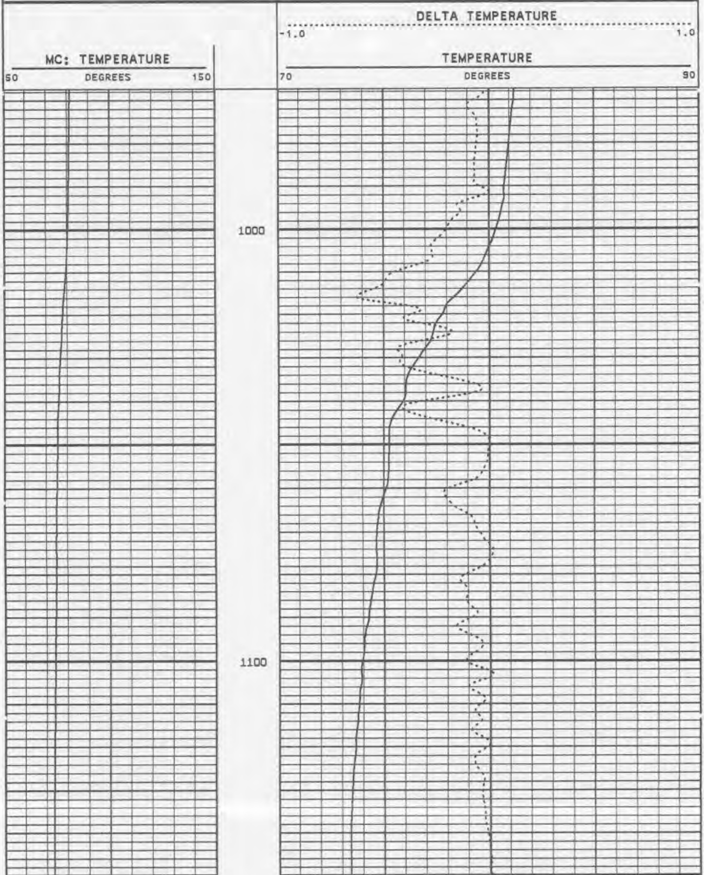
-- TEMPERATURE MEASURE POINT AT BOT

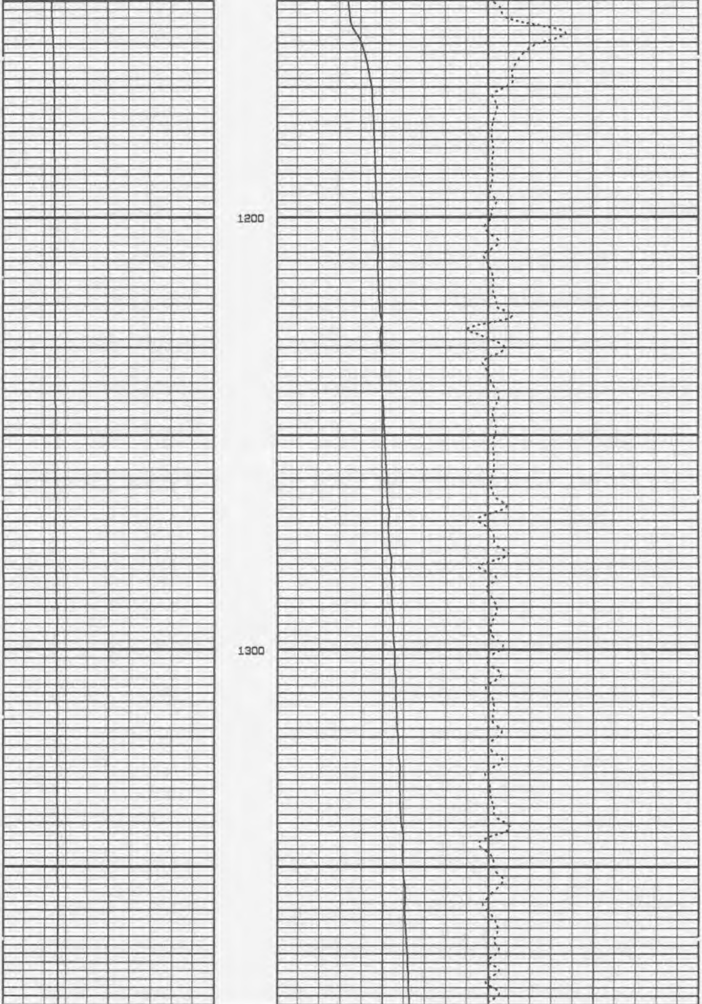
VERSION: 2.26

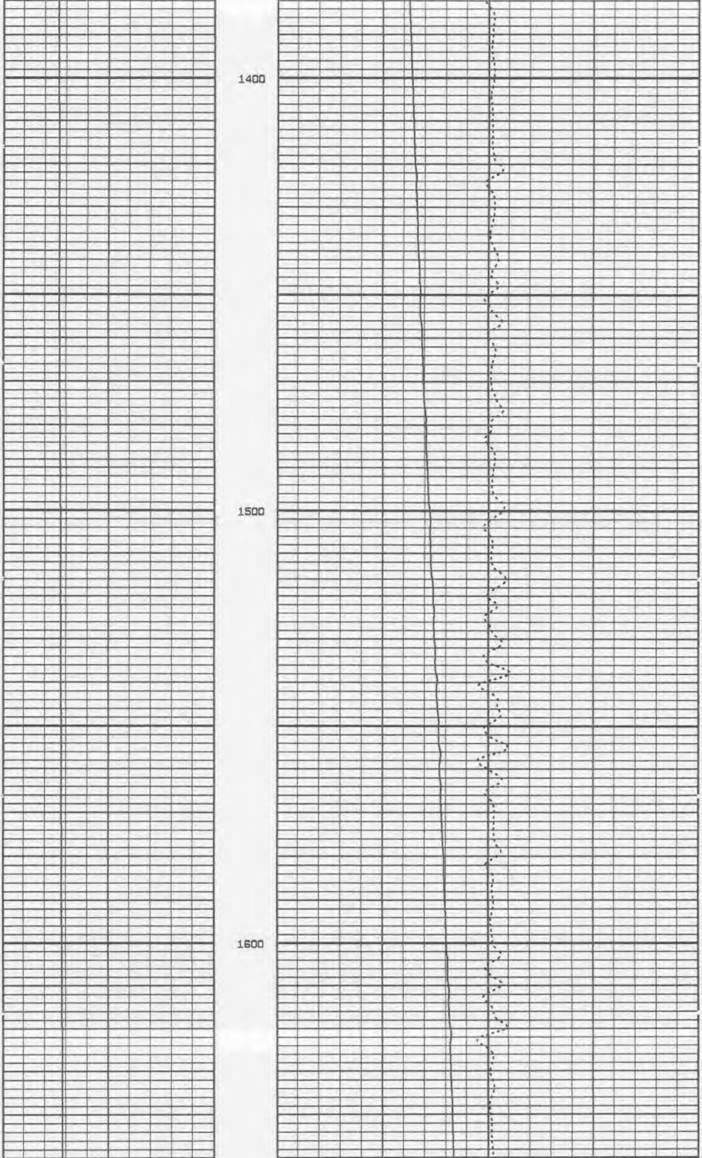
MAIN PASS

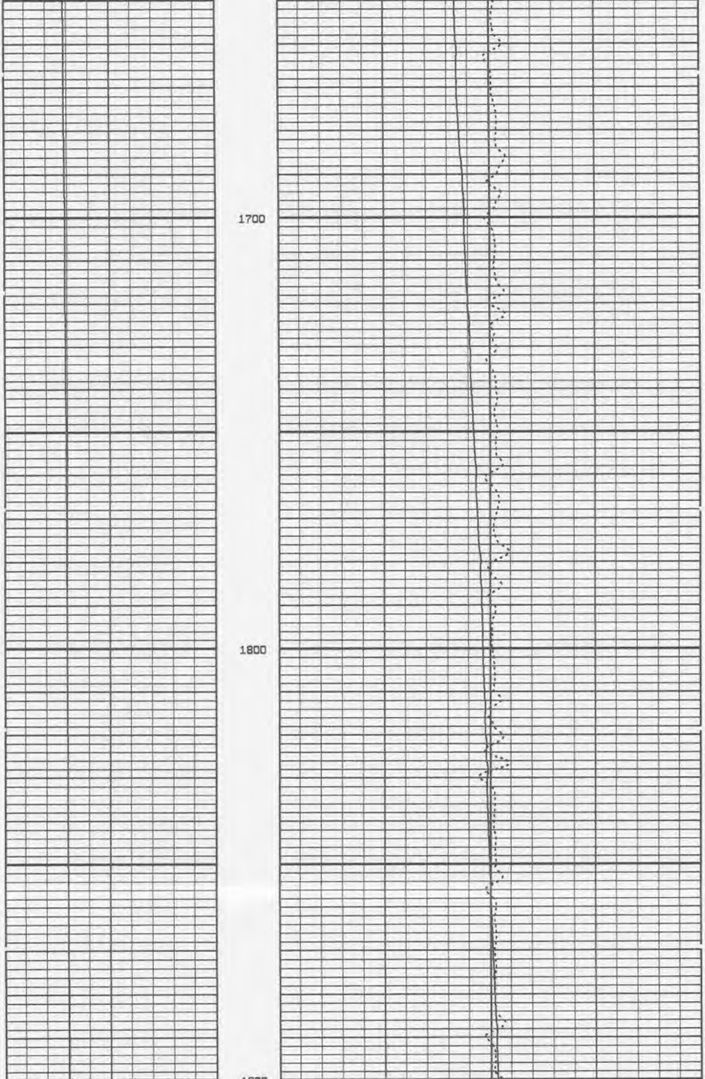
MIW16T

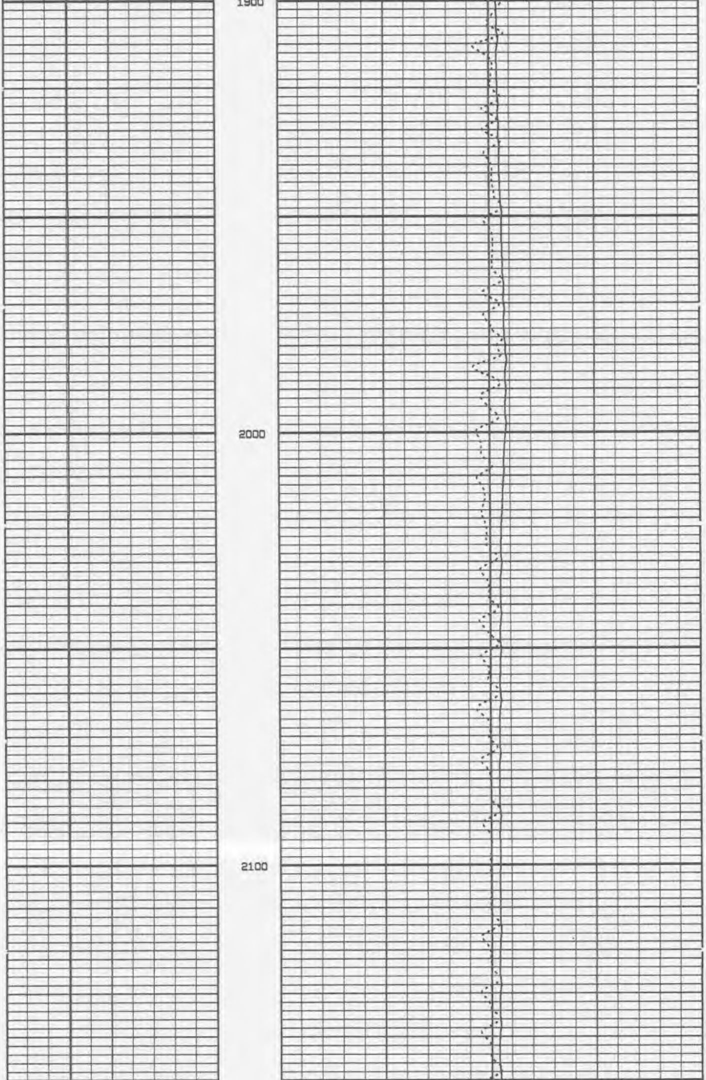
FINISH DEPTH: **2320.8** FEET DIRECTION: **DOWN** DATE: **10/04/95** TIME: **16:09:42** MODE: **TRACE PLAYBACK**

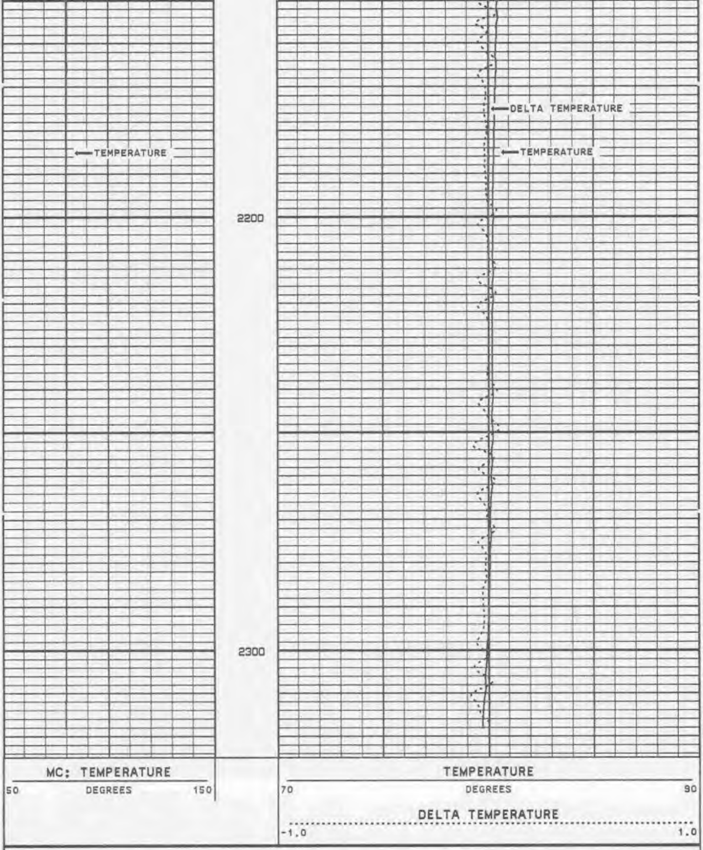












START DEPTH: **944.0** FEET DIRECTION: **DOWN** DATE: **10/04/95** TIME: **15:41:27** MODE: **TRACE PLAYBACK**

MIW16T

MAIN PASS

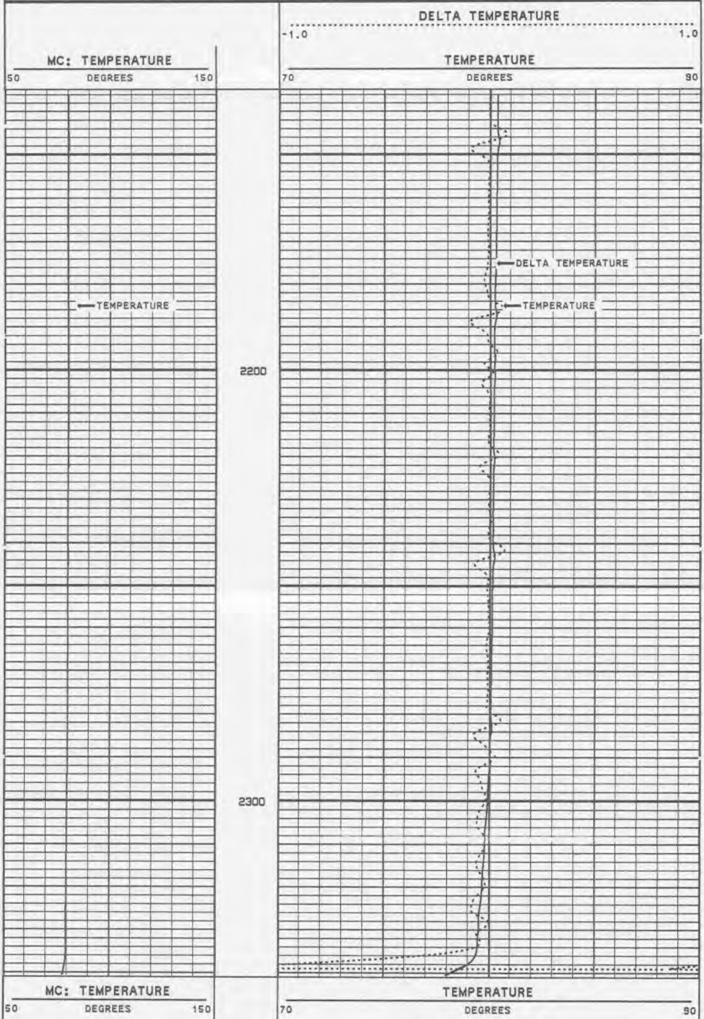
VERSION: 2.26

VERSION: 2.26

REPEAT SECTION

MIW16T1

FINISH DEPTH: **2343.1** FEET DIRECTION: **DOWN** DATE: **10/04/95** TIME: **16:16:49** MODE: **TRACE PLAYBACK**



DELTA TEMPERATURE

-1.0 1.0

START DEPTH: **2138.6** FEET DIRECTION: **DOWN** DATE: **10/04/95** TIME: **16:12:16** MODE: **TRACE PLAYBACK**

MIW16T1

REPEAT SECTION

VERSION: 2.26

MASTER CALIBRATION SUMMARY

FILE: DATE: 10/04/95 TIME: 18:52 VERSION: 2.26

TEMPERATURE #10

DATE: 11/26/94 TIME: 16:43

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
ZERO	457.4	CPS	69.0	68.7	69.4	0.26	DEGF
PLUS	724.5	CPS	122.9	122.7	123.1	0.14	DEGF

COMPANY HAZEN & SAWYER

WELL MIRAMAR WWTP IW-1

FIELD MIRAMAR STATE

FLORIDA GEOPHYSICAL LOGGING, INC.

DUAL INDUCTION GAMMA RAY LOG

FILE NO. ____

COMPANY HAZEN & SAWYER
WELL MIRAMAR WWTP IW-1
FIELD MIRAMAR
COUNTY BROWARD STATE FLORIDA

LOCATION
MIRAMAR WWTP

RECEIVED
OCT 13 1995
DEPT OF ENV PROTECTION
WEST PALM BEACH

SEC. ____ TWP ____ RGE ____

OTHER SERVICES:
TEMP GYRO
SONIC/VDL GR
FLOWMETER
BHTV X-Y CAL

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

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

DATE	04-OCTOBER-1995	
RUN NO.	SIX	
TYPE LOG	DIL	
DEPTH-DRILLER	2340'	
DEPTH-LOGGER	2340'	
LOGGED INTERVAL	2340' TO 995'	TO
OPERATING RIG TIME	1.5 HOURS	
TYPE FLUID IN HOLE	WATER	
SALINITY, PPM CL	NA	
DENSITY-VISCOSITY	NA	
LEVEL	FULL	
MAX. REC. TEMP, DEG F.	81 DEGF	
EQUIPMENT-LOCATION	101 FTM	
RECORDED BY	DENTON/LEE	
WITNESSED BY	J.WHEATLY	

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
ONE	58"	265'	SURFACE	50"	.5 WT.	260'	SURFACE
TWO	48.5"	1010'	260'	42"	.5 WT.	1000'	SURFACE
THREE	12.25"	2340'	1000'				

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VERSION: 2.26

MAIN PASS

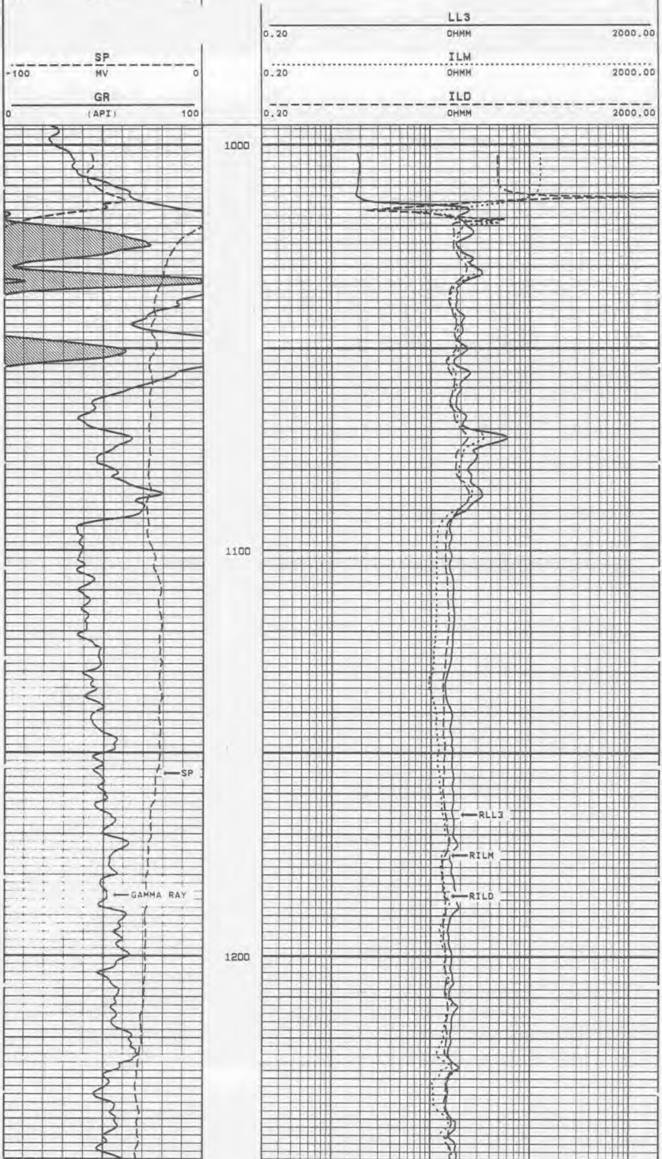
MIW16DIL

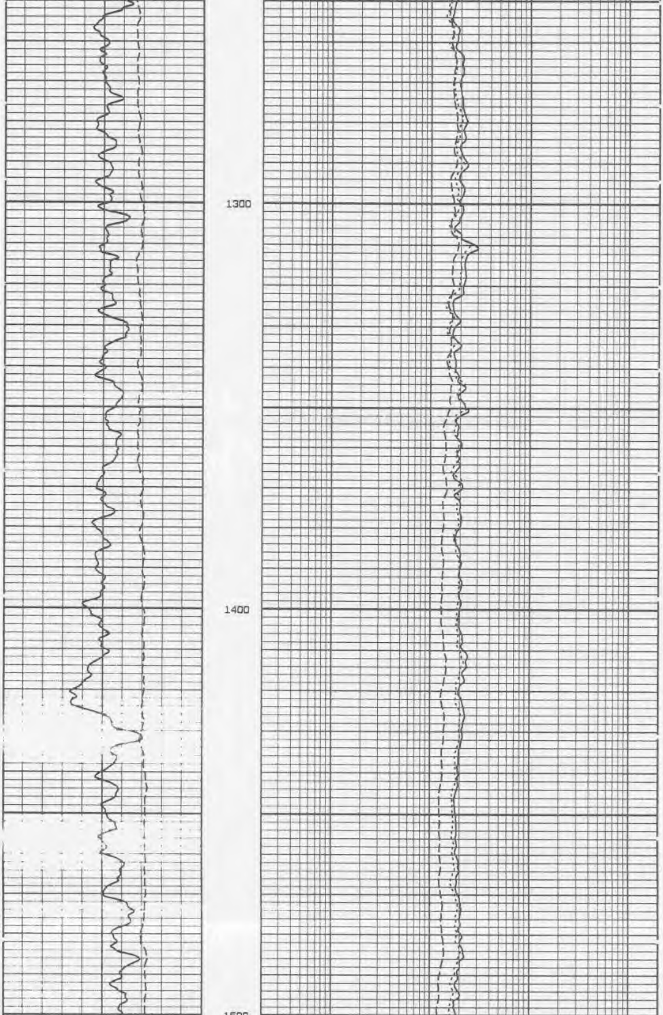
FINISH DEPTH: 1000.2 FEET DIRECTION: UP DATE: 10/05/95 TIME: 11:39:56 MODE: TRACE PLAYBACK

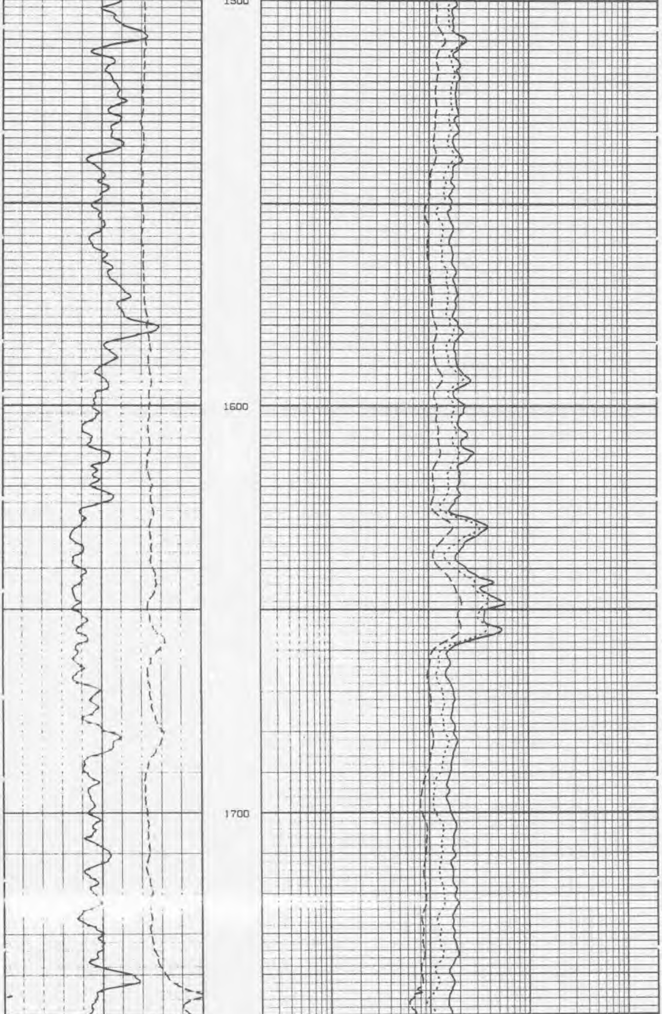
GAMMA RAY BACKUP

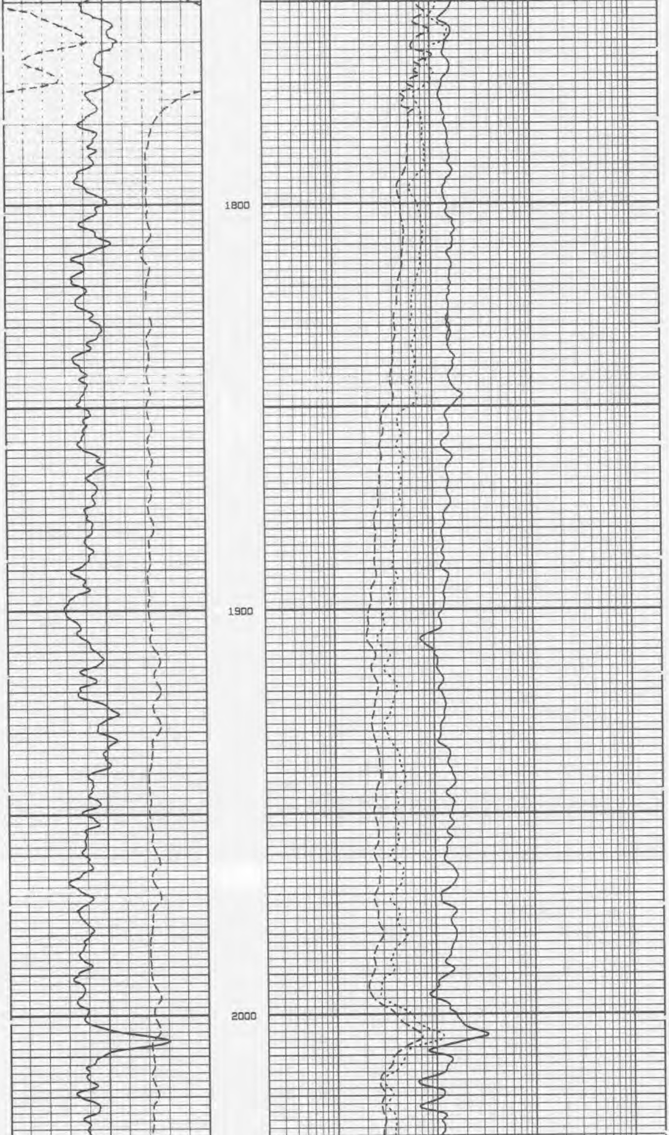
GAMMA RAY BACKUP

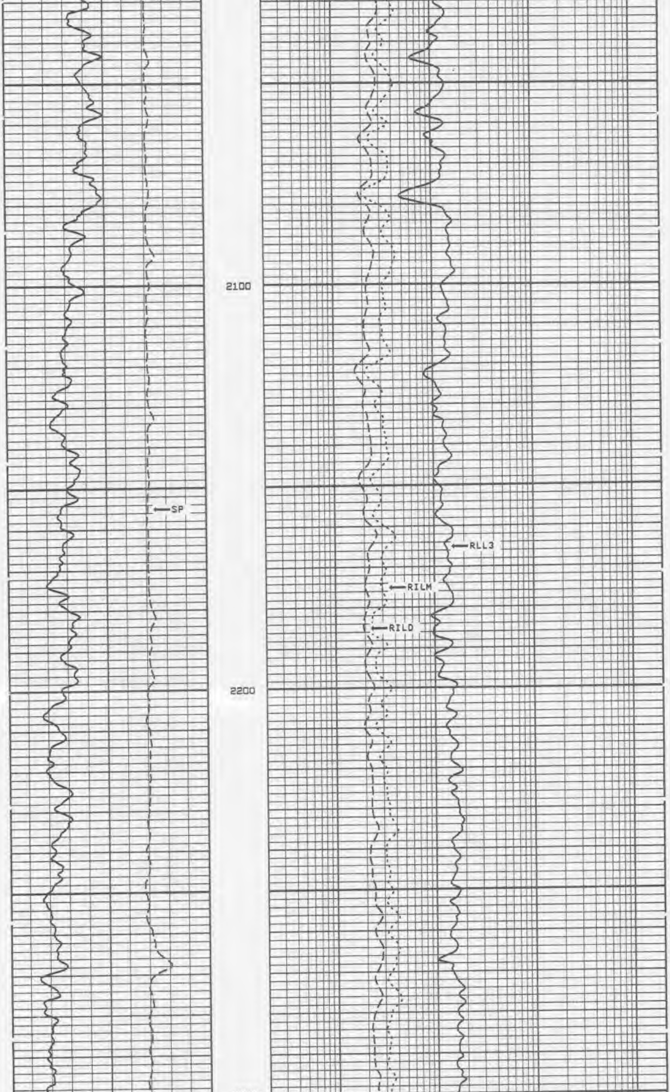
GR BACKUP
100 (API) 200

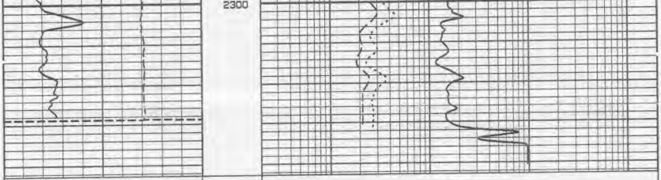












GR
0 (API) 100

SP
-100 MV 0

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

GAMMA RAY BACKUP

START DEPTH: **2342.7** FEET DIRECTION: **UP** DATE: **10/05/95** TIME: **11:35:34** MODE: **TRACE PLAYBACK**

MIW16DIL

MAIN PASS

VERSION: 2.26

VERSION: 2.26

REPEAT SECTION

MIW16DIL1

FINISH DEPTH: **2098.6** FEET DIRECTION: **UP** DATE: **10/05/95** TIME: **00:50:22** MODE: **TRACE PLAYBACK**

GAMMA RAY BACKUP

GR BACKUP
100 (API) 200

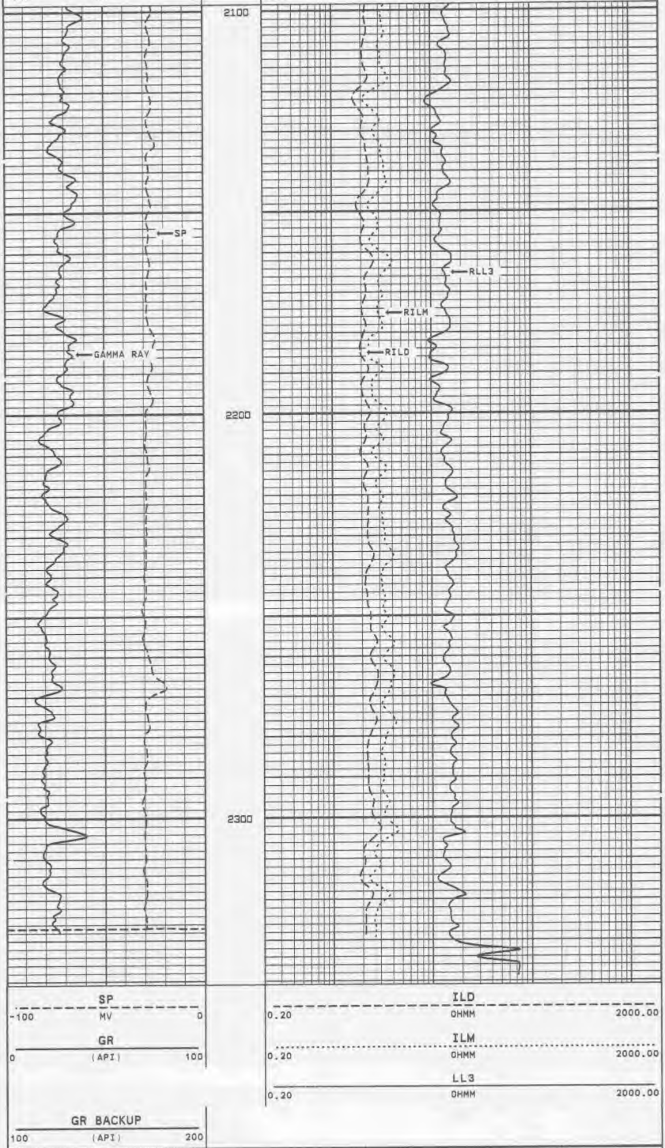
LL3
0.20 OHMM 2000.00

GR
0 (API) 100

ILM
0.20 OHMM 2000.00

SP
-100 MV 0

ILD
0.20 OHMM 2000.00



GAMMA RAY BACKUP

START DEPTH: **2340.9** FEET DIRECTION: **UP** DATE: **10/05/95** TIME: **00:45:14** MODE: **TRACE PLAYBACK**

MIW16DIL1

REPEAT SECTION

VERSION: 2.26

MASTER CALIBRATION SUMMARY

FILE: DATE: 10/05/95 TIME: 11:13 VERSION: 2.26

ILD TOOL #10

DATE: 10/02/95 TIME: 14:12

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
LOOP OPEN	45.0	MV	0.0	-0.8	1.3	0.67	MMHO
LOOP CLOSED	681.1	MV	400.0	399.1	401.1	0.43	MMHO

ILM TOOL #10

DATE: 10/02/95 TIME: 14:12

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
LOOP OPEN	57.1	MV	0.0	-1.2	0.9	0.52	MMHO
LOOP CLOSED	742.3	MV	464.0	463.5	464.9	0.58	MMHO

LL3 TOOL #10

DATE: 07/20/95 TIME: 11:01

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
BOX 1000 OHMS	79.7	MV	1.0	1.0	1.1	0.02	MMHO
BOX 100 OHMS	108.7	MV	10.0	10.0	10.4	0.05	MMHO
BOX 10 OHMS	409.2	MV	100.0	99.8	100.4	0.13	MMHO
BOX 1 OHMS	2543.6	MV	1000.0	999.1	1001.2	1.11	MMHO

COMPANY HAZEN & SAWYER

WELL MIRAMAR WWTP IW-1

FIELD MIRAMAR STATE

FLORIDA
GEOPHYSICAL LOGGING, INC.

X-Y CALPIER
GAMMA RAY
LOG

FILE NO. ____________

COMPANY HAZEN & SAWYER
WELL MIRAMAR WWTP IW-1
FIELD MIRAMAR
COUNTY BROWARD STATE FLORIDA

RECEIVED
OCT 1 3 1995
DEPT OF ENV PROTECTION
WEST PALM BEACH

LOCATION
MIRAMAR WWTP

SEC. ______ TWP ______ RGE ______

OTHER SERVICES:
DIL/LL3 GYRO
SONIC/VDL GR
FLOWMETER
TEMPERATURE

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

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

DATE	04-OCTOBER-1995	
RUN NO.	SIX	
TYPE LOG	X-Y CALIPER/GR	
DEPTH-DRILLER	2340'	
DEPTH-LOGGER	2340'	
LOGGED INTERVAL	2340' TO 990'	TO
OPERATING RIG TIME	1.5 HOURS	
TYPE FLUID IN HOLE	WATER	
SALINITY, PPM CL	NA	
DENSITY-VISCOSITY	NA	
LEVEL	FULL	
MAX. REC. TEMP. DEG F.	81 DEGF	
EQUIPMENT-LOCATION	101 FTM	
RECORDED BY	DENTON/LEE	
WITNESSED BY	J.WHEATLY	

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
ONE	58"	265'	SURFACE	50"	.5 WT.	260'	SURFACE
TWO	48.5"	1010'	260'	42"	.5 WT.	1000'	SURFACE
THREE	12.25"	2340'	1000'				

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REMARKS

XY CALIPER(LONG ARM)/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

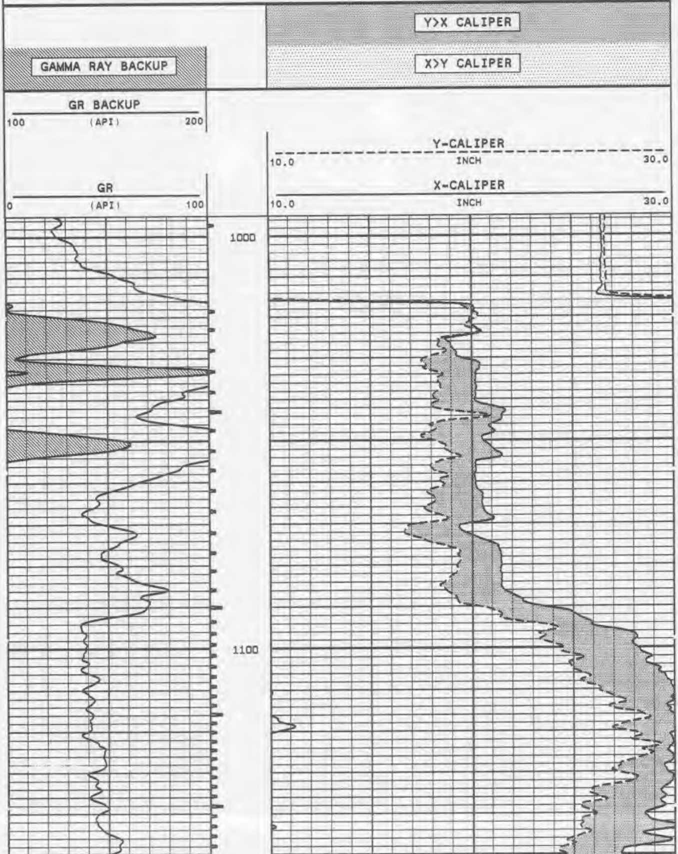
-- BOT

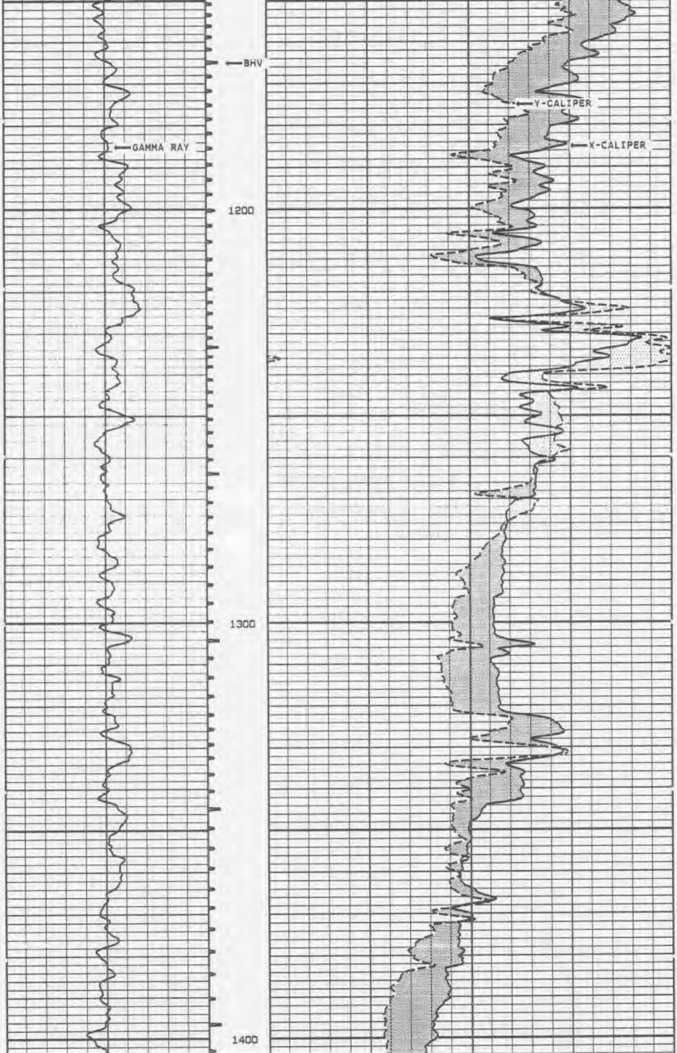
VERSION: 2.25

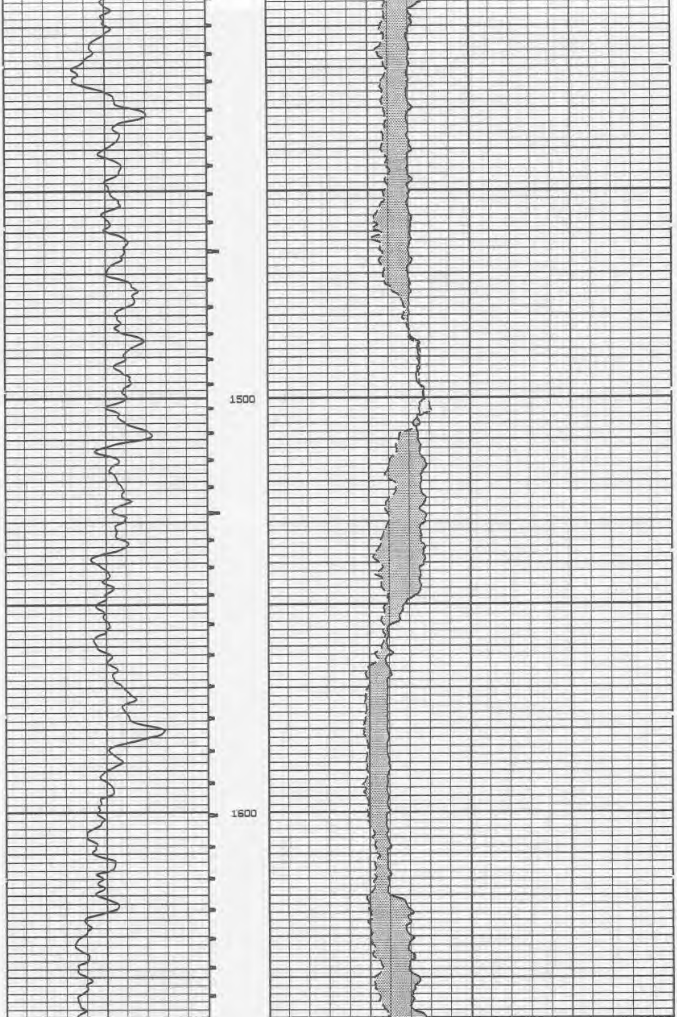
MAIN PASS

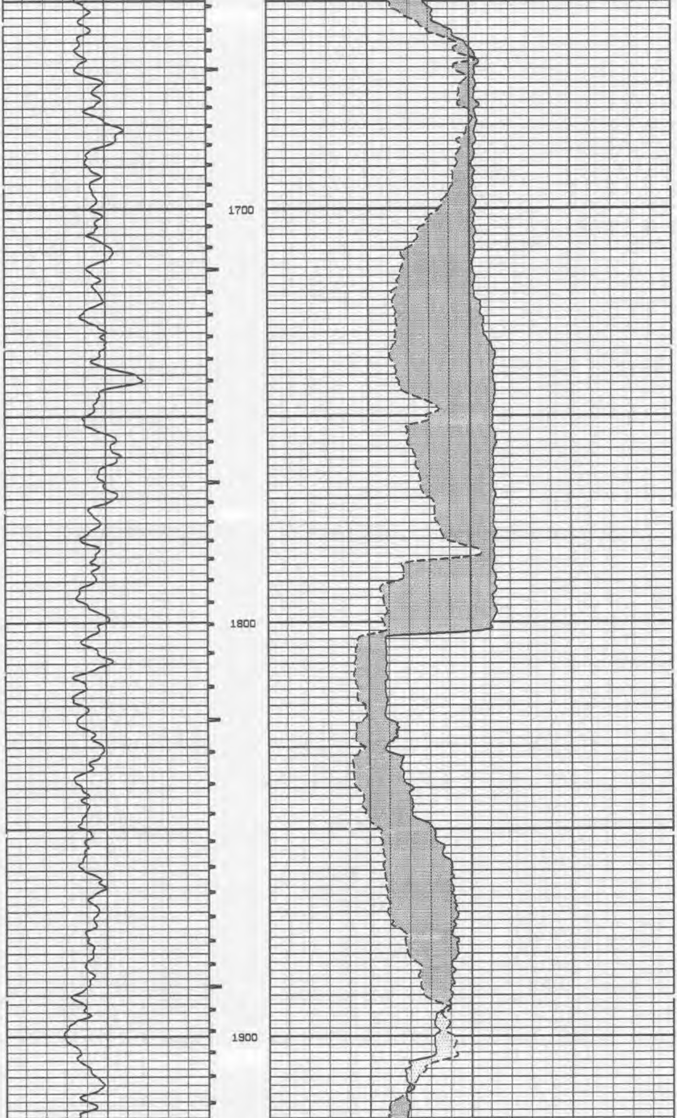
MIW16XY

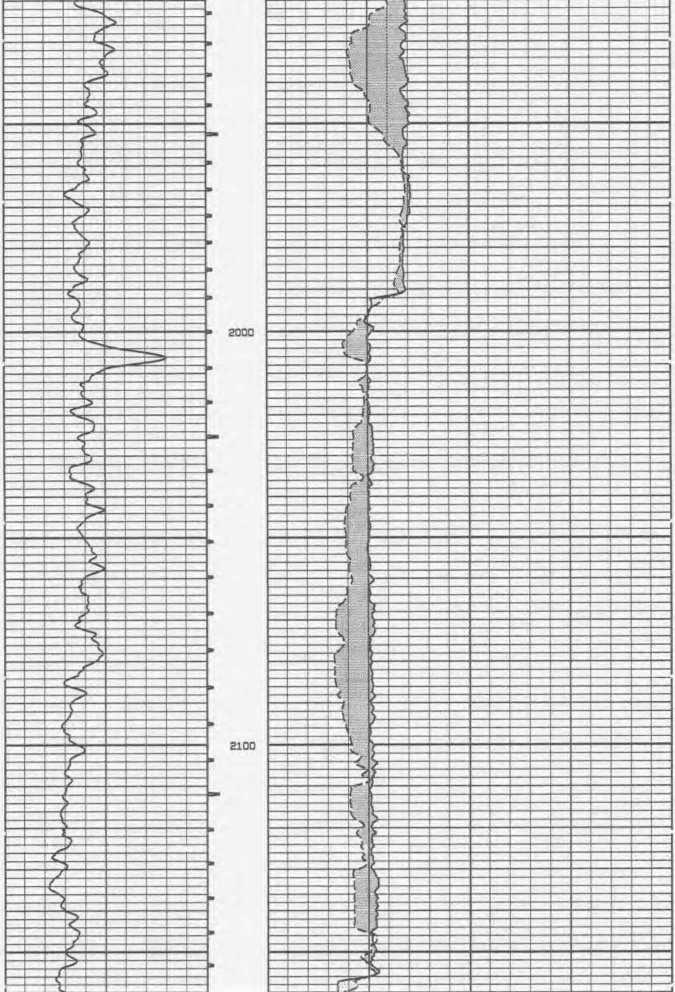
FINISH DEPTH: 995.2 FEET DIRECTION: UP DATE: 10/04/95 TIME: 17:36:23 MODE: RECOMPUTE

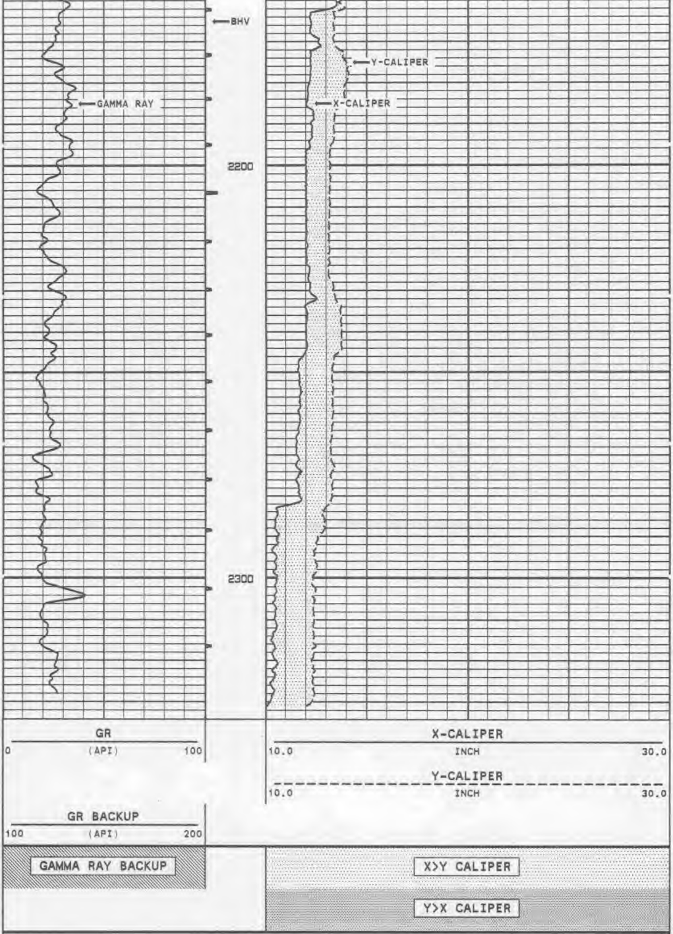












START DEPTH: **2334.3** FEET DIRECTION: **UP** DATE: **10/04/95** TIME: **17:00:22** MODE: **RECOMPUTE**

MIW16XY

MAIN PASS

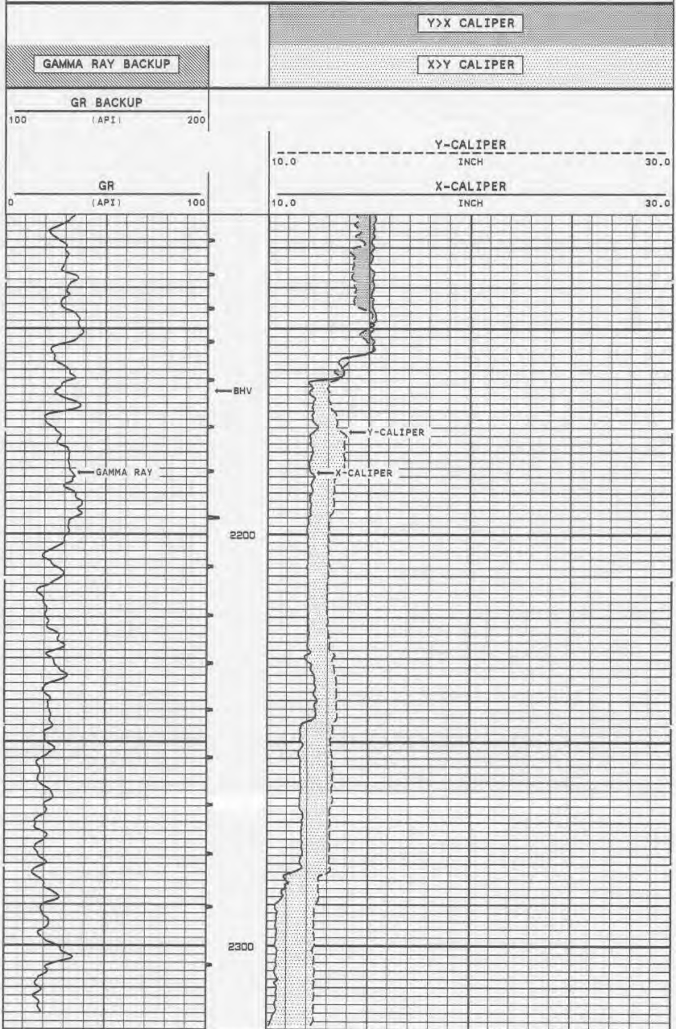
VERSION: 2.26

VERSION: 2.26

REPEAT SECTION

MIW16XY1

FINISH DEPTH: **2122.1** FEET DIRECTION: **UP** DATE: **10/04/95** TIME: **16:55:59** MODE: **RECOMPUTE**



GR		
0	(API)	100

X-CALIPER		
10.0	INCH	30.0

Y-CALIPER		
10.0	INCH	30.0

GR BACKUP		
100	(API)	200

GAMMA RAY BACKUP

X>Y CALIPER

Y>X CALIPER

START DEPTH: **2322.3** FEET DIRECTION: **UP** DATE: **10/04/95** TIME: **16:49:51** MODE: **RECOMPUTE**

MIW16XY1

REPEAT SECTION

VERSION: 2.26

MASTER CALIBRATION SUMMARY

FILE: DATE: 10/05/95 TIME: 02:14 VERSION: 2.26

X-CALIPER #2F

DATE: 10/03/95 TIME: 09:02

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
3.5"	341.0	CPS	3.5	3.2	3.7	0.23	INCH
10"	395.8	CPS	10.0	10.0	10.1	0.01	INCH
20"	461.8	CPS	20.0	19.8	20.2	0.12	INCH
30"	585.5	CPS	30.0	29.8	30.2	0.21	INCH
40"	705.7	CPS	40.0	39.6	40.2	0.17	INCH

Y-CALIPER #2F

DATE: 10/03/95 TIME: 09:02

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
3.5"	311.5	CPS	3.5	2.8	4.8	0.60	INCH
10"	365.3	CPS	10.0	9.5	10.6	0.24	INCH
20"	454.6	CPS	20.0	19.9	20.5	0.15	INCH
30"	560.5	CPS	30.0	29.7	30.5	0.20	INCH
40"	682.8	CPS	40.0	39.6	40.9	0.36	INCH

GR API CAL #13

DATE: 10/03/95 TIME: 09:16

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
SHOP: BACKGROUND	35.3	CPS	0.0	23.0	58.4	7.41	API
SHOP: CALIBRATOR	137.6	CPS	120.0	135.5	190.9	12.20	API

COMPANY HAZEN & SAWYER

WELL MIRAMAR WWTP IW-1

FIELD MIRAMAR STATE

FLORIDA GEOPHYSICAL LOGGING, INC.

X-Y CALIPER
GAMMA RAY
LOG

FILE NO. ______

COMPANY HAZEN & SAWYER
WELL MIRAMAR WWTP IW-1
FIELD MIRAMAR
COUNTY BROWARD STATE FLORIDA

LOCATION
MIRAMAR WWTP

RECEIVED
OCT 10 1995
DEPT OF ENV PROTECTION
WEST PALM BEACH

SEC. ______ TWP ______ RGE ______

OTHER SERVICES:
TEMPERATURE

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

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

DATE	28-SEPTEMBER-1995	
RUN NO.	THREE	
TYPE LOG	X-Y CALIPER/GR	
DEPTH-DRILLER	1010'	
DEPTH-LOGGER	999 '	
LOGGED INTERVAL	999 ' TO 230'	TO
OPERATING RIG TIME	2 HOUR	
TYPE FLUID IN HOLE	WATER	
SALINITY, PPM CL	NA	
DENSITY-VISCOSITY	NA	
LEVEL	FULL	
MAX. REC. TEMP. DEG F.	96 DEGF	
EQUIPMENT-LOCATION	102-MIAMI	
RECORDED BY	WILLIAMS/LEE	
WITNESSED BY	T.WOLFE	G.DIVELY

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
ONE	58"	265'	SURFACE	50"	.5" WT.	260'	SURFACE
TWO	48.5"	1010'	260'				

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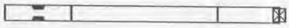
REMARKS

XY CALIPER/GAMMA RAY/TEMPERATURE TOOL STRING CONFIGURATION



-- GAMMA RAY -- 3 FT. LONG
MEASURE POINT 7.5 FT. FROM BOT

-- TOTAL TOOL STRING LENGTH = 11.5 FT.--

-- XY CALIPER -- 6 FT. LONG

-- LONG ARM MEASURE POINT 4 FT. FROM BOT

-- TEMPERATURE -- 2.5 FT. LONG
MEASURE POINT AT BOT

-- BOT

REMARKS

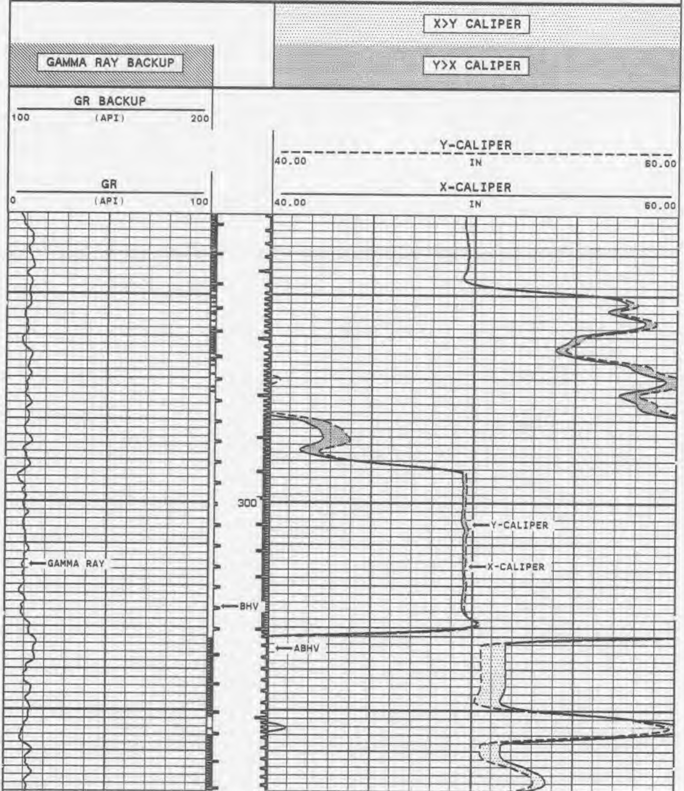
ABHV COMPUTED FOR 42" CASING.

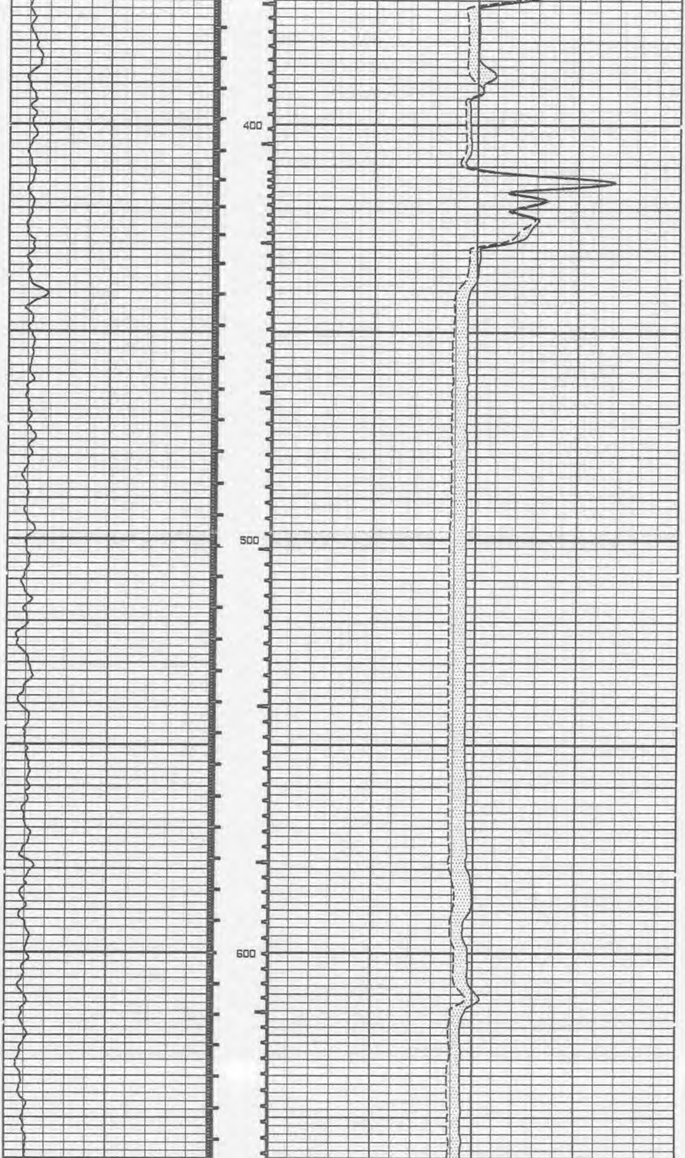
MAIN PASS

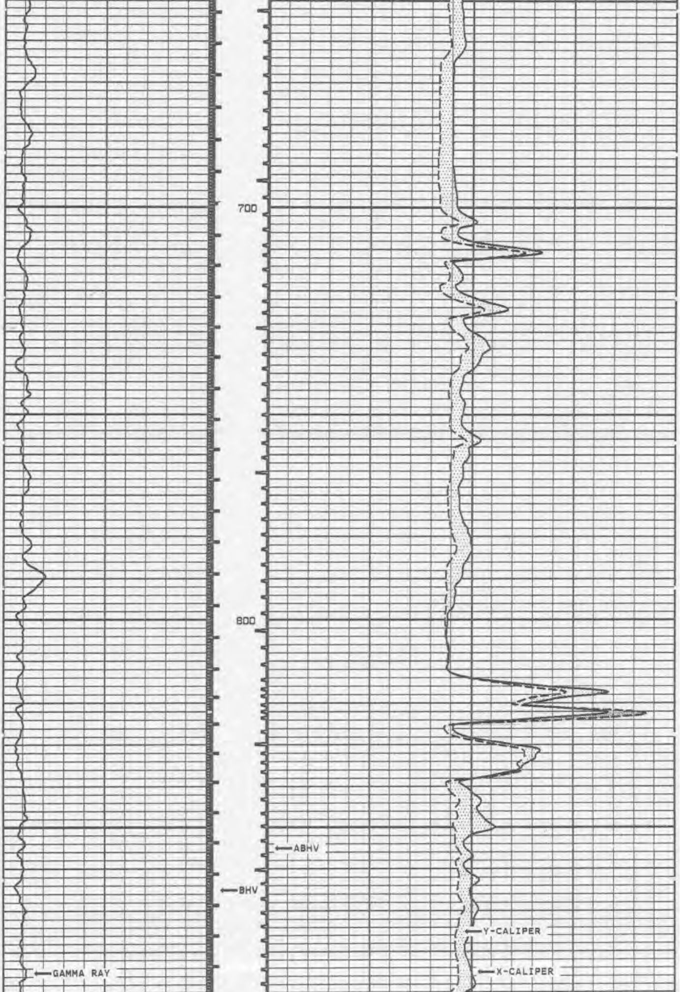
VERSION: 2.26

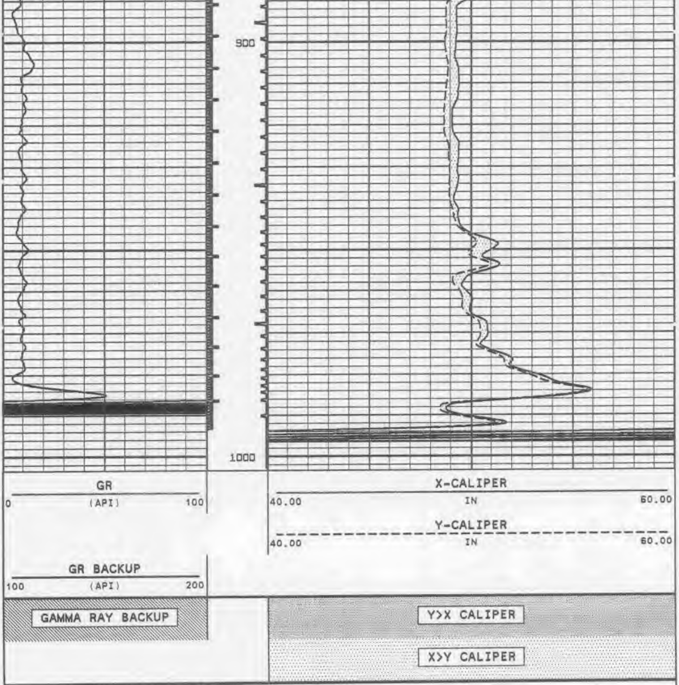
MIW13XY5

FINISH DEPTH: **225.3** FEET DIRECTION: **UP** DATE: **09/28/95** TIME: **16:03:21** MODE: **TRACE PLAYBACK**









START DEPTH: 998.5 FEET DIRECTION: UP DATE: 09/28/95 TIME: 16:00:39 MODE: TRACE PLAYBACK

MIW13XY5

VERSION: 2.26

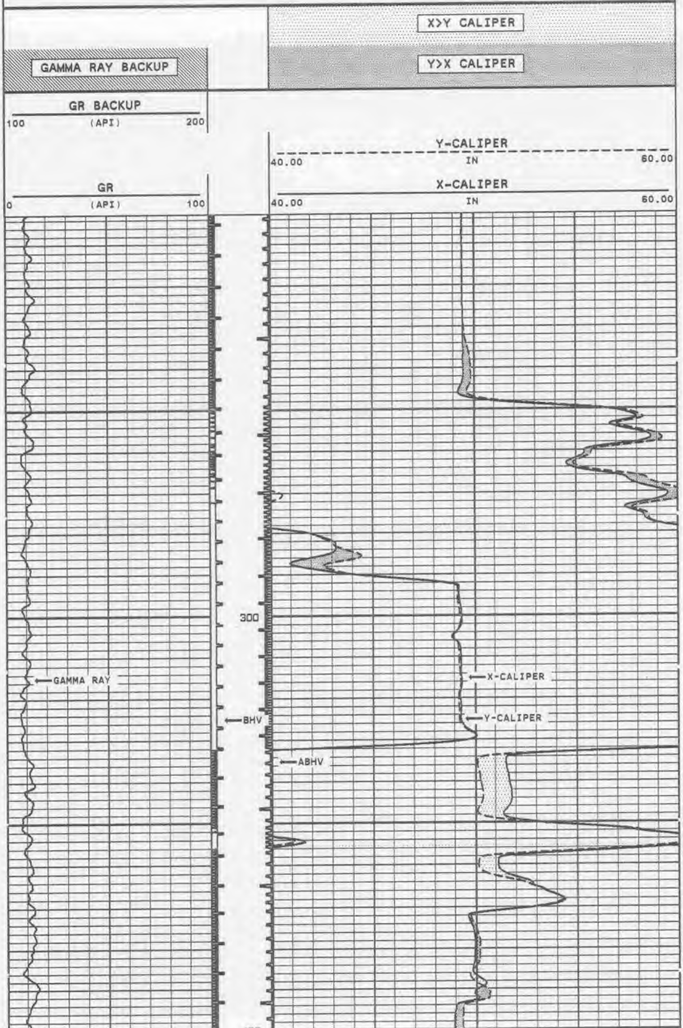
REMARKS

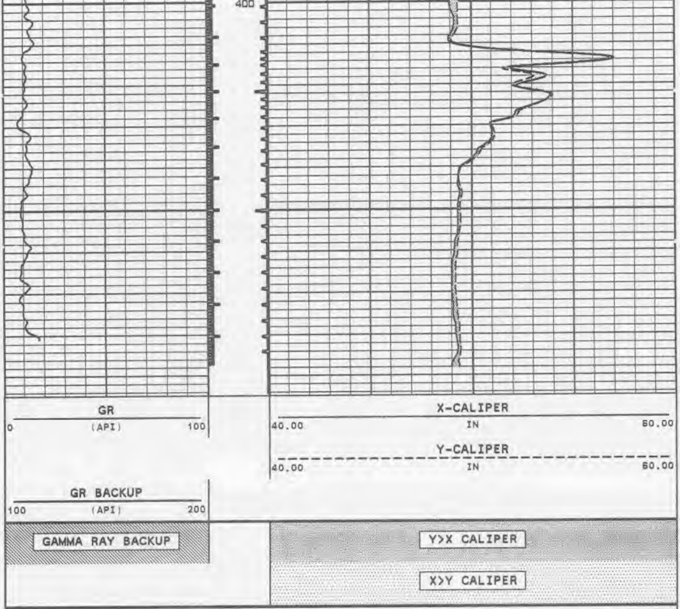
REPEAT SECTION

VERSION: 2.26

MIW13XY4

FINISH DEPTH: 198.0 FEET DIRECTION: UP DATE: 08/28/95 TIME: 15:42:26 MODE: TRACE PLAYBACK





START DEPTH: 490.0 FEET DIRECTION: UP DATE: 09/28/95 TIME: 15:41:10 MODE: TRACE PLAYBACK

MIW13XY4

VERSION: 2.26

MASTER CALIBRATION SUMMARY

FILE: DATE: 09/28/95 TIME: 15:39 VERSION: 2.26

X-CALIPER TOOL #1

DATE: 09/28/95 TIME: 12:51

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
20"	497.40	CPS	20.00	19.76	20.26	0.243	CPS
30"	598.36	CPS	30.00	29.67	30.14	0.203	CPS
40"	712.16	CPS	40.00	39.81	40.23	0.194	CPS
49.25"	827.56	CPS	49.25	49.04	49.46	0.186	CPS
67"	1036.48	CPS	67.00	66.87	67.30	0.182	CPS

Y-CALIPER TOOL #1

DATE: 09/28/95 TIME: 12:51

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
20"	477.28	CPS	20.00	19.77	20.27	0.241	CPS
30"	578.44	CPS	30.00	29.66	30.16	0.225	CPS
40"	678.36	CPS	40.00	39.66	40.13	0.186	CPS
49.25"	792.44	CPS	49.25	49.05	49.48	0.199	CPS
67"	989.60	CPS	67.00	66.59	67.04	0.032	CPS

```
                                   GR API CAL #12

                         DATE: 09/27/95          TIME: 08:46

                    MEASURED    UNITS    STANDARD    MINIMUM     MAXIMUM    DEVIATION    UNITS
                    --------    -----    --------    --------    --------   ---------    -----
SHOP: BACKGROUND        17.7    CPS           0.0        10.3        35.9        4.93    API
SHOP: CALIBRATOR       121.1    CPS         120.0       113.3       175.9       12.16    API
```

COMPANY HAZEN & SAWYER

WELL MIRAMAR WWTP IW-1

FIELD MIRAMAR STATE

FLORIDA GEOPHYSICAL LOGGING, INC.

X-Y CALIPER
GAMMA RAY
LOG

RECEIVED
OCT 0 2 1995
DEPT OF ENV PROTECTION
WEST PALM BEACH

FILE NO. ______

COMPANY HAZEN & SAWYER
WELL MIRAMAR WWTP IW-1
FIELD MIRAMAR
COUNTY BROWARD STATE FLORIDA

LOCATION
MIRAMAR WWTP
SEC. ______ TWP ______ RGE ______

OTHER SERVICES:
HRT

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

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

DATE	21-SEPTEMBER-1995	
RUN NO.	ONE	
TYPE LOG	XYCALGR	
DEPTH-DRILLER	265'	
DEPTH-LOGGER	265'	
LOGGED INTERVAL	265' TO SURFACE	TO
OPERATING RIG TIME	1 HOUR	
TYPE FLUID IN HOLE	MUD	
SALINITY, PPM CL	NA	
DENSITY-VISCOSITY	NA	
LEVEL	FULL	
MAX. REC. TEMP, DEG F.	92 DEGF	
EQUIPMENT-LOCATION	102-MIAMI	
RECORDED BY	WILLIAMS/LEE	
WITNESSED BY	G. DIVELY	

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
ONE	58"	265'	SURFACE				

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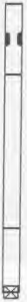
REMARKS

XY CALIPER/GAMMA RAY/TEMPERATURE TOOL STRING CONFIGURATION



-- GAMMA RAY -- 3 FT. LONG
MEASURE POINT 7.5 FT. FROM BOT

-- TOTAL TOOL STRING LENGTH = 11.5 FT.--

-- XY CALIPER -- 6 FT. LONG

-- LONG ARM MEASURE POINT 4 FT. FROM BOT

-- TEMPERATURE -- 2.5 FT. LONG
MEASURE POINT AT BOT

-- BOT

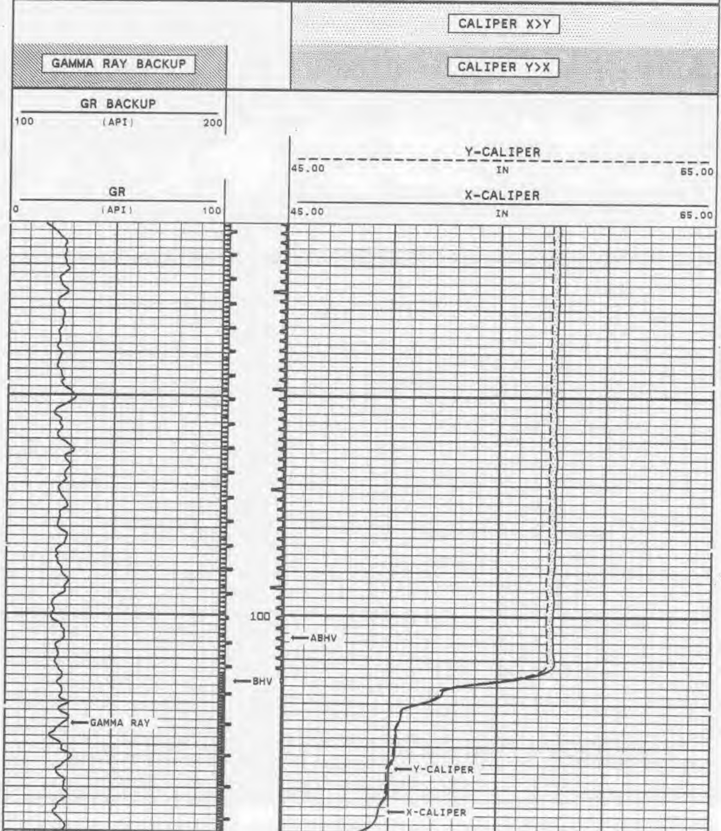
REMARKS

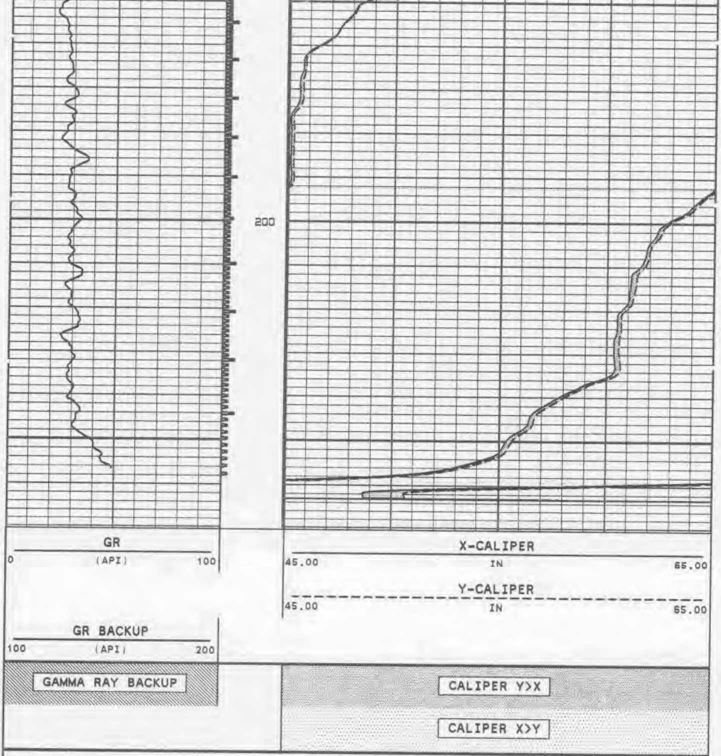
MAIN PASS
CLAY IN WELL CAUSED STICKING OF CALIPER ARMS BELOW 112 FEET AND
POOR REPEATABILITY

VERSION: 2.26

MIW11XY2

FINISH DEPTH: 5.4 FEET DIRECTION: UP DATE: 09/21/95 TIME: 17:38:55 MODE: TRACE PLAYBACK





START DEPTH: 265.7 FEET DIRECTION: UP DATE: 09/21/95 TIME: 17:31:00 MODE: TRACE PLAYBACK

MIW11XY2

VERSION: 2.26

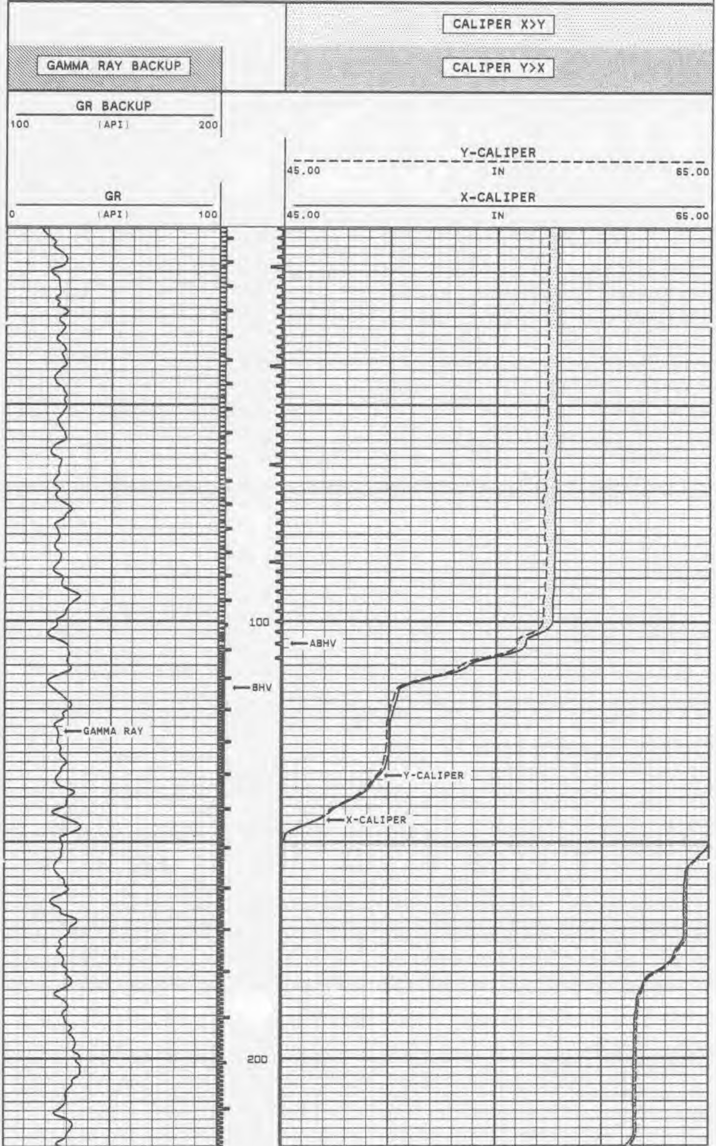
REMARKS

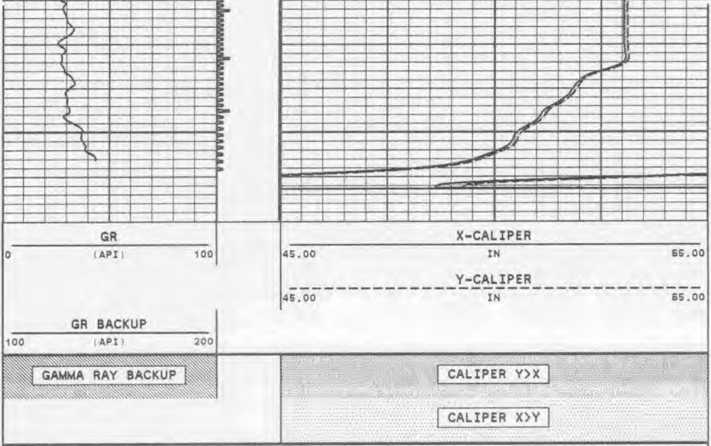
REPEAT SECTION
CLAY IN WELL CAUSED STICKING OF CALIPER ARMS BELOW 100 FEET AND
POOR REPEATABILITY

VERSION: 2.26

MIW11XY1

FINISH DEPTH: 4.8 FEET DIRECTION: UP DATE: 09/21/95 TIME: 17:21:40 MODE: TRACE PLAYBACK





START DEPTH: **265.3** FEET DIRECTION: **UP** DATE: **09/21/95** TIME: **17:16:35** MODE: **TRACE PLAYBACK**

MIW11XY1

VERSION: 2.26

MASTER CALIBRATION SUMMARY

FILE: DATE: 09/21/95 TIME: 17:44 VERSION: 2.26

X-CALIPER TOOL #1

DATE: 09/06/95 TIME: 21:19

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
7" CAL	393.20	CPS	7.00	6.71	7.16	0.218	CPS
10" CAL	420.64	CPS	9.50	9.44	9.93	0.151	CPS
20" CAL	531.40	CPS	20.50	20.36	20.77	0.163	CPS
30" CAL	666.72	CPS	30.50	30.37	30.72	0.156	CPS
40" CAL	805.84	CPS	40.00	39.94	40.28	0.116	CPS

Y-CALIPER TOOL #1

DATE: 09/06/95 TIME: 21:19

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
7" CAL	376.56	CPS	7.00	6.78	7.49	0.329	CPS
10" CAL	394.12	CPS	9.50	8.91	9.58	0.178	CPS
20" CAL	505.00	CPS	20.00	20.00	20.00	0.000	CPS
30" CAL	639.60	CPS	30.50	30.14	30.53	0.096	CPS
40" CAL	772.80	CPS	40.00	39.80	40.16	0.169	CPS

GR API CAL #15

DATE: 08/29/95 TIME: 12:17

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
SHOP: BACKGROUND	14.4	CPS	0.0	5.7	19.8	3.08	API
SHOP: CALIBRATOR	158.5	CPS	120.0	107.9	153.8	9.27	API

COMPANY	HAZEN & SAWYER
WELL	MIRAMAR WWTP IW-1
FIELD	MIRAMAR
STATE	FLORIDA

FLORIDA GEOPHYSICAL LOGGING, INC.

R [illegible] ED
NOV
DEPT. OF ENV PROTECTION

XY CALIPER LOG

FILE NO. ______

COMPANY CITY OF MIRAMAR
WELL IW-1
FIELD MIRAMAR
COUNTY BROWARD STATE FLORIDA

LOCATION

SEC.______ TWP______ RGE______

OTHER SERVICES:
DIL
BHC
FRT

PERMANENT DATUM PAD ELEV. 7
LOG MEASURED FROM PAD FT. ABOVE PERMANENT DATUM
DRILLING MEASURED FROM PAD

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

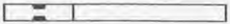
DATE	05-NOVEMBER-1994	
RUN NO.	12	
TYPE LOG	XYCAL	
DEPTH-DRILLER	3129'	
DEPTH-LOGGER	3129'	
LOGGED INTERVAL	3128' TO 2975'	TO
OPERATING RIG TIME	2 HRS	
TYPE FLUID IN HOLE	WATER	
SALINITY, PPM CL	RM .22 @ 68 DEGF	
DENSITY-VISCOSITY	8.6 PPG	
LEVEL	FULL	
MAX. REC. TEMP. DEG F.	NA	
EQUIPMENT-LOCATION	101/FTM	
RECORDED BY	NITZ/WILLIAMS	
WITNESSED BY	T. URAM	

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
TWO	48"	197'	SURF	42"	.5" WT.	190'	SURF
THREE	12 1/4"	1037'	CSG	36"	.5" WT.	1080'	SURF
FIVE	12 1/4"	2398'	CSG	24"	.5" WT.	2055'	SURF
TWELVE	12 1/4"	3129'	CSG				

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(LONG ARM)/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:

DATA COLLECTED IN SECTIONS DUE TO HOLE CONDITIONS.
DATA MISSING FROM 2850' TO 2985' DUE TO LOGGING THROUGH DRILL PIPE.

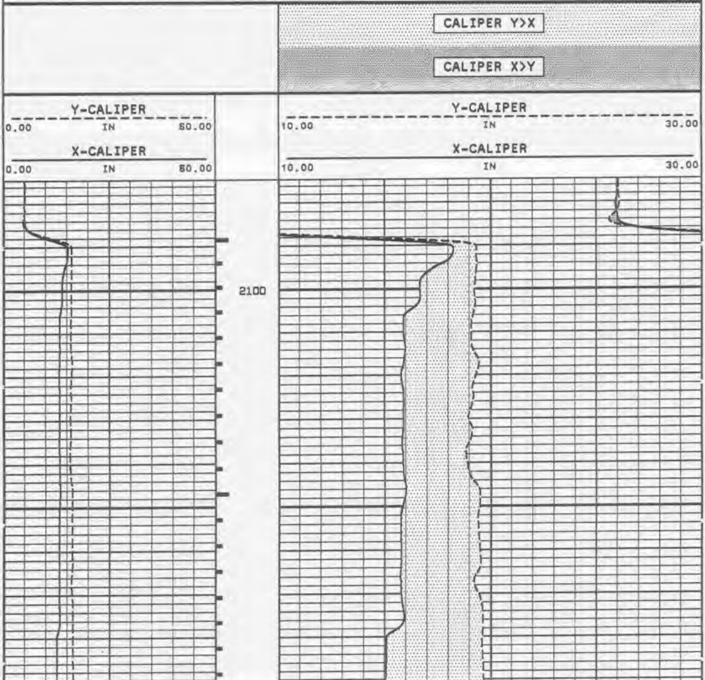
REMARKS

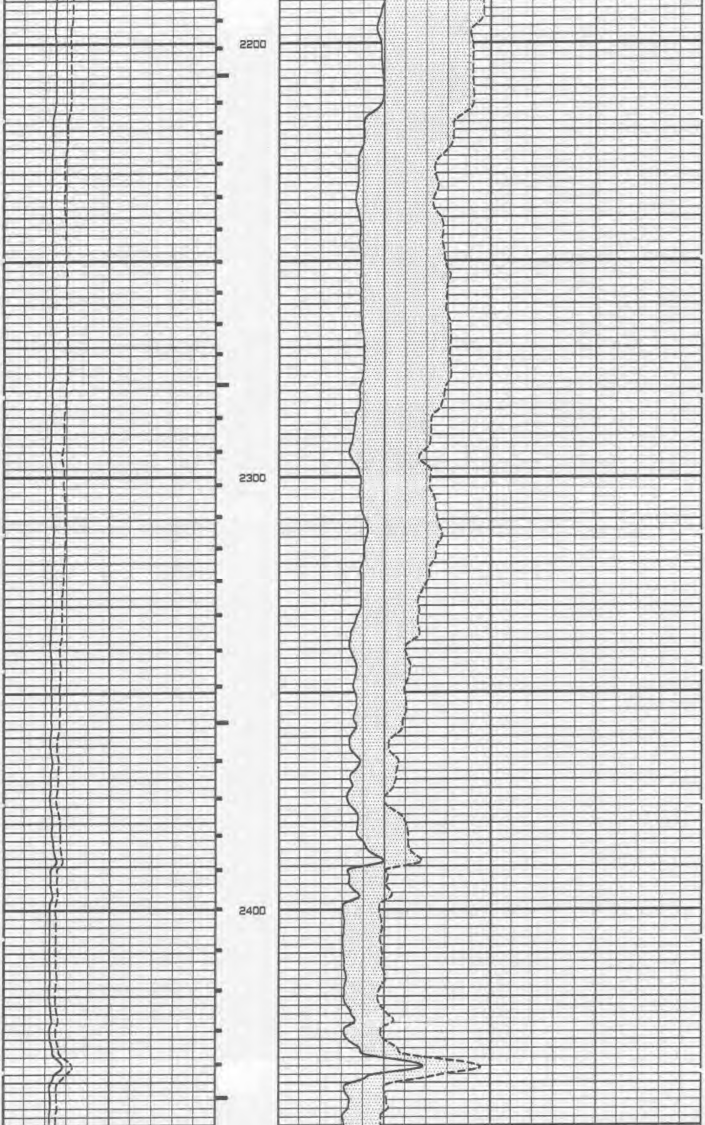
MAIN LOG
TOP SECTION
DRILL PIPE SET AT 2085'.
LOGGED IN SECTIONS DUE TO HOLE CONDITIONS.

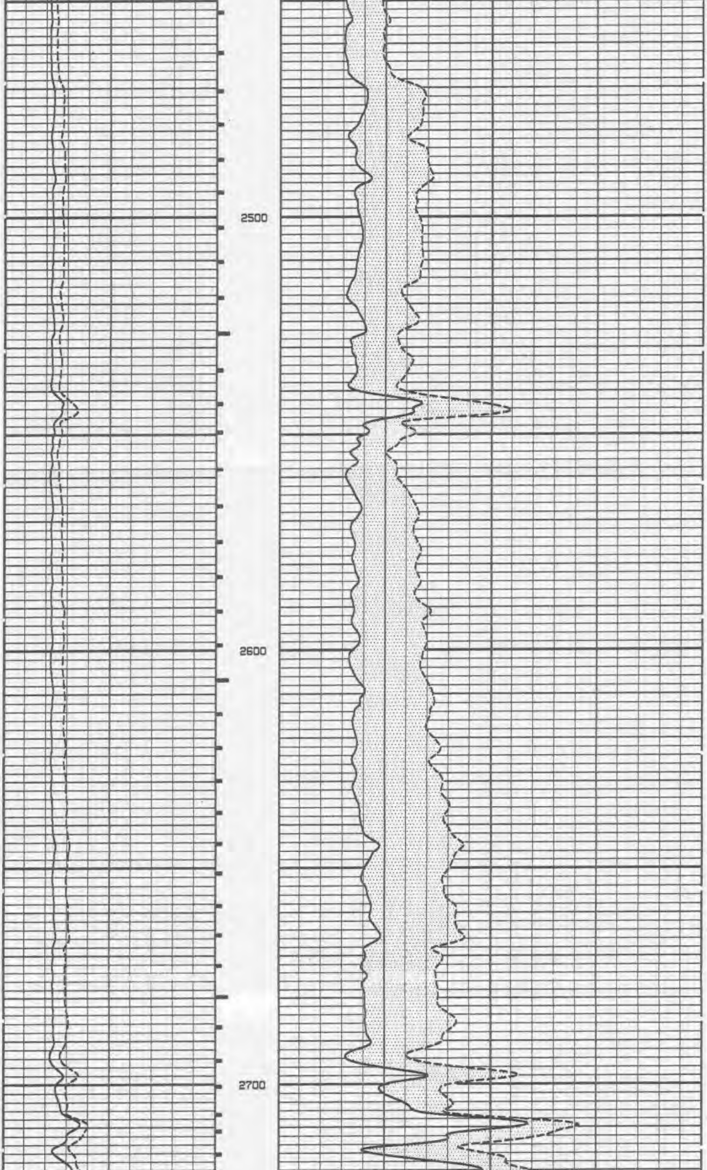
VERSION: 2.16

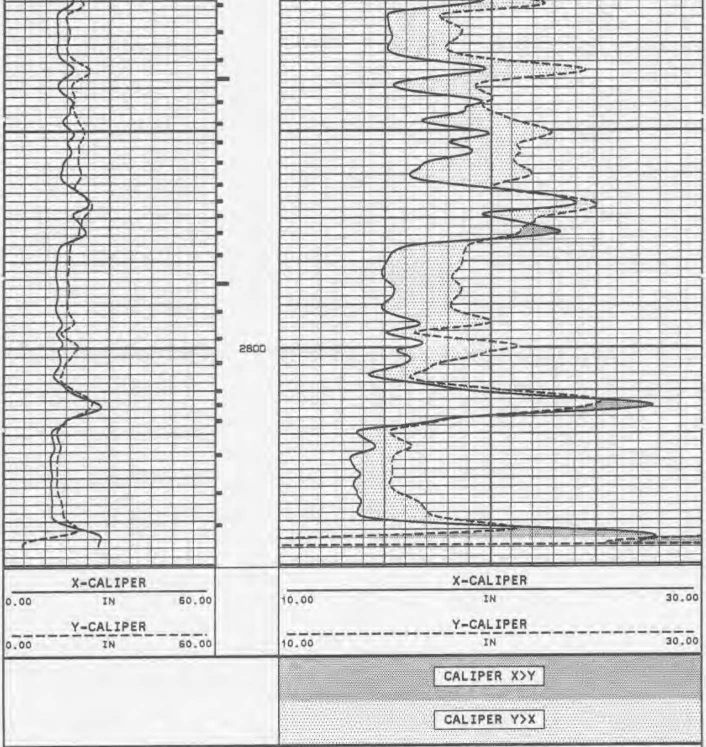
MIW112XY7

FINISH DEPTH: **2074.7** FEET DIRECTION: **UP** DATE: **11/04/94** TIME: **13:44:58** MODE: **TRACE PLAYBACK**









START DEPTH: 2850.7 FEET DIRECTION: UP DATE: 11/04/94 TIME: 13:41:50 MODE: TRACE PLAYBACK

MIW112XY7

VERSION: 2.16

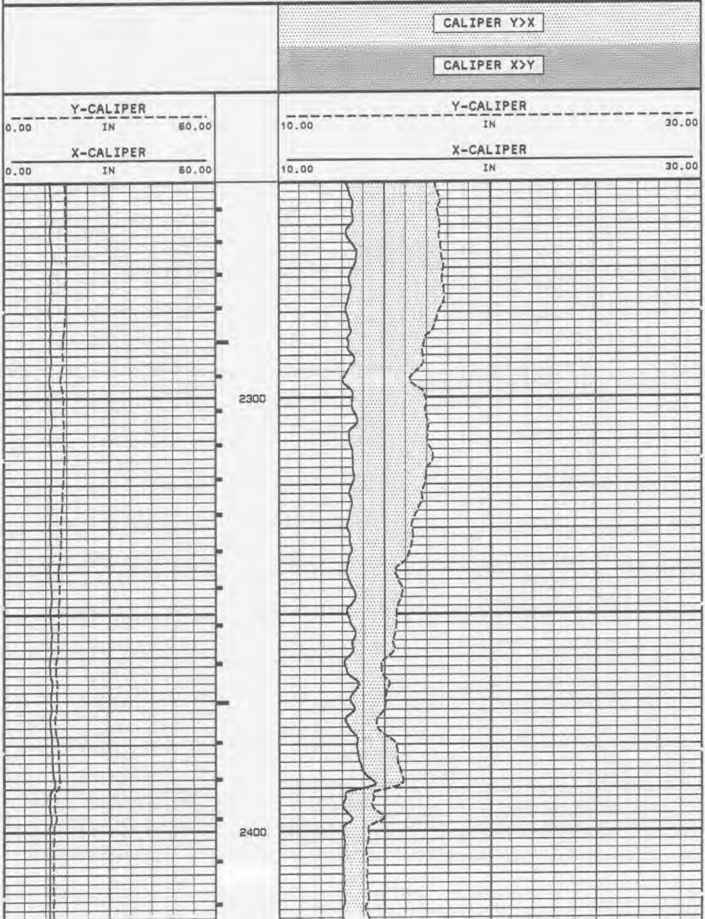
REMARKS

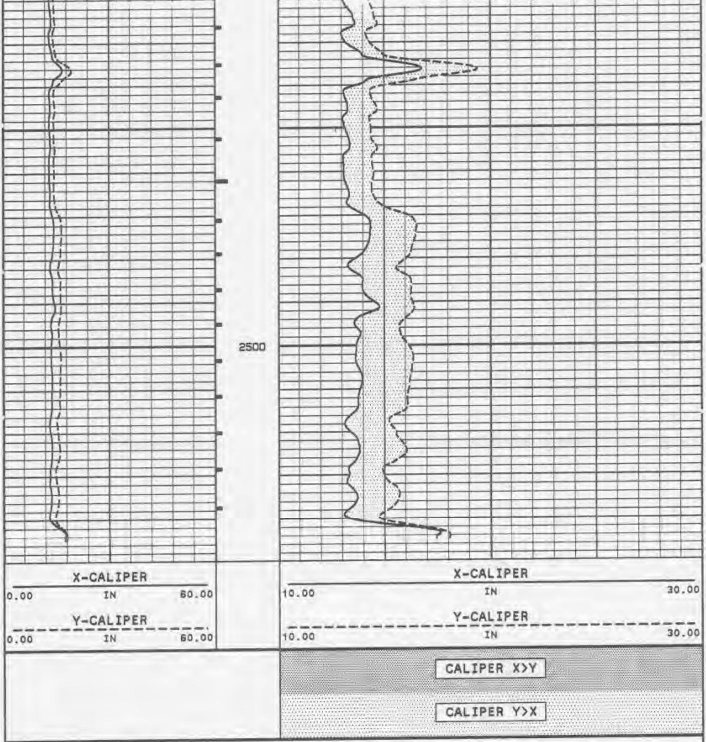
REPEAT SECTION
TOP SECTION
DRILL PIPE SET AT 2085'.
LOGGED IN SECTIONS DUE TO HOLE CONDITIONS.

VERSION: 2.16

MIW112XY6

FINISH DEPTH: 2260.0 FEET DIRECTION: UP DATE: 11/04/94 TIME: 13:39:23 MODE: TRACE PLAYBACK





START DEPTH: 2550.0 FEET DIRECTION: UP DATE: 11/04/94 TIME: 13:38:03 MODE: TRACE PLAYBACK

MIW112XY6

VERSION: 2.16

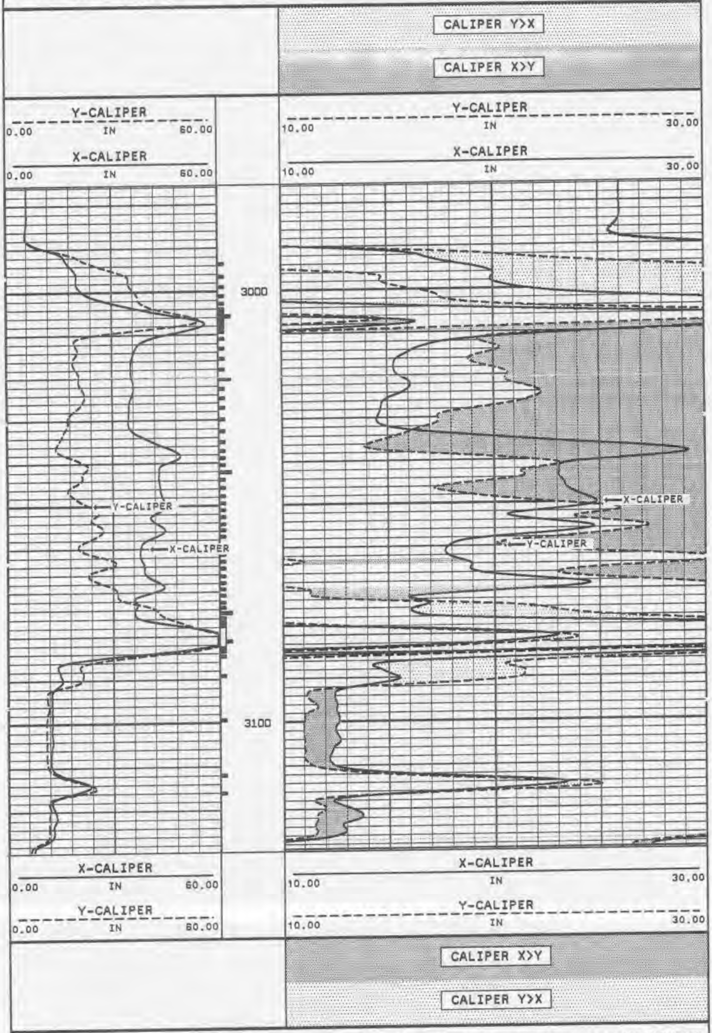
REMARKS

MAIN LOG
DRILL PIPE SET AT 2985'.
LOGGED IN SECTIONS DUE TO HOLE CONDITIONS.

VERSION: 2.16

MIW112XY17

FINISH DEPTH: 2974.9 FEET DIRECTION: UP DATE: 11/05/94 TIME: 05:34:18 MODE: TRACE PLAYBACK



START DEPTH: 3128.9 FEET DIRECTION: UP DATE: 11/05/94 TIME: 05:33:28 MODE: TRACE PLAYBACK

MIW112XY17

VERSION: 2.16

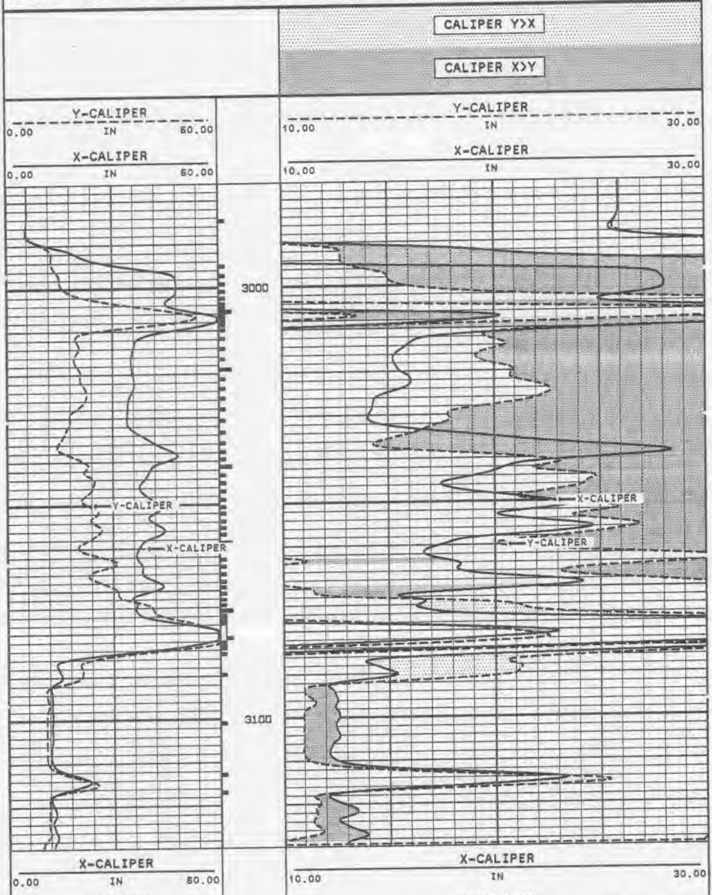
REMARKS

REPEAT SECTION
DRILL PIPE SET AT 2985'.
LOGGED IN SECTIONS DUE TO HOLE CONDITIONS.

VERSION: 2.16

MIW112XY16

FINISH DEPTH: 2975.4 FEET DIRECTION: UP DATE: 11/05/94 TIME: 05:31:50 MODE: TRACE PLAYBACK



Y-CALIPER 0.00 IN 60.00	Y-CALIPER 10.00 IN 30.00

CALIPER X>Y

CALIPER Y>X

START DEPTH: **3129.0 FEET** DIRECTION: **UP** DATE: **11/05/94** TIME: **05:31:00** MODE: **TRACE PLAYBACK**

MIW112XY16

VERSION: 2.16

MASTER CALIBRATION SUMMARY

FILE: DATE: 11/05/94 TIME: 08:29 VERSION: 2.16

X-CALIPER

DATE: 11/05/94 TIME: 05:04

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
ZERO	217.0	CPS	6.0	6.0	6.1	0.01	IN
PLUS	321.0	CPS	20.0	20.0	20.1	0.01	IN
12" RING	242.6	CPS	10.0	10.0	10.1	0.00	IN

Y-CALIPER

DATE: 11/05/94 TIME: 05:04

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
ZERO	198.2	CPS	6.0	5.9	6.1	0.07	IN
PLUS	288.5	CPS	20.0	20.0	20.0	0.00	IN
12" RING	210.7	CPS	10.0	9.9	10.1	0.05	IN

COMPANY CITY OF MIRAMAR

WELL IW-1

FIELD MIRAMAR STATE

FLORIDA GEOPHYSICAL LOGGING, INC.

BOREHOLE COMPENSATED SONIC LOG

FILE NO. ____________

COMPANY HAZEN & SAWYER
WELL MIRAMAR WWTP IW-1
FIELD MIRAMAR
COUNTY BROWARD STATE FLORIDA

LOCATION
MIRAMAR WWTP

SEC.________ TWP________ RGE________

OTHER SERVICES:
X-Y CALIPER
DIL/LL3/SP
TEMPERATURE
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	01-DECEMBER-1995	
RUN NO.	FOURTEEN	
TYPE LOG	BHC SONIC	
DEPTH-DRILLER	3520'	
DEPTH-LOGGER	3510'	
LOGGED INTERVAL	3510' TO 2950'	TO
OPERATING RIG TIME	1 HOURS	
TYPE FLUID IN HOLE	WATER	
SALINITY, PPM CL	N/A	
DENSITY-VISCOSITY	N/A	
LEVEL	FULL	
MAX. REC. TEMP. DEG F.	N/A	
EQUIPMENT-LOCATION	102-MIAMI	
RECORDED BY	WILLIAMS/LEE	
WITNESSED BY	G.DIVELY	

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
TWELVE				24"	.5" WT.	2950'	SURFACE
14	17.5"	2950'	3520'				

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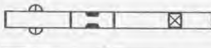
REMARKS

BOREHOLE COMPENSATED SONIC/GAMMA RAY TOOL STRING CONFIGURATION

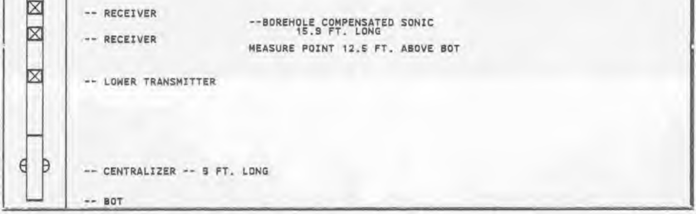


-- CENTRALIZER -- 5 FT. LONG

-- GAMMA RAY -- 3 FT. LONG
MEASURE POINT 22.4 FT. FROM BOT

-- TOTAL TOOL STRING LENGTH = 28.9 FEET

-- UPPER TRANSMITTER

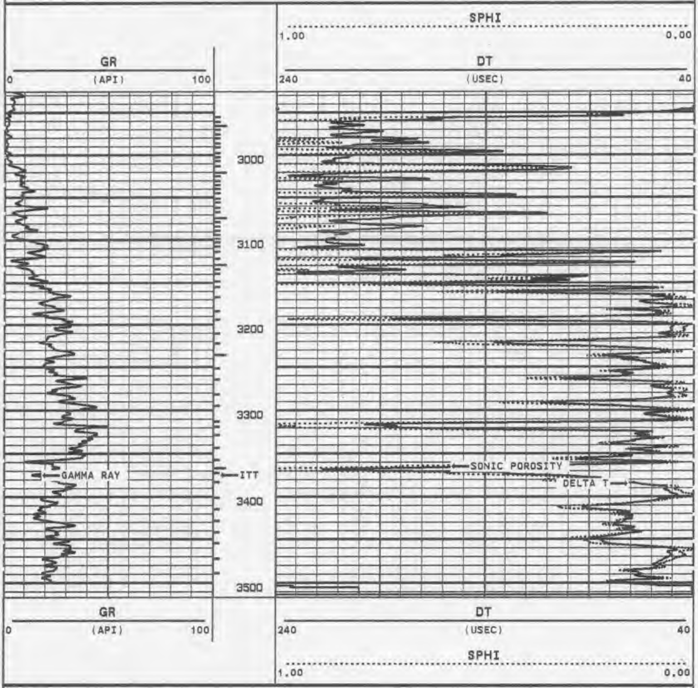

-- RECEIVER
-- RECEIVER
--BOREHOLE COMPENSATED SONIC
15.9 FT. LONG
MEASURE POINT 12.5 FT. ABOVE BOT
-- LOWER TRANSMITTER
-- CENTRALIZER -- 5 FT. LONG
-- BOT

REMARKS

POROSITY COMPUTED WITH LIMESTONE MATRIX 47.6 USEC/FT

VERSION: 2.26

FINISH DEPTH: 2931.9 FEET DIRECTION: UP DATE: 12/02/95 TIME: 07:21:07 MODE: TRACE PLAYBACK



START DEPTH: 3516.2 FEET DIRECTION: UP DATE: 12/02/95 TIME: 07:19:37 MODE: TRACE PLAYBACK

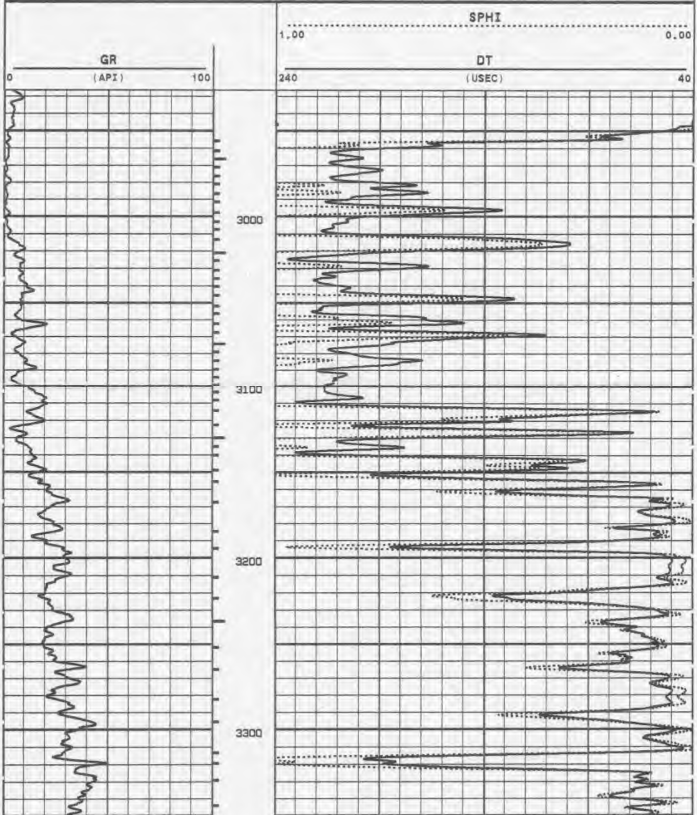
VERSION: 2.26

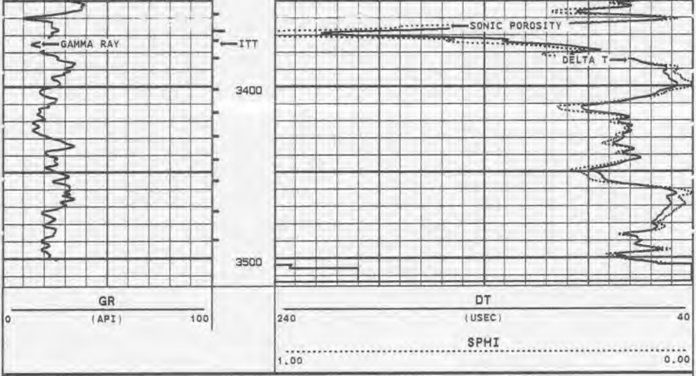
REMARKS

POROSITY COMPUTED WITH LIMESTONE MATRIX 47.6 USEC/FT

VERSION: 2.26

FINISH DEPTH: 2931.8 FEET DIRECTION: UP DATE: 12/02/95 TIME: 07:18:55 MODE: TRACE PLAYBACK





START DEPTH: **3516.2** FEET DIRECTION: **UP** DATE: **12/02/96** TIME: **07:17:18** MODE: **TRACE PLAYBACK**

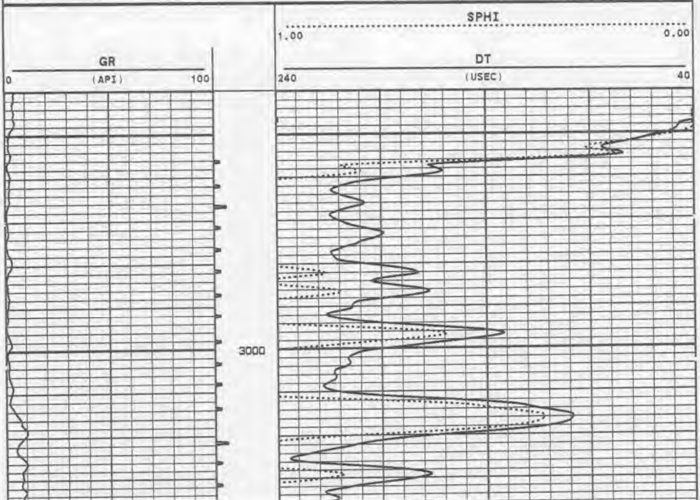
VERSION: **2.26**

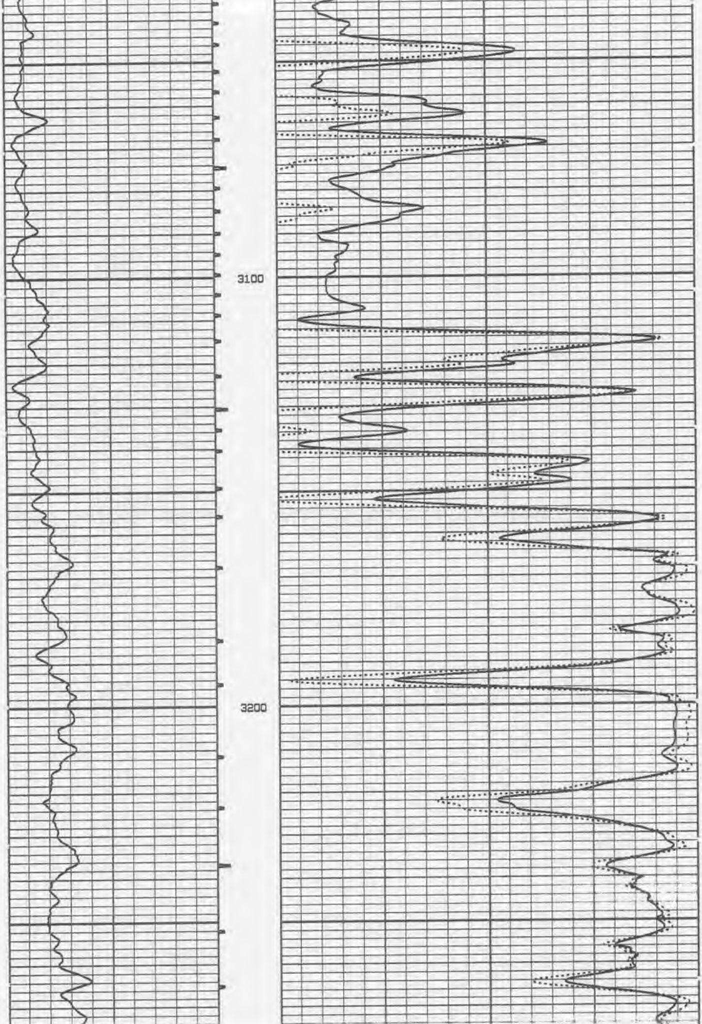
REMARKS

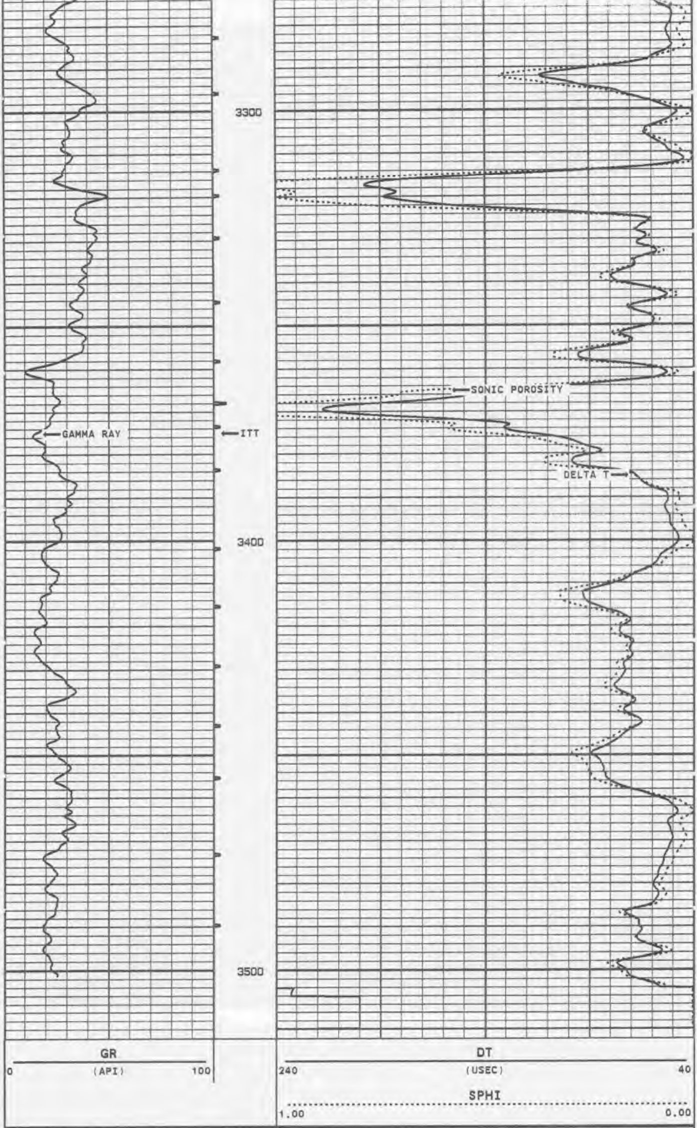
POROSITY COMPUTED WITH LIMESTONE MATRIX 47.6 USEC/FT

VERSION: **2.26**

FINISH DEPTH: **2944.9** FEET DIRECTION: **UP** DATE: **12/02/96** TIME: **07:15:40** MODE: **TRACE PLAYBACK**







START DEPTH: 3516.2 FEET DIRECTION: UP DATE: 12/02/95 TIME: 07:13:47 MODE: TRACE PLAYBACK

VERSION: 2.26

REMARKS

CASING CHECK

VERSION: 2.26

CASINGCHEK

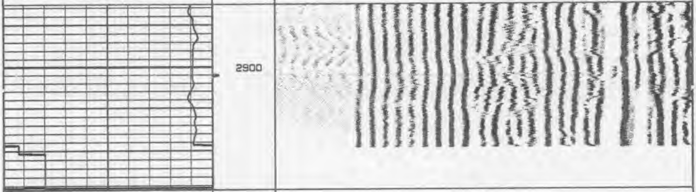
FINISH DEPTH: 2885.4 FEET DIRECTION: UP DATE: 12/02/95 TIME: 07:09:26 MODE: ORIGINAL

DT

240 (USEC) 40

VDL4

400 USEC 1400



DT

240 (USEC) 40

VDL4

400 USEC 1400

START DEPTH: 2928.9 FEET DIRECTION: UP DATE: 12/02/95 TIME: 07:08:59 MODE: ORIGINAL

CASINGCHEK

VERSION: 2.26

VERSION: 2.26

MAIN PASS

MIW114BHCM

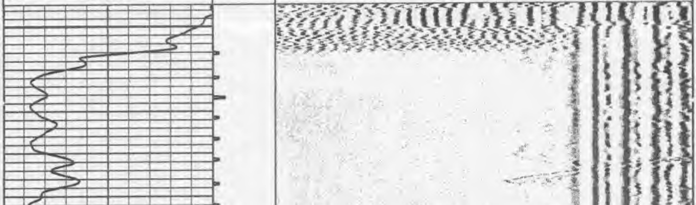
FINISH DEPTH: 2944.8 FEET DIRECTION: UP DATE: 12/02/95 TIME: 07:01:23 MODE: ORIGINAL

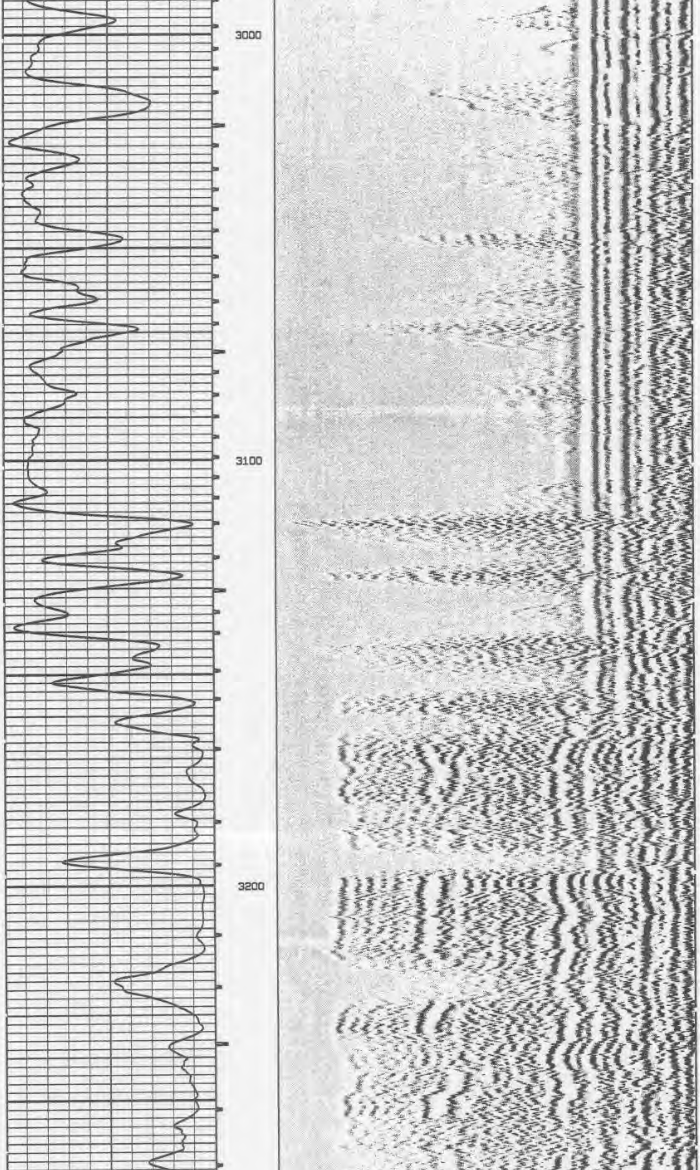
DT

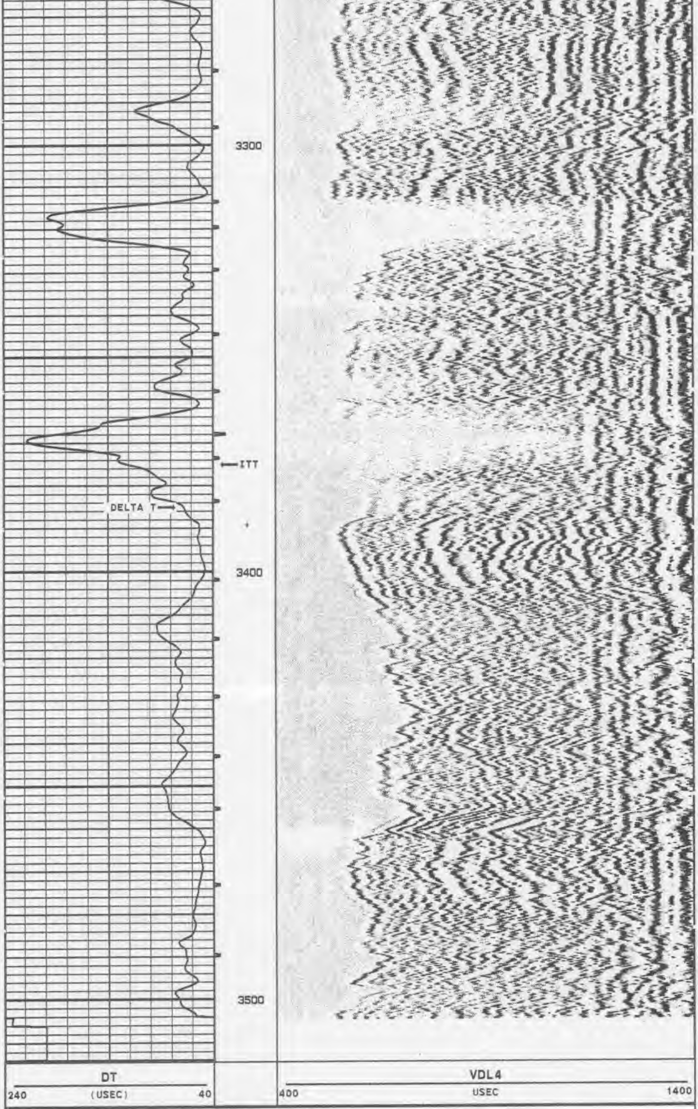
240 (USEC) 40

VDL4

400 USEC 1400







START DEPTH: **3514.4** FEET DIRECTION: **UP** DATE: **12/02/95** TIME: **06:41:52** MODE: **ORIGINAL**

MIW114BHCM

MAIN PASS

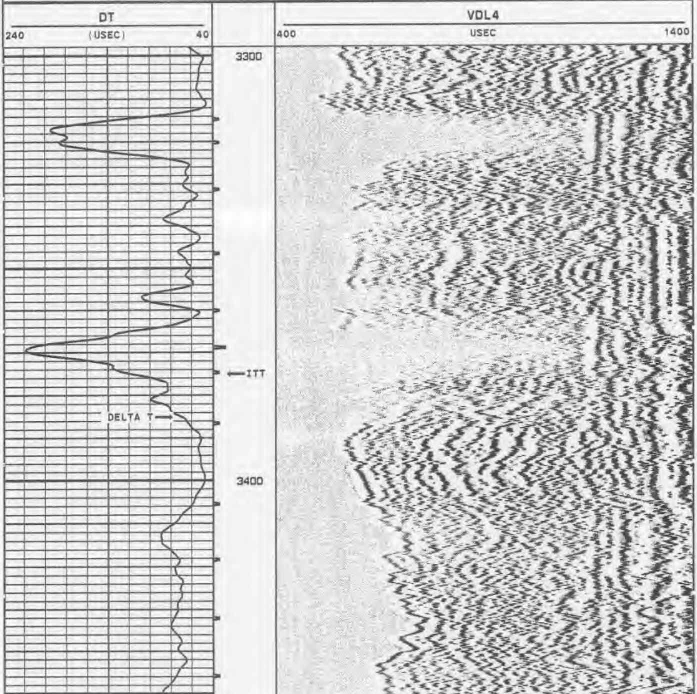
VERSION: 2.26

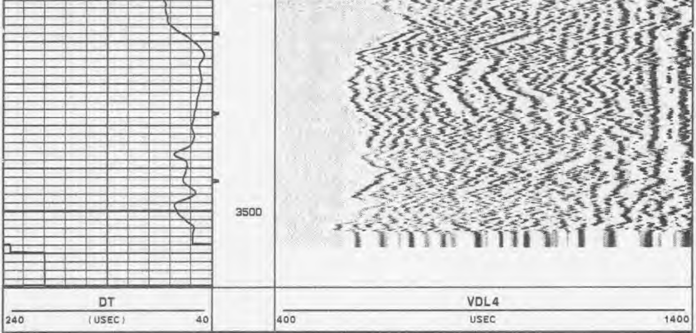
VERSION: 2.26

REPEAT SECTION

MIW114BHCR

FINISH DEPTH: **3298.1** FEET DIRECTION: **UP** DATE: **12/02/95** TIME: **06:37:27** MODE: **ORIGINAL**





START DEPTH: 3518.0 FEET DIRECTION: UP DATE: 12/02/95 TIME: 08:29:41 MODE: ORIGINAL

MIW114BHCR

REPEAT SECTION

VERSION: 2.26

COMPANY	HAZEN & SAWYER
WELL	MIRAMAR WWTP IW-1
FIELD	MIRAMAR
STATE	FLORIDA

FLORIDA GEOPHYSICAL LOGGING, INC.

HIGH RESOLUTION TEMPERATURE LOG

FILE NO. ____

COMPANY HAZEN & SAWYER
WELL MIRAMAR WWTP IW-1
FIELD MIRAMAR
COUNTY BROWARD STATE FLORIDA

LOCATION
MIRAMAR WWTP
SEC. ____ TWP ____ RGE ____

OTHER SERVICES:
X-Y CALIPER
DIL/LL3/SP
BHC/VDL
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	01-DECEMBER-1995	
RUN NO.	FOURTEEN	
TYPE LOG	TEMPERATURE	
DEPTH-DRILLER	3520'	
DEPTH-LOGGER	3510'	
LOGGED INTERVAL	3510' TO 2900'	TO
OPERATING RIG TIME	1 HOURS	
TYPE FLUID IN HOLE	WATER	
SALINITY, PPM CL	N/A	
DENSITY-VISCOSITY	N/A	
LEVEL	FULL	
MAX. REC. TEMP. DEG F.	N/A	
EQUIPMENT-LOCATION	102-MIAMI	
RECORDED BY	WILLIAMS/LEE	
WITNESSED BY	G.DIVELY	

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
TWELVE				24"	.5" WT.	2950'	SURFACE
14	17.5"	2950'	3520'				

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REMARKS

TEMPERATURE TOOL STRING CONFIGURATION

-- 7 TO 1 ADAPTER -- 1 FT. LONG

-- TOTAL TOOL STRING LENGTH = 8.5 FT. --

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

--TEMPERATURE -- 2.5 FT. LONG

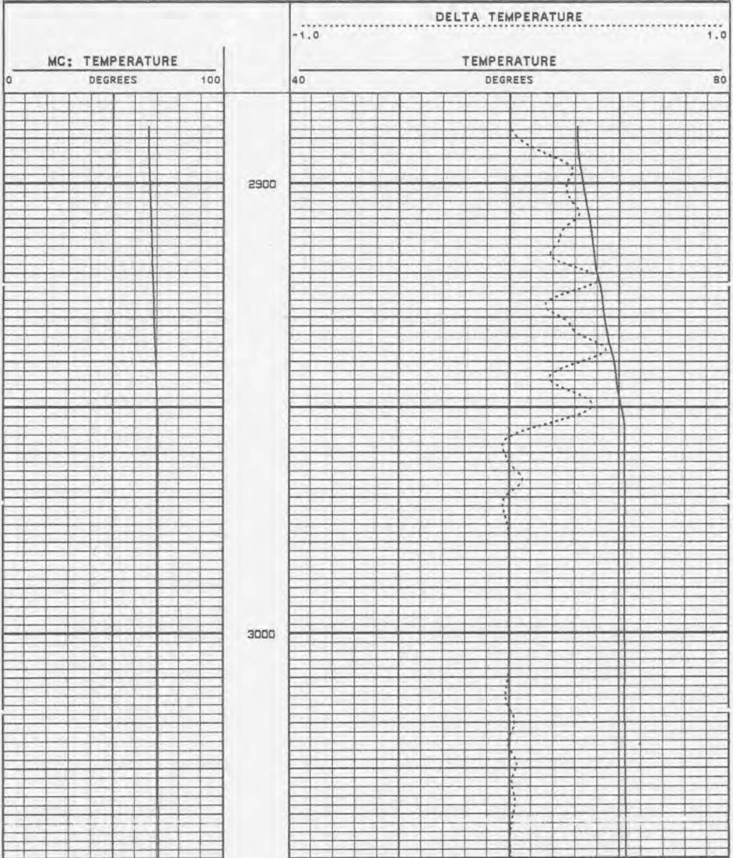
---MEASURE POINT .BOT.

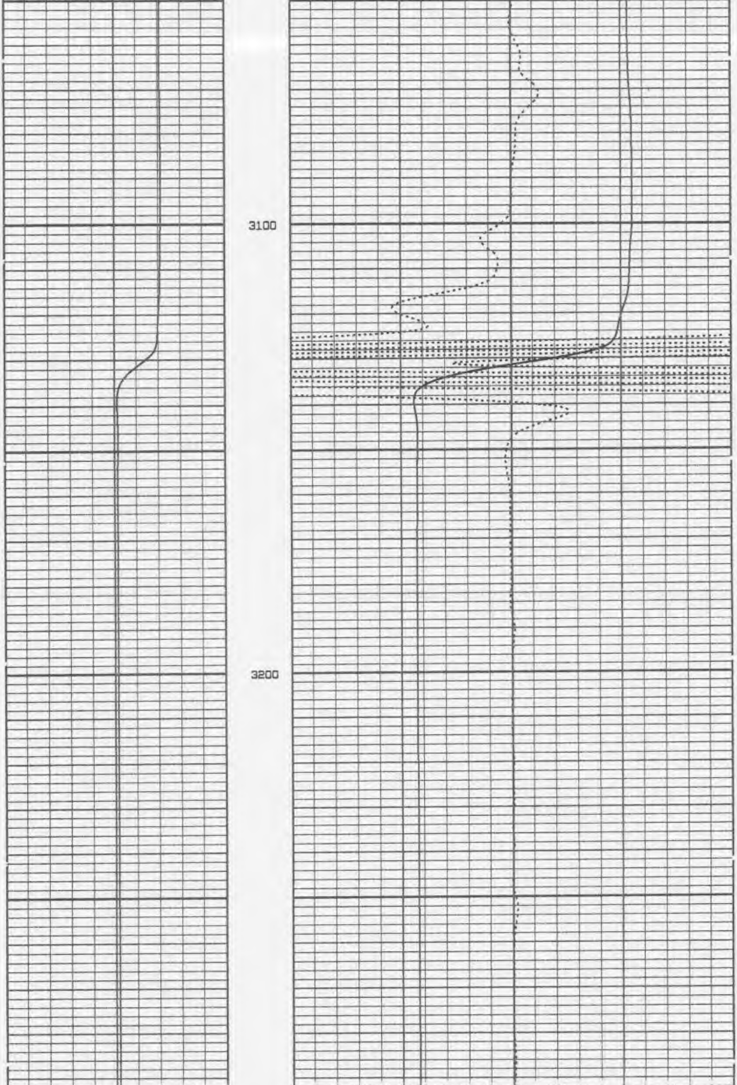
VERSION: 2.26

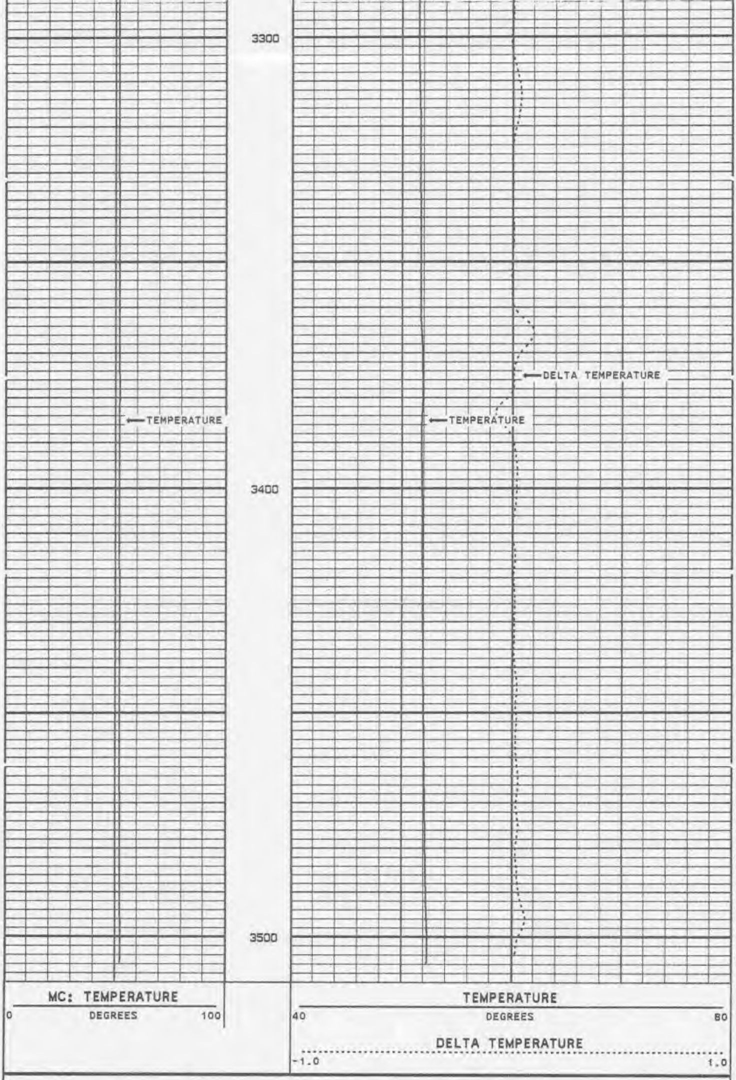
MAIN PASS

MIW114TMP

FINISH DEPTH: **3509.7** FEET DIRECTION: **DOWN** DATE: **12/02/95** TIME: **00:33:21** MODE: **TRACE PLAYBACK**







START DEPTH: **2891.2** FEET DIRECTION: **DOWN** DATE: **12/02/95** TIME: **00:18:54** MODE: **TRACE PLAYBACK**

MIW114TMP

MAIN PASS

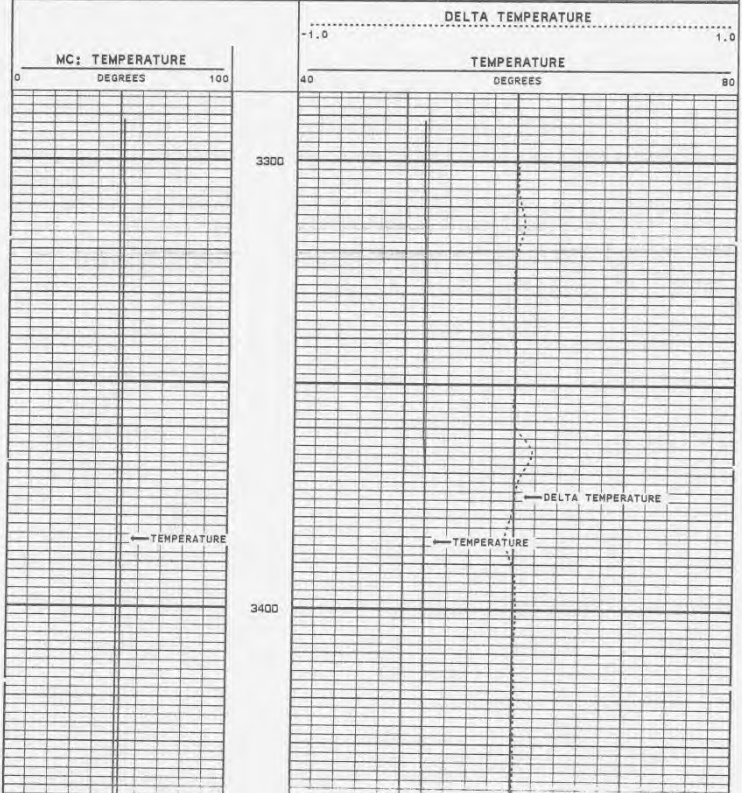
VERSION: 2.26

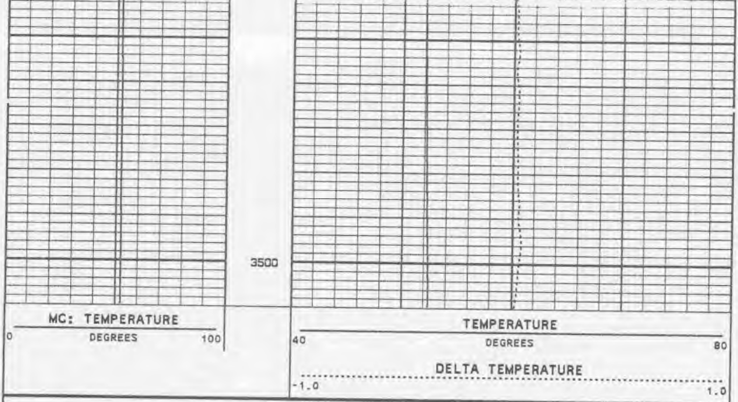
VERSION: 2.26

REPEAT SECTION

MIW114TRP

FINISH DEPTH: **3529.9** FEET DIRECTION: **DOWN** DATE: **12/02/95** TIME: **00:43:08** MODE: **TRACE PLAYBACK**





START DEPTH: **3296.6** FEET DIRECTION: **DOWN** DATE: **12/02/95** TIME: **00:37:43** MODE: **TRACE PLAYBACK**

MIW114TRP

REPEAT SECTION

VERSION: 2.26

MASTER CALIBRATION SUMMARY

FILE: DATE: 12/02/95 TIME: 05:05 VERSION: 2.26

TEMPERATURE #10

DATE: 11/26/95 TIME: 16:43

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
ZERO	457.4	CPS	69.0	68.7	69.4	0.26	DEGF
PLUS	724.5	CPS	122.9	122.7	123.1	0.14	DEGF

COMPANY HAZEN & SAWYER

WELL MIRAMAR WWTP IW-1

FIELD MIRAMAR STATE FLORIDA

HIGH RESOLUTION TEMPERATURE LOG

FLORIDA GEOPHYSICAL LOGGING, INC.

FILE NO. ____________

COMPANY HAZEN & SAWYER
WELL MIRAMAR WWTP IW-1
FIELD MIRAMAR
COUNTY BROWARD STATE FLORIDA
LOCATION MIRAMAR WWTP
SEC. ____ TWP ____ RGE ____

OTHER SERVICES:
X-Y CALIPER
DIL/LL3/SP
BHC/VDL
FLOWMETER

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

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

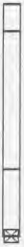
DATE	01-DECEMBER-1995	
RUN NO.	FOURTEEN	
TYPE LOG	TEMPERATURE	
DEPTH-DRILLER	3520'	
DEPTH-LOGGER	3510'	
LOGGED INTERVAL	3510' TO 2900'	TO
OPERATING RIG TIME	1 HOURS	
TYPE FLUID IN HOLE	WATER	
SALINITY, PPM CL	N/A	
DENSITY-VISCOSITY	N/A	
LEVEL	FULL	
MAX. REC. TEMP. DEG F.	N/A	
EQUIPMENT-LOCATION	102-MIAMI	
RECORDED BY	WILLIAMS/LEE	
WITNESSED BY	G.DIVELY	

BOREHOLE RECORD				CASING RECORD		
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
TWELVE							
14	17.5"	2950'	3520'	24"	.5" WT.	2950'	SURFACE

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

TEMPERATURE TOOL STRING CONFIGURATION



-- 7 TO 1 ADAPTER -- 1 FT. LONG

-- TOTAL TOOL STRING LENGTH = 8.5 FT. --

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

--TEMPERATURE -- 2.5 FT. LONG

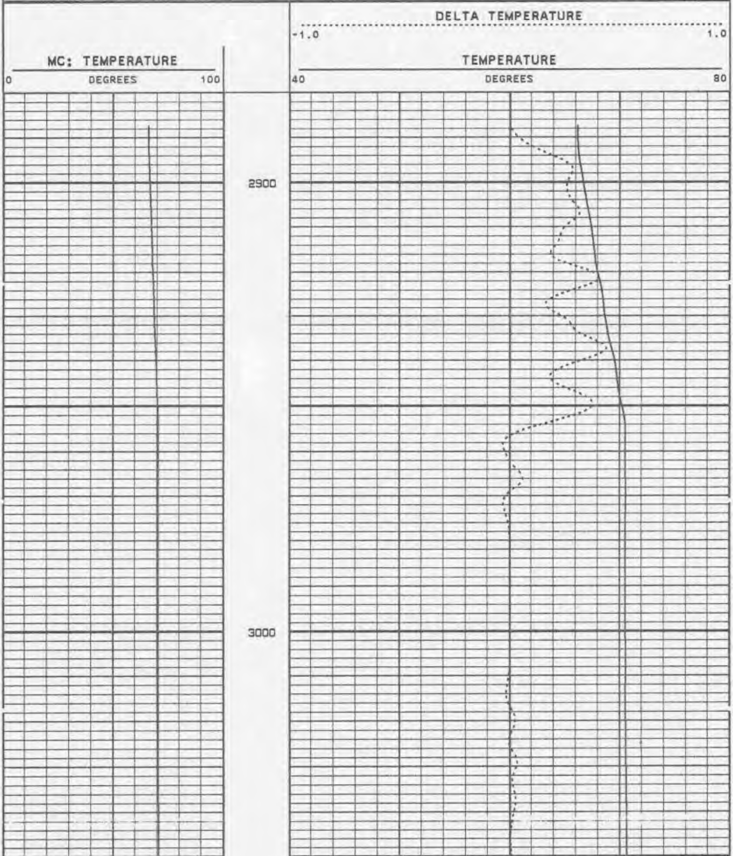
---MEASURE POINT BOT.

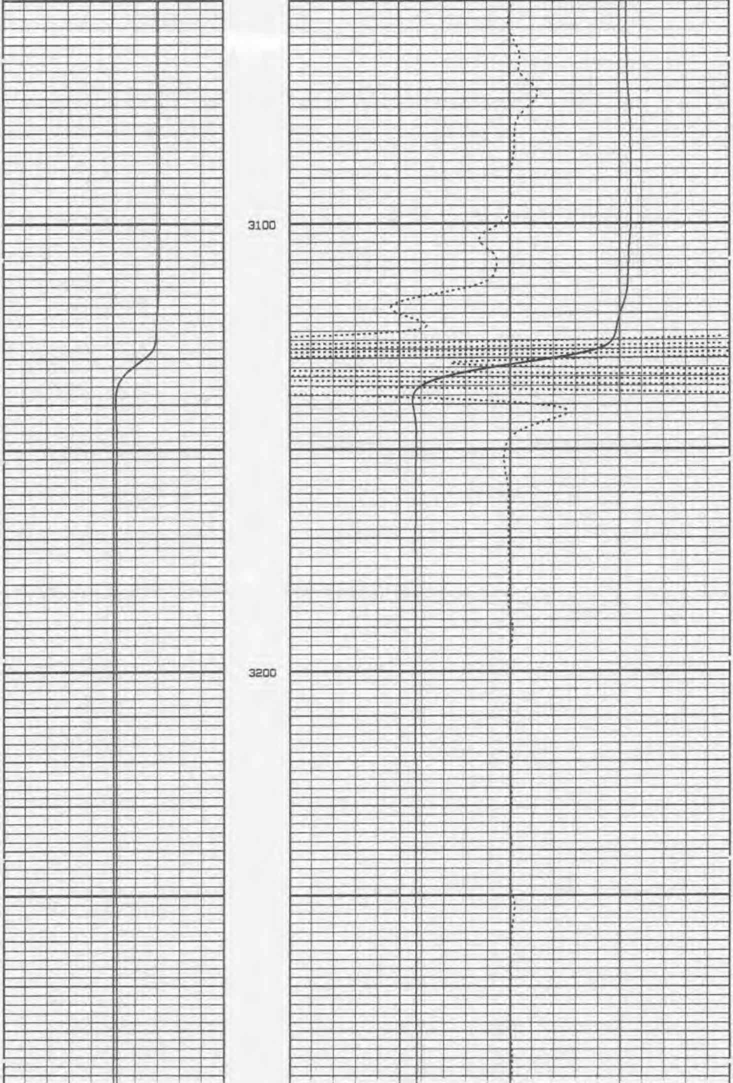
VERSION: 2.26

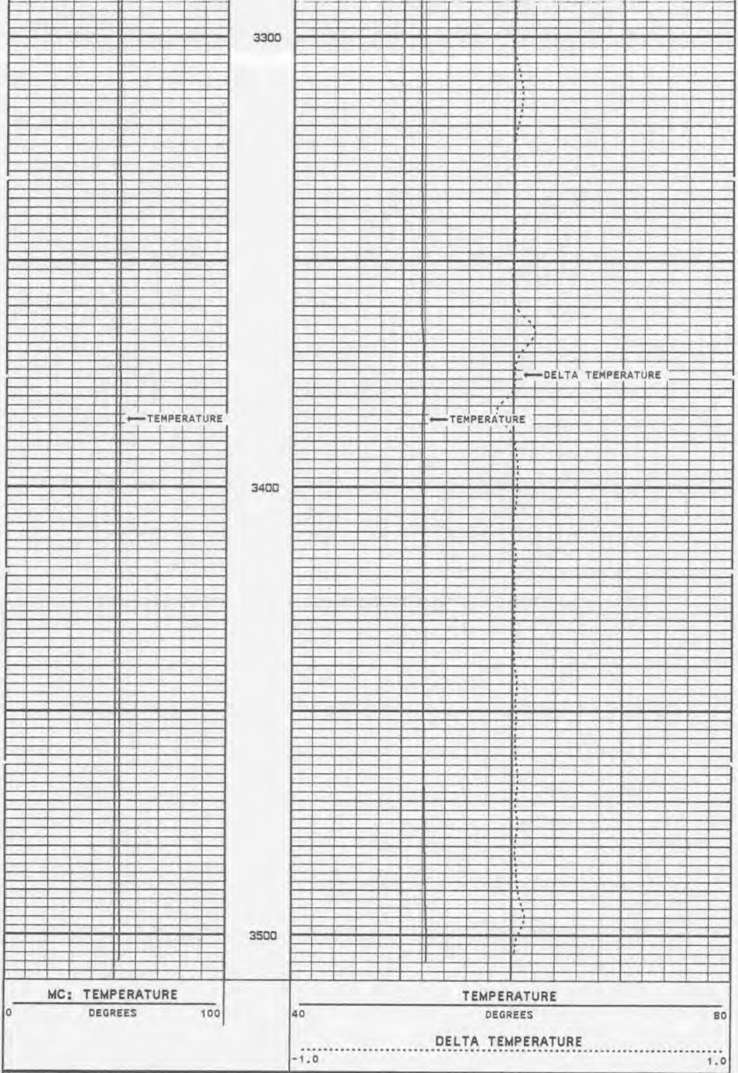
MAIN PASS

MIW114TMP

FINISH DEPTH: **3509.7** FEET DIRECTION: **DOWN** DATE: **12/02/95** TIME: **00:33:21** MODE: **TRACE PLAYBACK**







START DEPTH: 2891.2 FEET DIRECTION: DOWN DATE: 12/02/95 TIME: 00:18:54 MODE: TRACE PLAYBACK

MIW114TMP

MAIN PASS

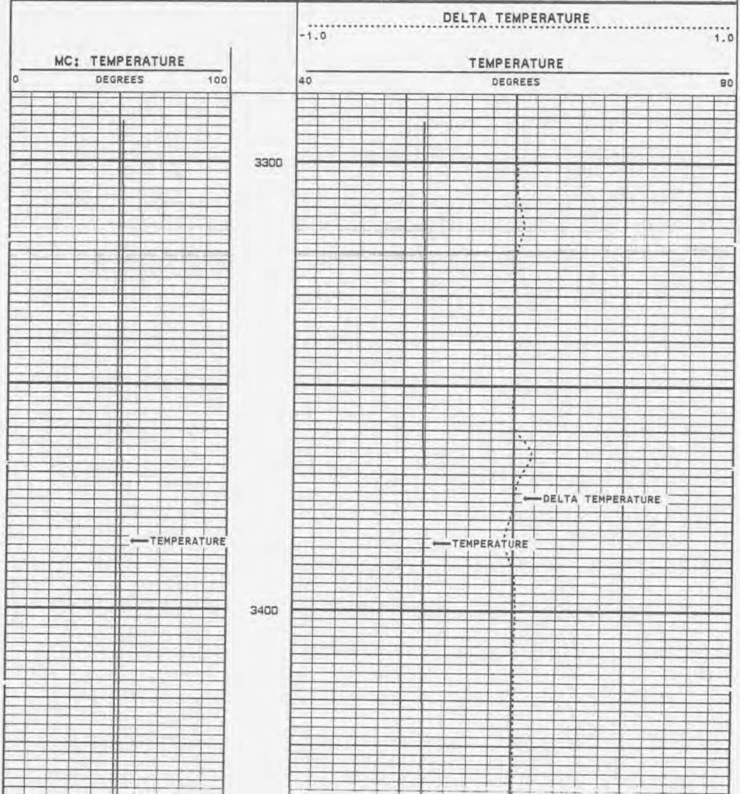
VERSION: 2.26

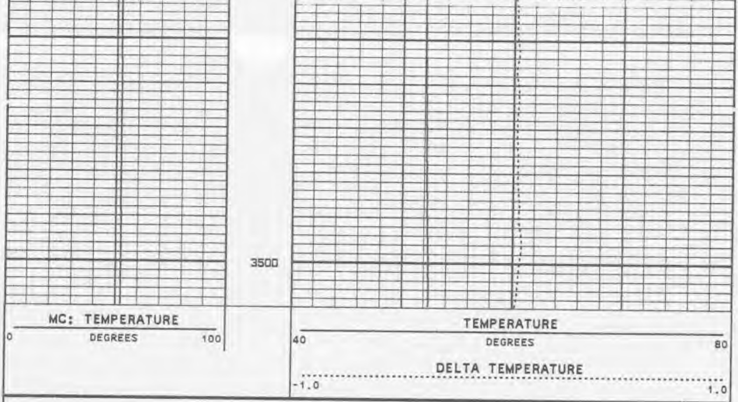
VERSION: 2.26

REPEAT SECTION

MIW114TRP

FINISH DEPTH: **3529.8** FEET DIRECTION: **DOWN** DATE: **12/02/95** TIME: **00:43:08** MODE: **TRACE PLAYBACK**





START DEPTH: **3296.6** FEET DIRECTION: **DOWN** DATE: **12/02/95** TIME: **00:37:43** MODE: **TRACE PLAYBACK**

MIW114TRP

REPEAT SECTION

VERSION: 2.26

MASTER CALIBRATION SUMMARY

FILE: DATE: 12/02/95 TIME: 05:05 VERSION: 2.26

TEMPERATURE #10

DATE: 11/26/95 TIME: 16:43

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
ZERO	457.4	CPS	69.0	68.7	69.4	0.26	DEGF
PLUS	724.5	CPS	122.9	122.7	123.1	0.14	DEGF

COMPANY HAZEN & SAWYER

WELL MIRAMAR WWTP IW-1

FIELD MIRAMAR STATE

FLORIDA GEOPHYSICAL LOGGING, INC.

DUAL INDUCTION
LL3/SP
GAMMA RAY
LOG

FILE NO. ____

COMPANY HAZEN & SAWYER
WELL MIRAMAR WWTP IW-1
FIELD MIRAMAR
COUNTY BROWARD STATE FLORIDA

LOCATION
MIRAMAR WWTP

SEC.____ TWP____ RGE____

OTHER SERVICES:
X-Y CALIPER
TEMPERATURE
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	15-NOVEMBER-1995	
RUN NO.	ELEVEN	
TYPE LOG	DIL	
DEPTH-DRILLER	2955'	
DEPTH-LOGGER	2960'	
LOGGED INTERVAL	2960' TO 2290'	TO
OPERATING RIG TIME	1.5 HOUR	
TYPE FLUID IN HOLE	WATER	
SALINITY, PPM CL	NA	
DENSITY-VISCOSITY	NA	
LEVEL	FULL	
MAX. REC. TEMP, DEG F.	75 DEGF	
EQUIPMENT-LOCATION	101 FTM	
RECORDED BY	JONES/LEE	
WITNESSED BY	J.WHEATELY	

BOREHOLE RECORD				CASING RECORD			
RUN NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
EIGHT	41.5"	2312'	CASINGE	50"	.5 WT.	260'	SURFACE
				42"	.5 WT.	1000'	SURFACE
NINE				34"	.5 WT.	2300'	SURFACE
TEN	12.25"	2860'	CASING				
ELEVEN	32.5"	2955	CASING				

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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 --12.5 FT. FROM BOT

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

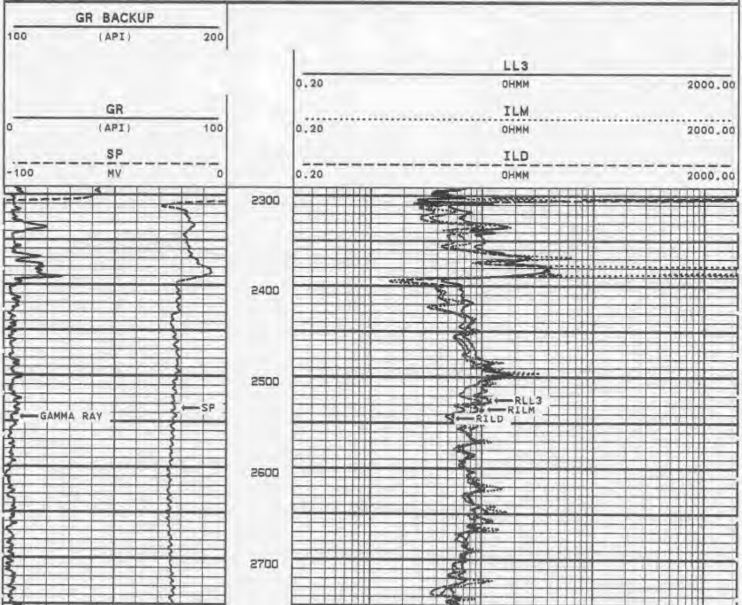
-- BOT

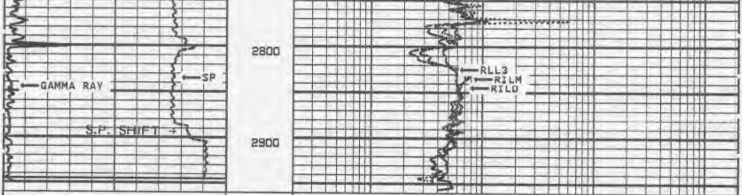
VERSION: 2.26

MAIN PASS

MIW111DILM

FINISH DEPTH: 2292.2 FEET DIRECTION: UP DATE: 11/15/95 TIME: 03:44:06 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

START DEPTH: 2959.9 FEET DIRECTION: UP DATE: 11/15/95 TIME: 03:28:14 MODE: TRACE PLAYBACK

MIW111DILM

MAIN PASS

VERSION: 2.26

VERSION: 2.26

MAIN PASS

MIW111DILM

FINISH DEPTH: 2292.2 FEET DIRECTION: UP DATE: 11/15/95 TIME: 03:44:06 MODE: TRACE PLAYBACK

GR BACKUP
100 (API) 200

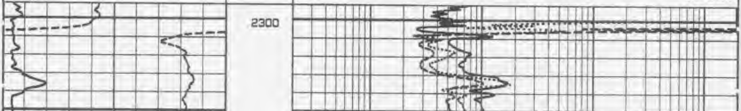
LL3
0.20 OHMM 2000.00

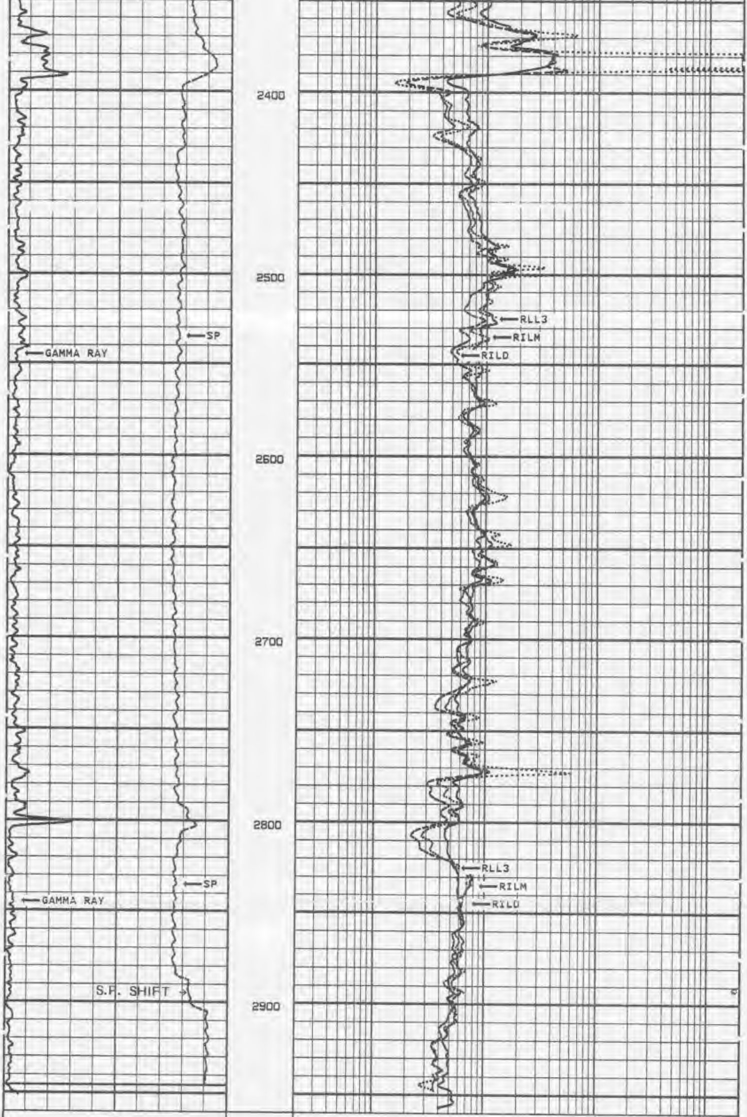
GR
0 (API) 100

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

START DEPTH: 2959.8 FEET DIRECTION: UP DATE: 11/15/85 TIME: 03:28:14 MODE: TRACE PLAYBACK

MIW111DILM

MAIN PASS

VERSION: 2.26

VERSION: 2.26

MAIN PASS

MIW111DILM

FINISH DEPTH: 2292.2 FEET DIRECTION: UP DATE: 11/15/85 TIME: 03:44:06 MODE: ORIGINAL

GR BACKUP
100 (API) 200

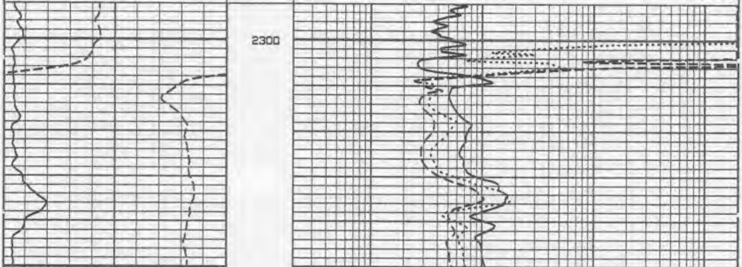
LL3
0.20 OHMM 2000.00

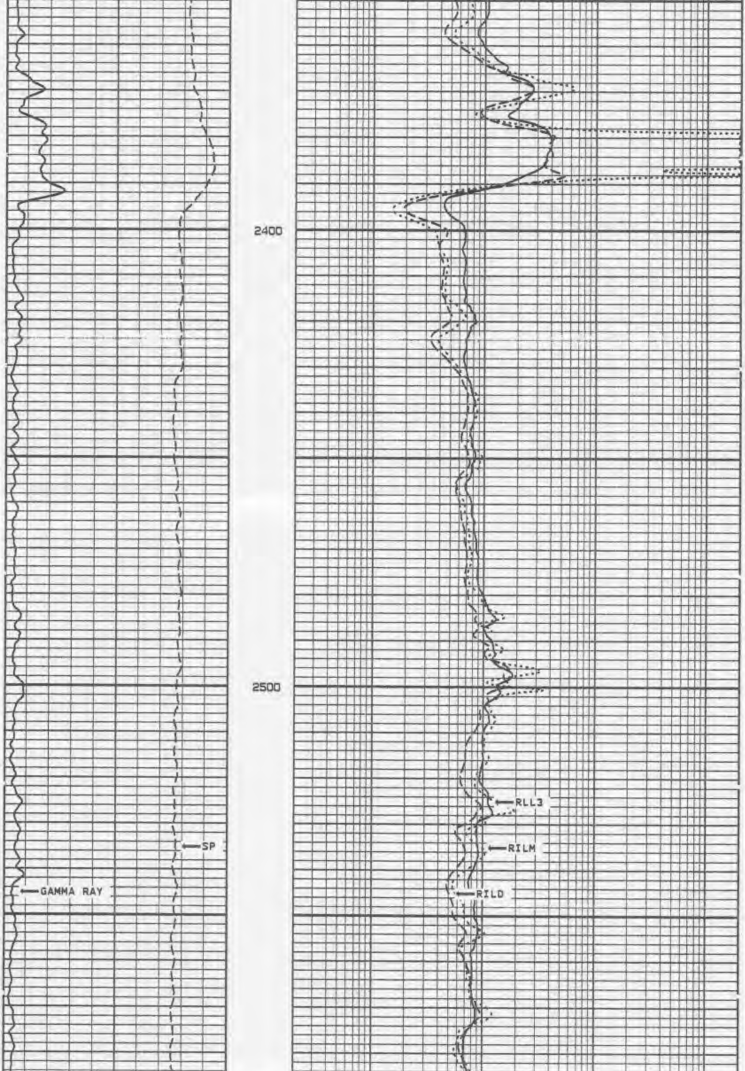
GR
0 (API) 100

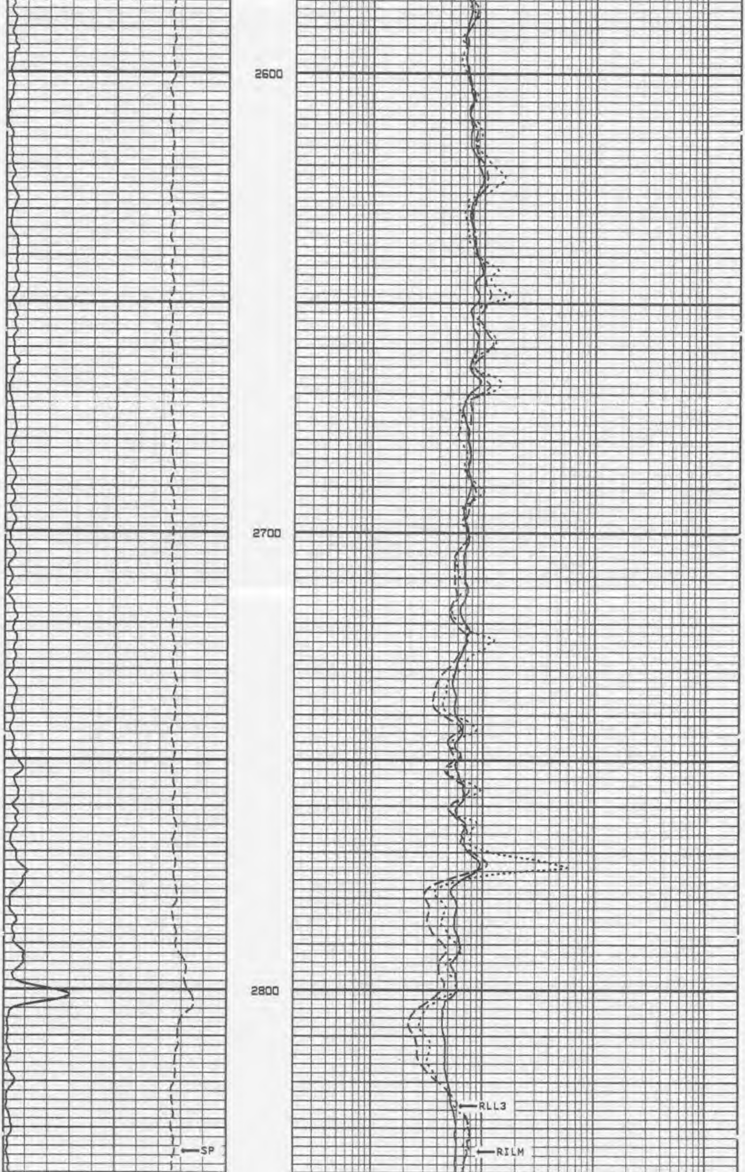
ILM
0.20 OHMM 2000.00

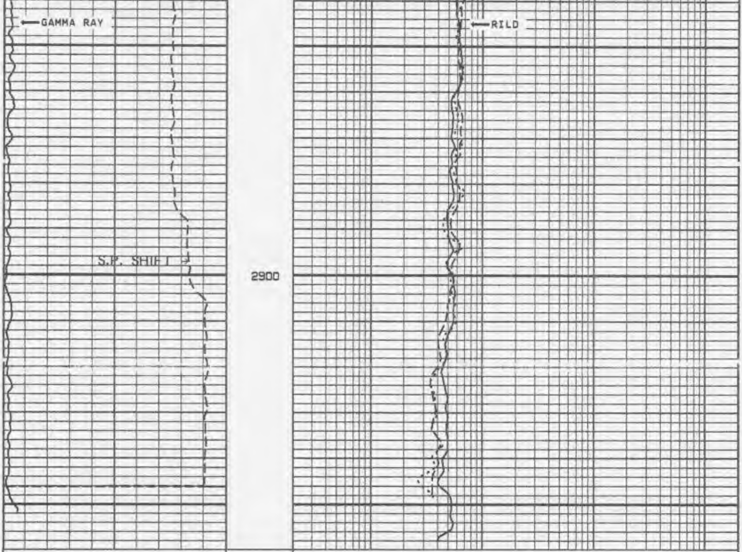
SP
-100 MV 0

ILD
0.20 OHMM 2000.00









SP
-100 MV 0

GR
0 (API) 100

ILD
0.20 OHMM 2000.00

ILM
0.20 OHMM 2000.00

LL3
0.20 OHMM 2000.00

GR BACKUP
100 (API) 200

START DEPTH: 2959.9 FEET DIRECTION: UP DATE: 11/15/95 TIME: 03:28:14 MODE: ORIGINAL

MIW111DILM

MAIN PASS

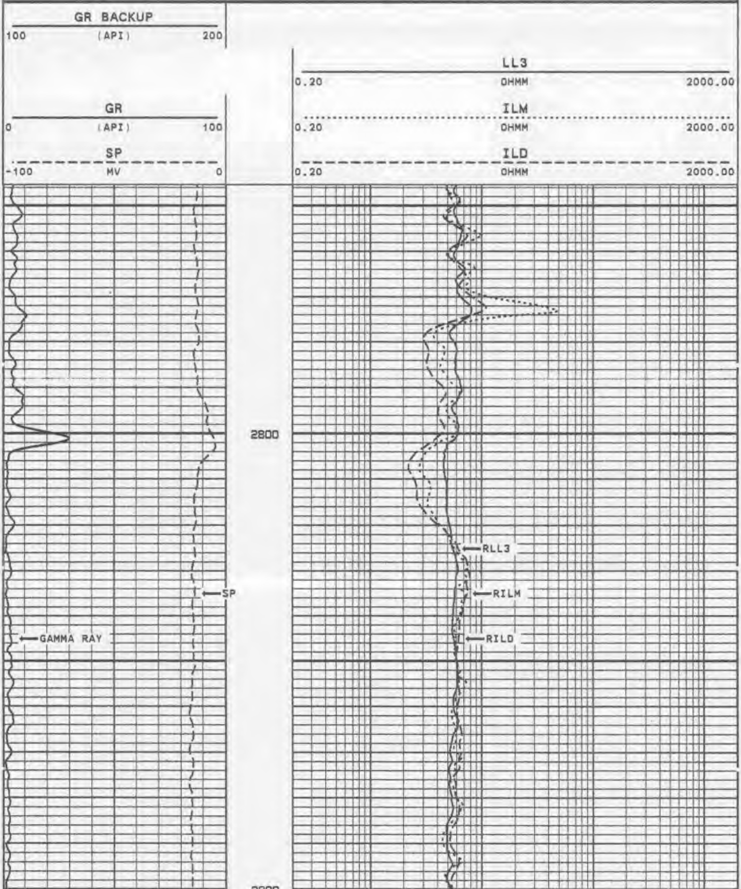
VERSION: 2.26

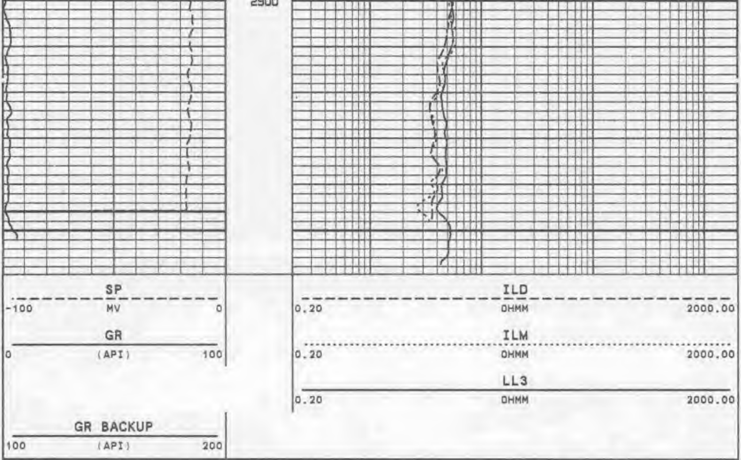
VERSION: 2.26

REPEAT SECTION

MIW111DILR

FINISH DEPTH: 2745.5 FEET DIRECTION: UP DATE: 11/15/95 TIME: 03:23:09 MODE: ORIGINAL





START DEPTH: **2959.6** FEET DIRECTION: **UP** DATE: **11/15/95** TIME: **03:17:52** MODE: **ORIGINAL**

MIW111DILR

REPEAT SECTION

VERSION: 2.26

MASTER CALIBRATION SUMMARY

FILE: DATE: 11/15/95 TIME: 03:14 VERSION: 2.26

ILD TOOL #10

DATE: 10/02/95 TIME: 14:12

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
LOOP OPEN	45.0	MV	0.0	-0.8	1.3	0.67	MMHO
LOOP CLOSED	681.1	MV	400.0	399.1	401.1	0.43	MMHO

ILM TOOL #10

DATE: 10/02/95 TIME: 14:12

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
LOOP OPEN	57.1	MV	0.0	-1.2	0.9	0.52	MMHO
LOOP CLOSED	742.3	MV	464.0	463.5	464.9	0.58	MMHO

LL3 TOOL #10

DATE: 07/20/95 TIME: 11:01

	MEASURED	UNITS	STANDARD	MINIMUM	MAXIMUM	DEVIATION	UNITS
BOX 1000 OHMS	79.7	MV	1.0	1.0	1.1	0.02	MMHO
BOX 100 OHMS	108.7	MV	10.0	10.0	10.4	0.05	MMHO
BOX 10 OHMS	409.2	MV	100.0	99.8	100.4	0.13	MMHO
BOX 1 OHMS	2543.6	MV	1000.0	999.1	1001.2	1.11	MMHO

COMPANY HAZEN & SAWYER

MIRAMAR WWTP

WELL MIRAMAR WWTP IW-1

FIELD MIRAMAR STATE FLORIDA