Southwest Surveys

GEOPHYSICAL WELL LOG:	PERM. DATUM: GROUND LEVEL	OTHER SERVICES:
GAMMA RAY RESISTANCE S.P.	LOG MEASURED FROM: G. L. ELEVATION:	DRIFT 3ARM CALIPER

COMPANY: UNITED NUCLEAR CORPORATION
PROJECT/FIELD: CHURCHROCK PROJECT
WELL: 715

LOCATION SEC. 36 T 17 N R 16 W
COUNTY: McKINLEY STATE: NEW MEXICO

ELEVATION KB:
DF:
GL:

COMPANY UNITED NUCLEAR CORPORATION
WELL: UNC-715

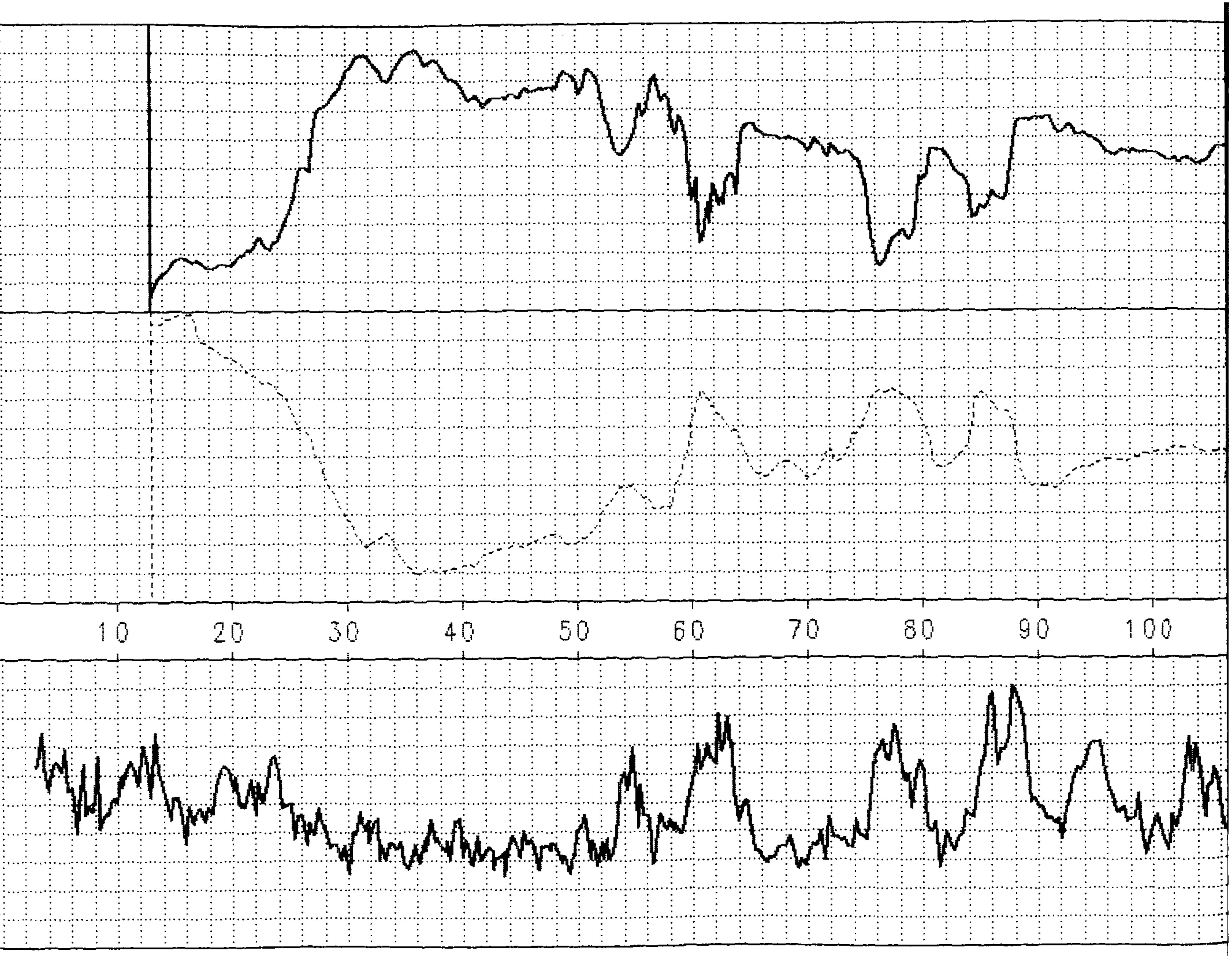
	RUN NO. 1		RUN NO. 1
DATE	05-22-91	FLUID LEVEL	13'
DEPTH DRILLER	129.5' FT.	FLUID NATURE	WATER
DEPTH LOGGER	129' FT.	FLUID VISCOSITY	
BOTTOM LOGGED	129' FT.	FL. RESISTIVITY	
TOP LOGGED INT.	SURFACE	FL. RES. @ B.H.T.	
CASING LEVEL	FT.	CIRCULATION TEMP.	
CASING SIZE		BOT HOLE TEMP	
CASING SIZE			
BIT SIZE	5 5/8"		ORE-78
BIT SIZE		LOGGED BY:	S.STUBBERUD
		WITNESSED BY:	LARRY BUSH

REMARKS: THIS IS THE 1ST RUN ON THIS HOLE. A 3 ARM CALIPER WILL BE RUN AFTER REAMING THE HOLE TO 11".

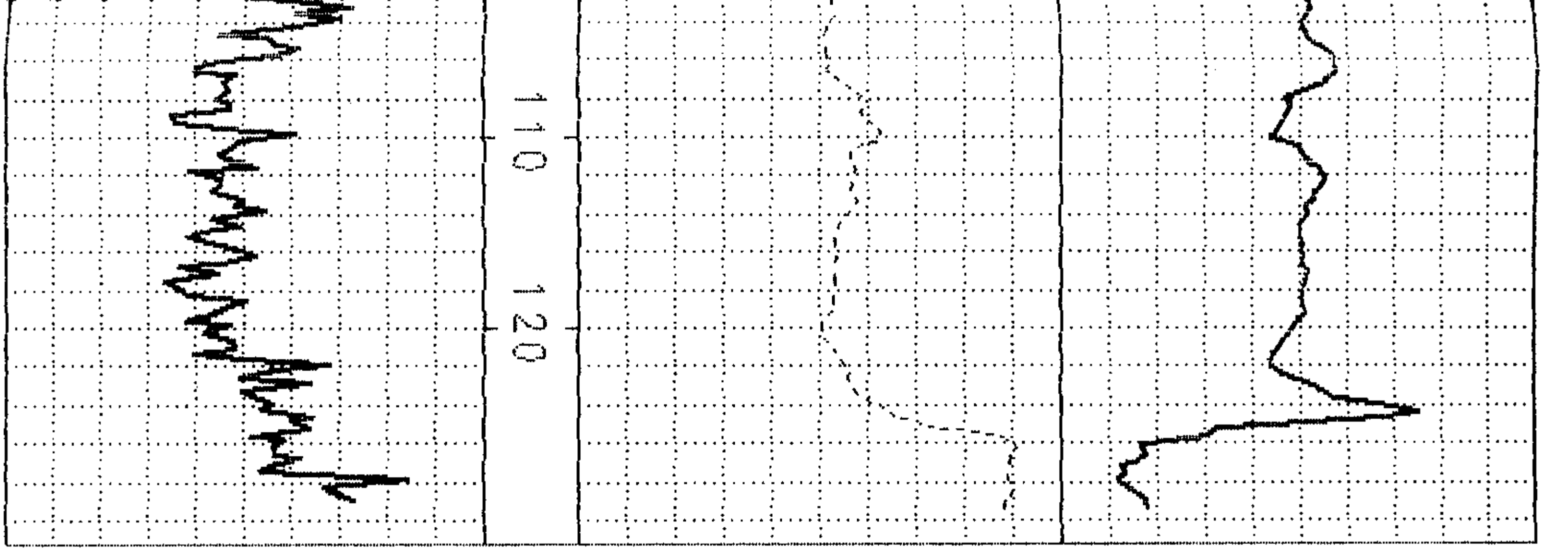
THANK YOU FOR USING SOUTWEST SURVEYS

(\acq4\unc715.or0) UNITED NUCLEAR CORPORATION

GAMMA RAY	MV	RESISTANCE
0 CPS 50	-90 S.P. 10	50 OHMS 105



10
20
30
40
50
60
70
80
90
100



GAMMA RAY
0 CPS 50

MV
-90 S.P. 10

RESISTANCE
50 OHMS 105

(\acq4\unc715.or0)

UNITED NUCLEAR CORPORATION

Southwest Surveys

GEOPHYSICAL WELL LOG: 3ARM CALIPER	PERM. DATUM: GROUND LEVEL LOG MEASURED FROM: G. L. ELEVATION:	OTHER SERVICES: SEE REMARKS

COMPANY: UNITED NUCLEAR CORPORATION
PROJECT/FIELD: CHURCHROCK PROJECT
WELL: 715

LOCATION SEC. 36 T 17 N R 16 W
COUNTY: McKINLEY STATE: NEW MEXICO

ELEVATION KB:
DF:
GL:

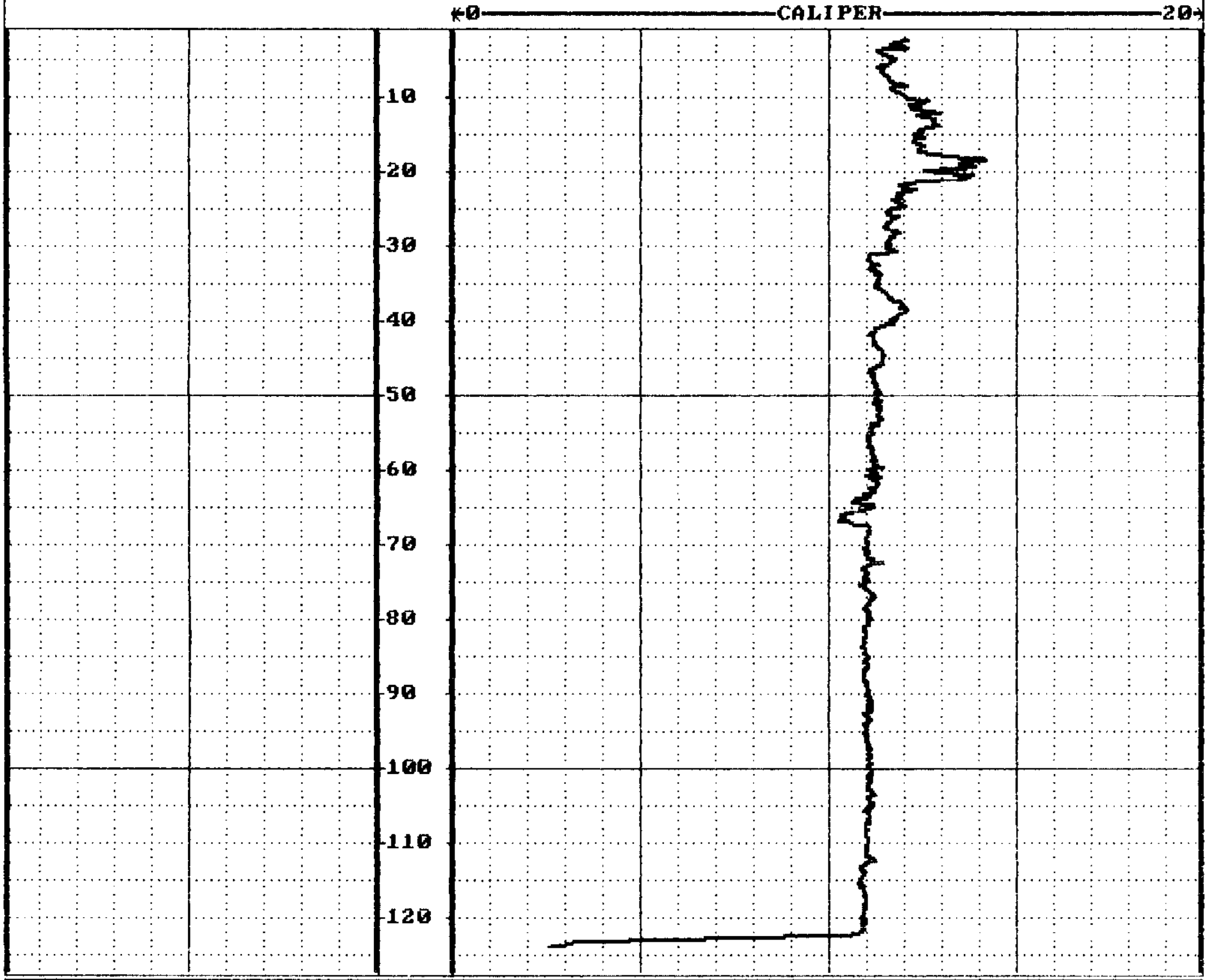
COMPANY UNITED NUCLEAR CORPORATION
WELL: UNC-715

	RUN NO. 2		RUN NO. 2
DATE	05-23-91	FLUID LEVEL	
DEPTH DRILLER	127' FT.	FLUID NATURE	WATER
DEPTH LOGGER	124.1 FT.	FLUID VISCOSITY	
BOTTOM LOGGED	126.1 FT.	FL. RESISTIVITY	
TOP LOGGED INT.	SURFACE	FL. RES. @ B.H.T.	
CASING LEVEL	N/A FT.	CIRCULATION TEMP.	
CASING SIZE		BOT HOLE TEMP	
CASING SIZE			
BIT SIZE	11"	3 ARM CALIPER	3ARM 5049
BIT SIZE		LOGGED BY:	JIM GENTRY
		WITNESSED BY:	LARRY BUSH

REMARKS: CALIPER TOOL #5049
WELL REAMED TO 11"

THANK YOU FOR USING
SOUTHWEST SURVEYS

OUT:UNC715C.CL1 (OFF) Recs:0 Bytes:0 Free:5802K
2.6 0.0 1489 3 0 1 12.05 6 -0 55677



OUT:UNC715C.CL0 (OFF) Recs:89 Bytes:6745 Free:5802K
124.1 0.0 1037 3 0 1 2.67 5 -0 556

←0 CALIPER 20→

UNITED NUCLEAR
CORP.

Well # 715
5/22/91

Logged by: S. Stubberud
Witness: Larry Bush
Logged Down

Direction 205.47
Step-Out 1.03
True Vert. Depth 28.99

Depth	Inclination	(Azimuth) Direction
0129	00.7	241
0120	00.8	228
0110	00.6	216
0100	00.7	210
0090	00.7	204
0080	00.5	202
0070	00.5	201
0060	00.4	202
0050	00.4	201
0040	00.3	199
0030	00.3	204
0020	00.2	213
0010	00.6	159
0000	00.1	891

Well # 715
United Nuclear Corp.
Churchrock Project
5/22/91
Logged by: S. Stubberud

SWACO GEOLOGRAPH

LLF18103 USE THIS NUMBER WHEN REORDERING CHARTS

RECORDER CHART M3181-X

G-8 (12 HOUR)

Mining Services Chart

CHANGE CHARTS AT 8:00 A.M. AND 8:00 P.M.

OPERATOR JNC-

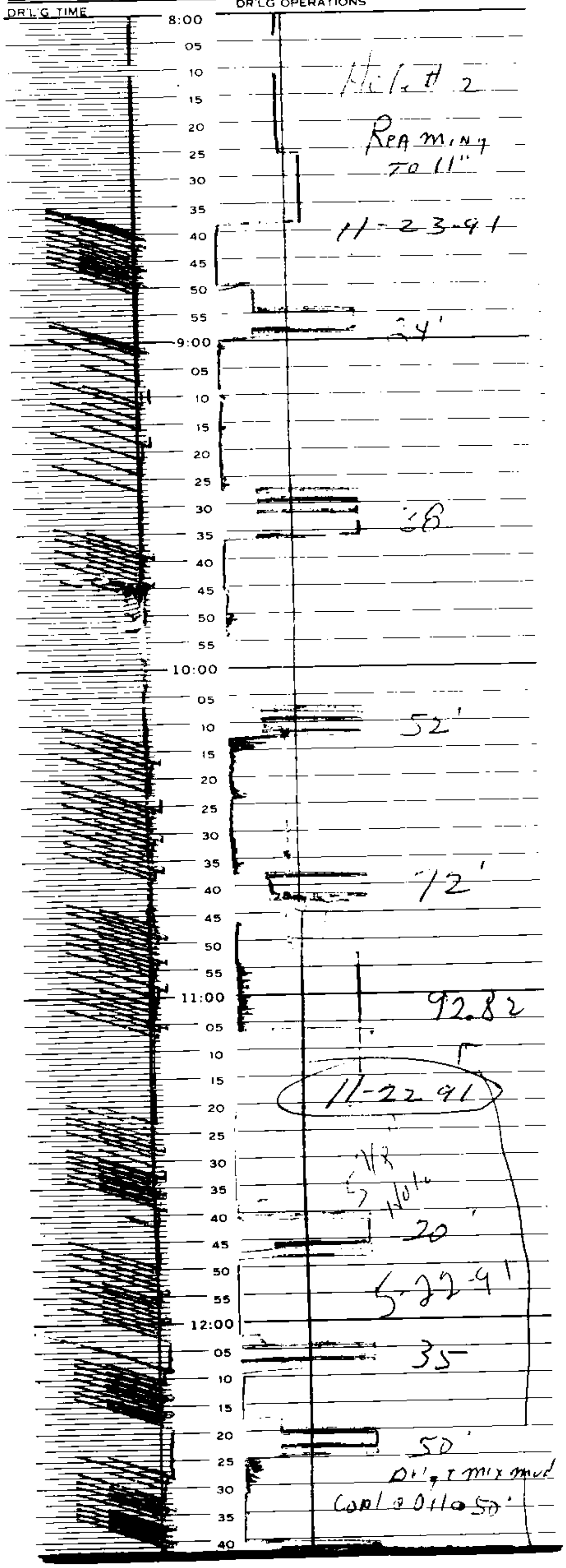
NO 2 LEASE

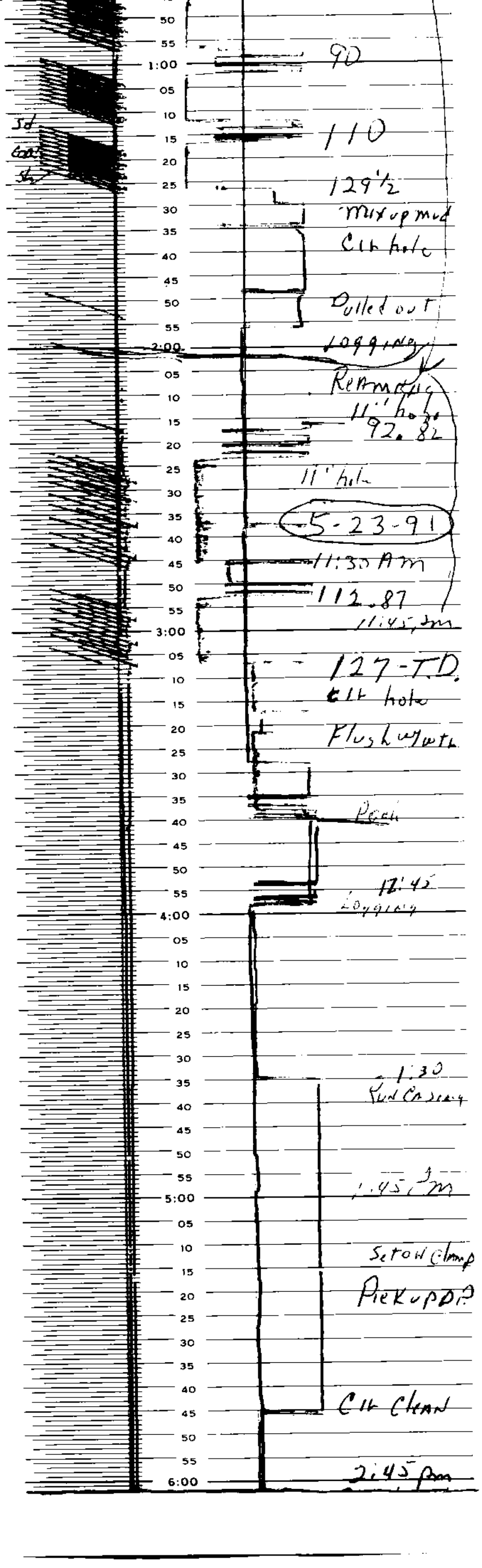
LOC 715 SEC T 5 5/8" R 11" (127)

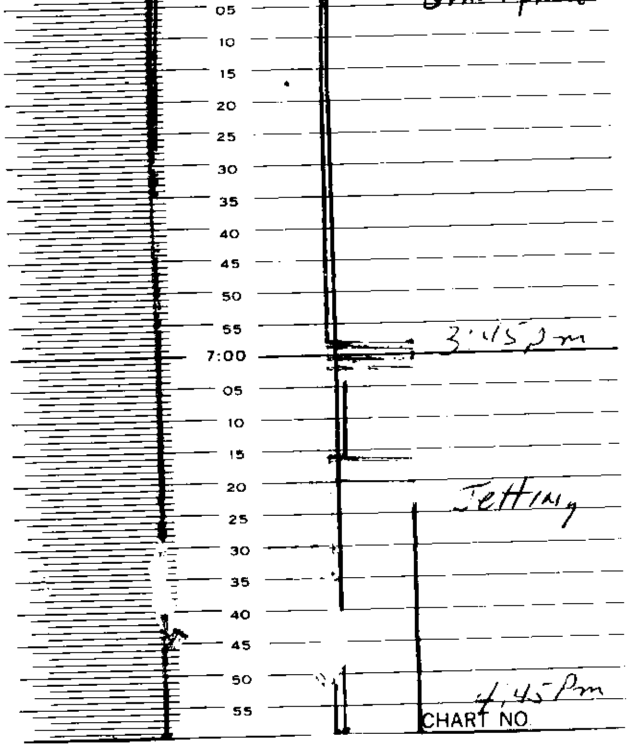
COUNTY STATE

DATE ON T. D. OFF 129-10

TIME ON 8 A M 8 P M T. D. ON 0




1:00
90
110
129½
Mix up mud
Clr hole
Pulled out
logging
2:00
Reaming
11" hole
92.82
11" hole
5-23-91
11:30 AM
112.87
11:45 am
3:00
127-T.D.
Clr hole
Flush w/ wtr
12:45
Logging
4:00
1:30
Run Casing
1:45 pm
5:00
Set on clamp
Pickup D.P.
Clr Clean
2:45 pm
6:00


05
10
15
20
25
30
35
40
45
50
55
7:00
3:45 pm
05
10
15
20
Jetting
25
30
35
40
45
50
55
4:45 Pm
CHART NO.

? CHURCHROCK

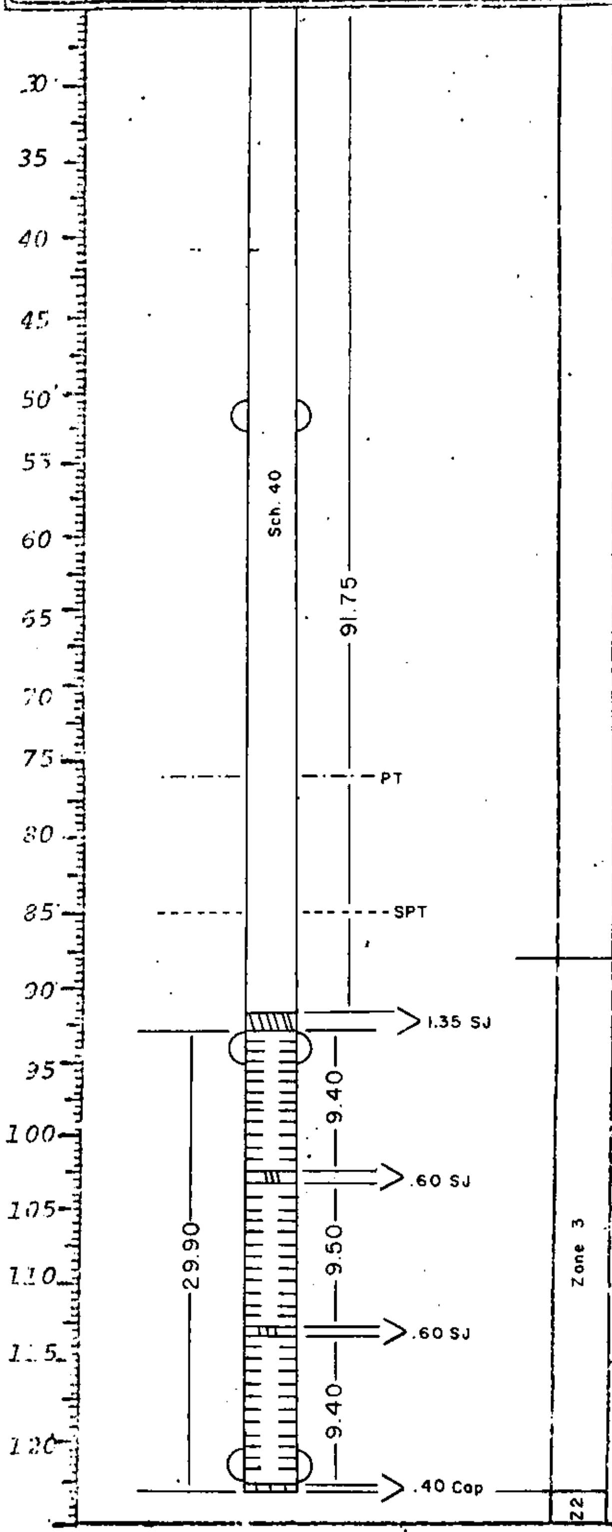
WATER WELL INSTALLATION

WELL NO. 715

DATE DRILLED 5-22-91

LOCATION - SECTION 36 T 17N. R16W	DRILLER Wayne Smith Drilling
COORDINATES - N 76299.99 E 60900.48	DRILLING METHOD Rotary
ELEVATIONS - GROUND 6962.44 TOP OF PIPE 6964.48	DRILLING MUD Water
DEPTH DRILLED 129.5	GEOPHYSICAL LOGS E-Log, Caliper Drift
DEPTH CASED 123	DEVELOPMENT Water Wash Screens Airlift
DEPTH TO WATER	

DEPTH			LITHOLOGY LOG



) - Centralizer

PT- Pellet Top

SPT- Sand Pack Top 8X12 Sieve

SJ- Slip Joint/ Slip Joint to Thread Adapter

4/8- Sch. 80 to Sch. 40 Adapter

WELL CONSTRUCTION & COMPLETION REPORT

Property Name Church Rock Site

Well Name 715

Status or Function of Well as of 5-24-91 (Date): Completed

Well Location: N 76299.99

E 60900.48

Collar Elev. 6962.44

Driller Wayne Smith Drilling
Wayne Smith

Cored Hole: Interval ______ Disposition ______

Geophysical Logs:

Natural Gamma	Yes
Resistance	Yes
Self Potential	Yes
Caliper	Yes
Spinner	
Drift	Yes
Other	

Basic Well Construction:

Telescoping Screen	Yes
Gravel Pack	
Perforation	
Underreamed	
Cement Basket & Screen on Casing	
Open Hole	
Other	

Basic Lithology: Sandstones, Mudstones, Shales, Carbonaeous Shales, and Coal

Basic Mineralization: Oil

Static Water Level: ______

Well Total Depth (or elevation)	6832.94'
Casing Depth (elevation)	6839.44'
Screen Interval (elevation)	6869.34'--- 6839.84'
Perforated Interval	93.1'---122.6'
Underreamed Interval	
Open Hole Interval	
Gravel Packed Interval	85' -- 123' Bottom Filled
Cemented Interval	
Location of Centralizers	51.73', 94.1', 122'
Depth (or elevation) of packer	
Depth (or elevation) of wash plug	
Depth (or elevation) of bottom of screen string	122.6'
Depth (or elevation) of cement basket	

Hole: Method Rotary w/ Clear Water

Diameter 5 5/8" From 0' To 129.5'

11" From 0' To 127'

Fluid if Any

Casing: Material PVC Sch. 40 Aardvark

Dimensions
ID Sch. 40- 6.065"
OD ~~Sch. 40- 6.625"~~
Joints Flush
Centralizers 6" to 11"

Cement: Method

Done By

Description of Mixture

Screen: Construction & Material Sch. 40 PVC

Nominal 6" ID 5.688" OD 6 5/8"

Length 10'

Slot Size .050"

Open Area/Ft 54.3 sq. in./ln. ft.

Other Material Associated with Screen Slip joint- glue type between Screens .5'-.6' in length. .4'- End cap on bottom of screen. Slip joint & conversion to Aardvark Sch. 80/40 threads @ top of screen.

Peforations: Method

Size

Amount

Underream: Method

Diameter

Slotted Casing: Interval

Slot Size

Slots Per Foot

Open Area/FT

Gravel: Size 8X12 Mesh Amount 50 lb. /bag- 28 bags used

Method of Completion & Description: 5 5/8" Pilot hole drilled & logged. 11" hole reamed and calipered. Screen, centralizers, and casing hung in hole. Screens washed, Screens gravel packed, hole airlifted, and bentonite pellets placed. Annulus mud of 80 Vis. or higher filled to ground level and refilled at end of drilling 6-14-91.

Wayne Smith Drilling Co., Inc.
DAILY DRILL REPORT

COMPANY NAME UNC

PROJECT Well #2 # 715

DATE 5-22-91

REPORT NO. 3

DAY SHIFT ✓ NIGHT SHIFT

DRILLER Wayne Smith

HELPER Ambrose Lewis

HELPER Ronald Morgan

RIG #1

8 hrs Rig Time @ 115.00 per hr

HOLE NUMBER	INTERVAL FROM	INTERVAL TO	INTERVAL TOTAL	TIME FROM	TIME TO	TIME TOTAL	REMARKS
				8:00	10:15	2 1/4	Start up Serviced Rig & Pump mud pump
	(1 sx Super gel TD mud 3 sx Quick-			1 gal. Pack R-			Mixed TD mud - over 2 inches)
							Filled Backside of well
				10:15	11:15	1	Rig Down - Moved TO Next Loc
							Rig up - Mix 2 sx Quick thick
	0	129 1/2	129	11:15	1:30	2 1/4	Drilling 5 5/8" hole
				1:30	1:45	1/4	Ck hole Clean
				1:45	2:00	1/4	Pooh
				2:00	3:00	1	logging
				3:00	4:00	1	Grh - Washed clean with water
							LDDP - put 11" Bit on

Packed Swivel N.C.

DRILLING MUD USED	LOADS OF WATER HAULED	BIT NUMBER	BIT SIZE	SERIAL NUMBER
5 sx Quick gel	1 load 4200 gal	1	5 5/8	Same Bit used on

Service Printing Co. 6/90

TOTAL FOOTAGE DRILLED

6

Wayne Smith Drilling Co., Inc.
DAILY DRILL REPORT

COMPANY NAME: UNC

PROJECT: Well # 2 # 715

DATE: 5-23-91

REPORT NO.: 4

DAY SHIFT: ✓ NIGHT SHIFT:

DRILLER: Wayne Smith

HELPER: Ambrose Lewis

HELPER: Ronald Morgan

RIG: # 1

10 hrs Rig time @ 115.00 per hr

HOLE NUMBER	INTERVAL FROM	INTERVAL TO	INTERVAL TOTAL	TIME FROM	TIME TO	TIME TOTAL	REMARKS
	0			8:00	8:30	1/2	Start up Set Rig Dig Pit & Ditch
	0	127	127	8:30	12:00	3 1/2	Reaming 5 7/8 to 11" hole
				12:00	12:30	1/2	Ck hole & Flushed w/ 100 bbls water
				12:30	12:45	1/4	Pooh - took 11" Bit off
				12:45	1:30	3/4	Run Clah. log - 126'
				1:30	2:15	3/4	Run 6" Casing - set on Clamps
				2:15	4:15	2	pick up DP. Wash screen etc
							Gravel packed - & Spotted Bentonite
				4:15	5:30	1 1/4	Jetting w/ Air - producing water
				5:30	6:00	1/2	LDDP - Prime pump shut Down

DRILLING MUD USED	LOADS OF WATER HAULED	BIT NUMBER	BIT SIZE	SERIAL NUMBER
	2 Load	2	11"	Same As Last time

Service Printing Co. 6/90

TOTAL FOOTAGE DRILLED

Wayne Smith Drilling Co., Inc.
DAILY DRILL REPORT

COMPANY NAME UNC

PROJECT Well #2 715

DATE 5-24-91

REPORT NO. 5

DAY SHIFT — NIGHT SHIFT

DRILLER Wayne Smith

HELPER Ambrose Lewis

HELPER Ronald Morgan

RIG

4hrs Rig time @ 115.00

HOLE NUMBER	INTERVAL FROM	INTERVAL TO	INTERVAL TOTAL	TIME FROM	TIME TO	TIME TOTAL	REMARKS
				8:00	8:30	1/2	Start up Serviced Rig
				8:30	1200	3 1/2	Mixed T.D. mud Vis 80
							& Filled Back side of Casing
							Rig Down & Moved equipment
							to unc yard For Break
							Took 11" & 5 7/8" Bits off
							Subs & Ready For New Bits

DRILLING MUD USED	LOADS OF WATER HAULED	BIT NUMBER	BIT SIZE	SERIAL NUMBER
5 sx Quick Thick				
1 gal Pac R				
Vis 80 wt. 9.0 WL 10cc				

Service Printing Co. 6/90

TOTAL FOOTAGE DRILLED

UNC CHURCHROCK

WATER WELL INSTALLATION

WELL NO. 17S

DATE DRILLED 5-23-91

LOCATION - SECTION 36 T 17N R 16W	DRILLER Wayne Smith Drilling
COORDINATES - N ______ E ______	DRILLING METHOD Mud + Water
ELEVATIONS - GROUND ______ TOP OF PIPE ______	DRILLING MUD ______
DEPTH DRILLED 129.5'	GEOPHYSICAL LOGS ______
DEPTH CASED ______	
______ DEPTH TO WATER ______	DEVELOPMENT ______

DEPTH		LITHOLOGY LOG
5		Lt. Tan Silty Sandy Soil w/ thin dark Gray shale & small Limonitic S.S & White Silty SS
10		Lt. Brown Silty Sandy Soil /w minor gray Shale & Small Limonitic SS
15		Lt. Brown Silty-Clay Sandy Soil/w minor gray shale + Small Limonitic SS minor Carb. Shale
20		Lt. Brown/Reddish Silty-Clay Sandy Soil/w minor gray Shale + minor coal
25		Lt. Reddish Sandy soil/w/minor Limonitic SS
30		Lt. Reddish very fine Sandy soil / with Lt. white silty SS
35		Lt. Reddish very fine Sandy soil /with Lt. white silty SS
40		Lt. Reddish to White Fine Sandy Soil / with minor Limonitic + Lt. Gray SS Minor Limonitic Shale/mudstone
45		Lt. Reddish to White Fine Sandy Soil /w minor Limonitic + Lt. Gray SS Minor Limonitic Shale-Brown Mudstone
50	oil	Lt. Reddish Tan Fine Sandy Soil /w minor Limonitic SS minor oil here
55		Lt. Reddish Tan Fine Sandy Soil /w minor White Silty SS Minor Coal + Limonitic SS
60		Lt. Reddish to Med. Brown Fine to Med Sandy Soil /w Limonitic Shale + SS Med Brown Mudstone + Minor White silty SS
65		Med. Brown Med. Gr. SS + Med. Gray Shale/w minor Limonitic shale + white silty SS + minor Carb. Black Shale
70		Med Brown to Med. Gray SS /w Limonitic Shale, carb. Black shale and white Silty SS
75		Lt. Tan to Lt. Gray Fine Gr SS/w Black Carb. Shale, Coal, minor Carb. Shale - Oil
80		Dark Black Shale w/ Lt. White Silty SS
85	Gallup SS	Dark Black Shale Med. Gray Med to Coarse SS
90		Med. Gray to Lt. Gray Silty Shale/w minor Limonitic Silty SS
95		Med.-Dark Gray Med to Coarse Qtz SS/W minor dark gray shale - minor coal + Carb. Blk. Shale Minor Feldspar
10[0]		Med.-Dark Gray Med to Coarse Qtz. SS/ w minor dark gray shale Minor Feldspar minor Limonitic Silty SS.

UNC CHURCHROCK

WATER WELL INSTALLATION

WELL NO. 175 page 2

DATE DRILLED 5-23-91

LOCATION - SECTION ____ T ____, R ____	DRILLER ____
COORDINATES - N ____ E ____	DRILLING METHOD ____
ELEVATIONS - GROUND ____ TOP OF PIPE ____	DRILLING MUD ____
DEPTH DRILLED ____	GEOPHYSICAL LOGS ____
DEPTH CASED ____	DEVELOPMENT ____
____ DEPTH TO WATER ____	

DEPTH			LITHOLOGY LOG
			Med. Gray Med to Coarse Qtz SS. /w minor Lt. Gray Shale 3-5% Feldspar Minor Dk. Blk. Shale
105			Med. Gray Med to Coarse Qtz SS + Lt. Gray to Dk Gray Clay Siltstones w/minor Limonitic Silty SS
110			Med. Gray Med to Coarse Qtz SS + Lt. to Med Gray Clay Siltstone - Shale w/minor Limonitic Silty SS
115			Med Gray Med to Coarse Qtz SS w/ 5% Feldspar minor Med Gray Shale
120			Med. Gray Med to Coarse Qtz. SS w/ 5-7% Feldspar ... Gray Shale Coal
125'			Coal Lt. to Med Gray Clay Shale
129½	T.O.		