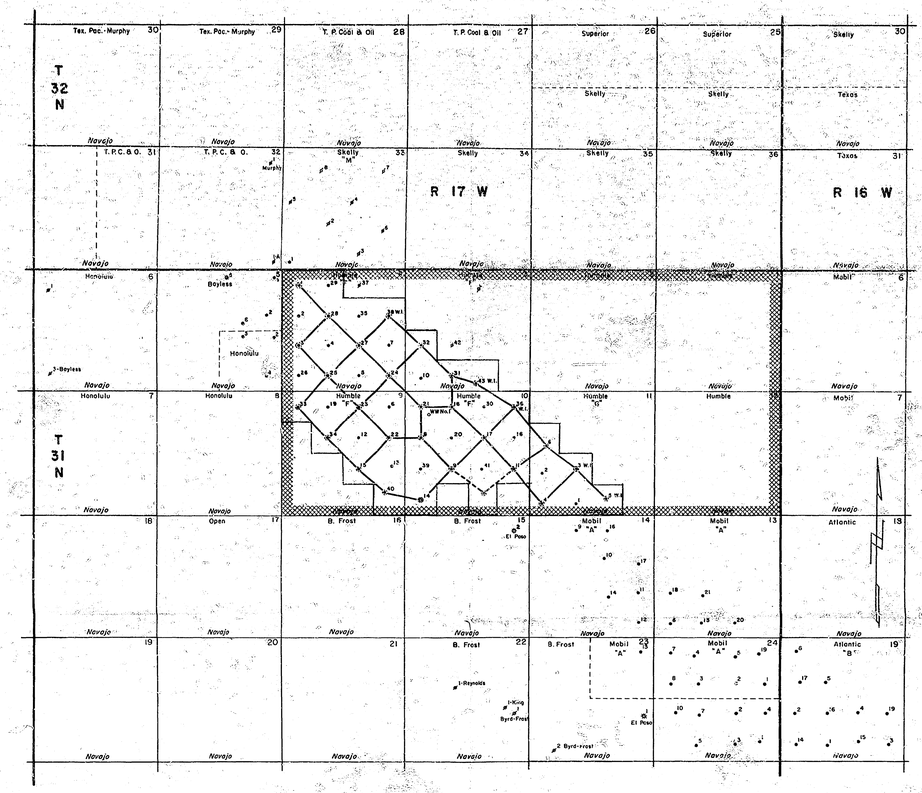
Case No.

2024

Page Exhibits

V.N.N.C.F. MICROGRAPHICS

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— LEGEND —

- Producing Wells
- Proposed Injection Wells
- Proposed Injection Well Location
- Dry & Abandoned
- Abandoned Location
- Gas Well
- Water Supply Well
- Outline of Humble Acreage

— PROPOSED PROJECT AREA

2000 0 2000 4000 6000 Feet

SCALE

PROPOSED WATERFLOOD PATTERN

(HUMBLE ACREAGE)

HORSESHOE GALLUP FIELD

SAN JUAN CO., NEW MEXICO

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
CASE EXHIBIT NO. 4
CASE NO. 2024

W.N.M.C.P. MICROGRAPHICS
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WELEX

INDUCTION-ELECTRIC LOG

COMPANY HUMBLE OIL & REFINING COMPANY
WELL NAVAJO F-24
FIELD CHIMNEY ROCK
COUNTY SAN JUAN STATE NEW MEXICO

Location: 660' FSL 660' FEL
Other Logs: –

Sec. 4 Twp. 31N Rge. 17W

Permanent Datum: 4-1/2' ABOVE GROUND Elev. 5255.5'
Log Measured from: KELLY BUSHING
Drilling Measured from: KELLY BUSHING

Elevation: KB 5255.5' DF 5254.5' GL 5251'

Run No.	ONE
Date	5-24-59
Total Depth Driller	1045'
Total Depth Welex	1048'
Csg. Shoe Driller	48'
Csg. Shoe Welex	52'
Survey Begins	1043'
Survey Ends	52'
Csg. Size	8-1/8"
Bit Size	6-3/4
Mud Data – Type	CHEMICAL
Weight	
Viscosity	
Ph	@ °F @ °F @ °F @ °F
Wtr. Loss cc/ min.	
Res. @ Surface Temp.	1.2 @ 72 °F @ °F @ °F @ °F
Res. @ Max. Hole Temp.	1.1 @ 78 °F @ °F @ °F @ °F
Rmf.	0.9 @ 79 °F @ °F @ °F @ °F
Rmc.	1.2 @ 79 °F @ °F @ °F @ °F
Source Mud Sample	FLOW LINE
Recorded By	BRIGHT
Witnessed By	MR. BOANE
Logging Tool No.	9490

DIVISION PRODUCTION GEOLOGIST
FILE

REMARKS:

Resistivity Curves Recorded
Normal 18"
Lateral
Induction

PRODUCTION

RESISTIVITY OHMS M²/M — CONDUCTIVITY MILLIMHOS/M
18" NORMAL 100 0 — INDUCTION 100 0 — CONDUCTIVITY 0 500

7-5/8" CSG SET @ 52'

100 200 300 400 500 600 700 800 900 1000

POTENTIAL MILLIVOLTS
– – 10 + –

W.R.N.C.P. MICROGRAPHICS
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LOG PREVIEW ONLY
V.L.M.C.P. MICROGRAPHICS

HUMBLE OIL & REFINING COMPANY
NAVAJO NO. F-24
CHIMNEY ROCK FIELD
SAN JUAN COUNTY, NEW MEXICO

T.D. LOGGED - 1043'.
T.D. DRILLED - 1045'.
T.D. REACHED - 1048'.

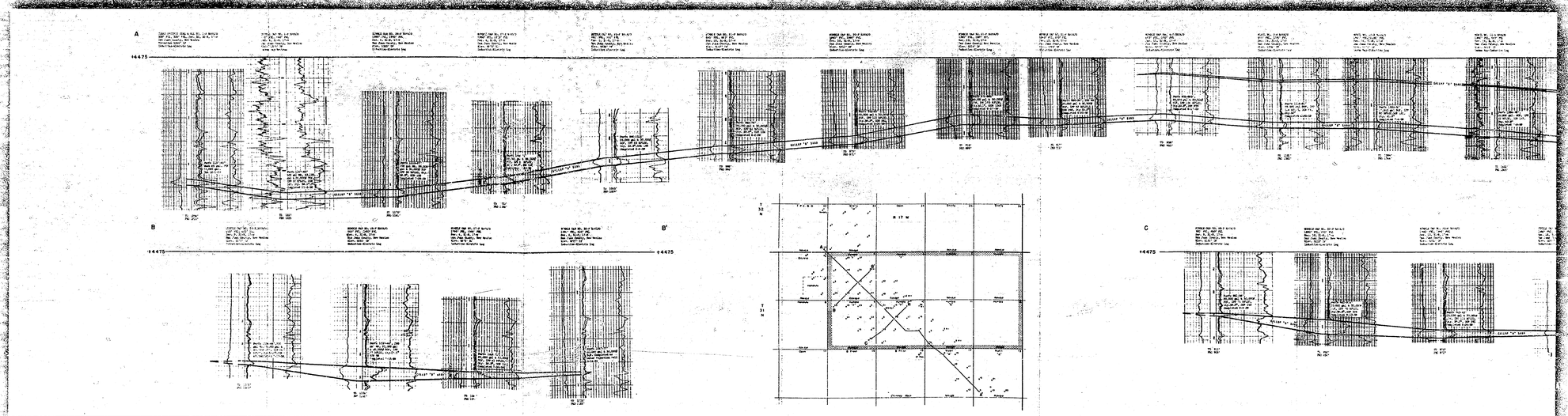
5"=100'

POTENTIAL MILLIVOLTS
-10 +
Rm 1.1 @ 79 °F.

RESISTIVITY OHMS M²/M
0 18" NORMAL 100
0 INDUCTION 100

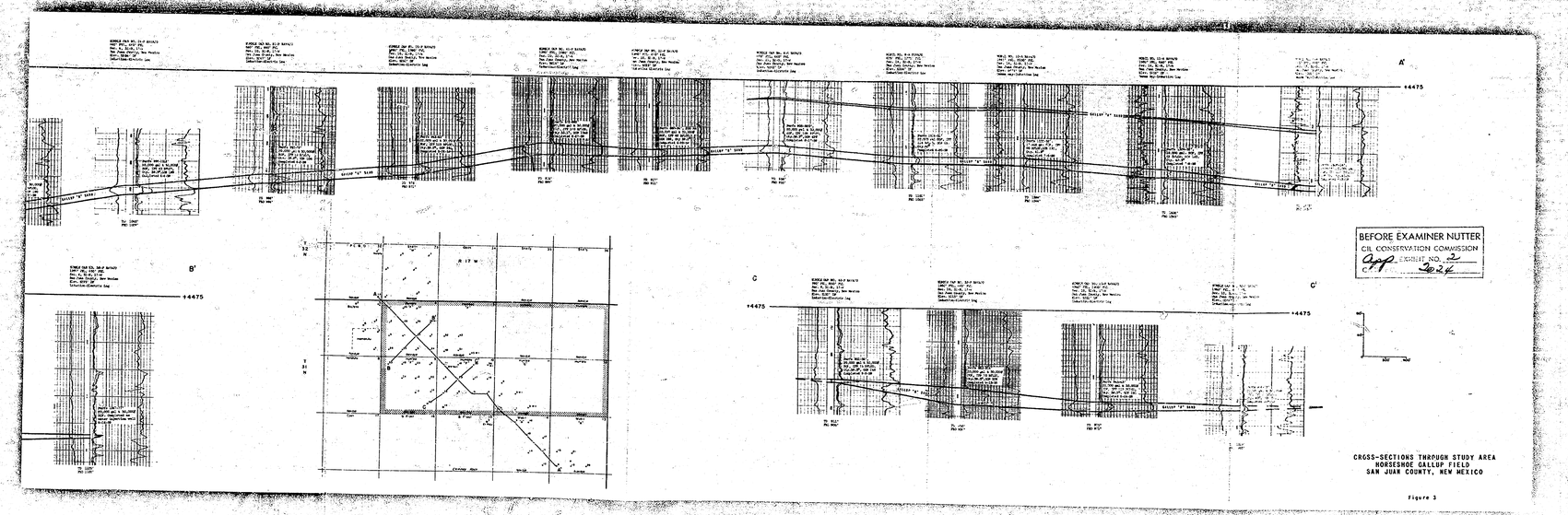
CONDUCTIVITY MILLIMHOS/M
500 CONDUCTIVITY 0

1050
1000
950
900
800
700
600
500



W.R.M.C.F. MICROGRAPHICS

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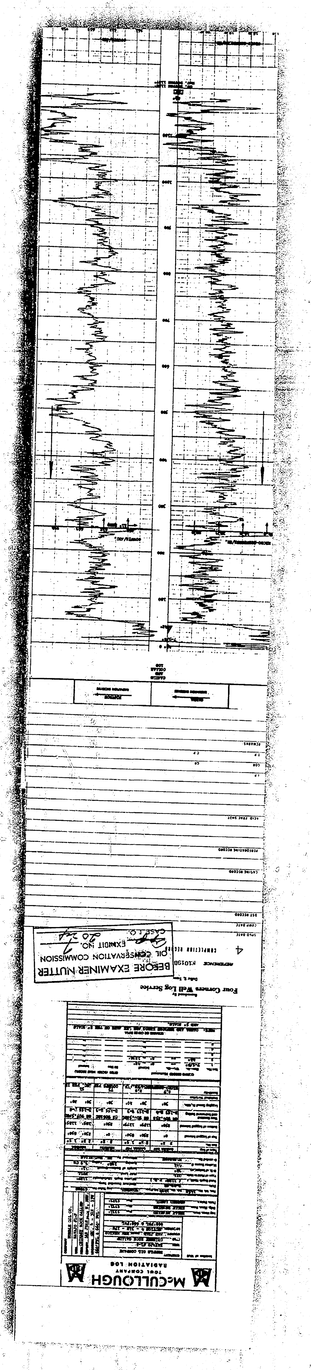


CROSS-SECTIONS THROUGH STUDY AREA
HORSESHOE GALLUP FIELD
SAN JUAN COUNTY, NEW MEXICO

Figure 3

W.N.M.C.P. MICROGRAPHICS

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BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 3
CASE NO. 5

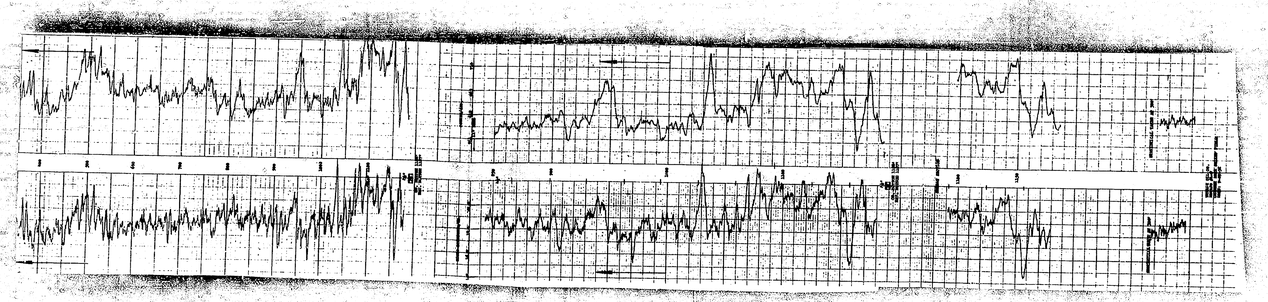
McCULLOUGH
TOOL COMPANY
RADIATION LOG

Four Complete Well Log Service

ADDENDUM #10150 — COMPLETION RECORD — 4

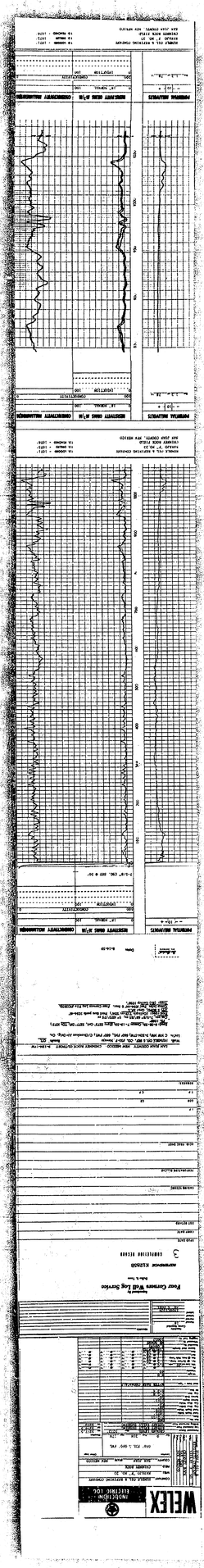
V.N.M.C.F. NOMOGRAPHICS

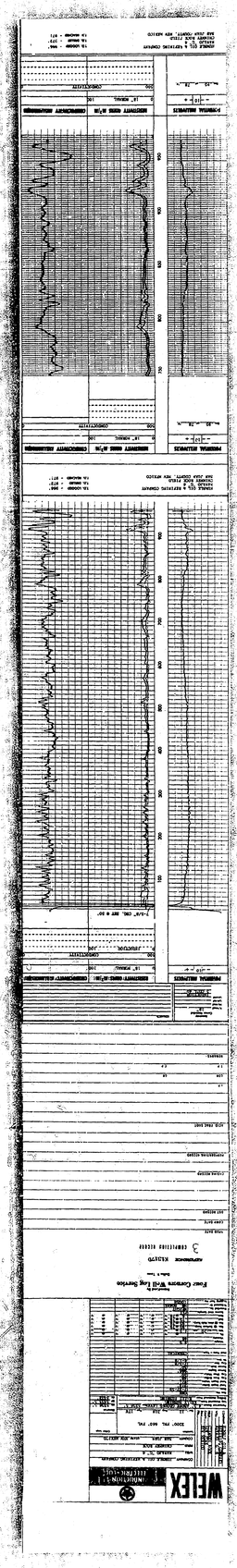
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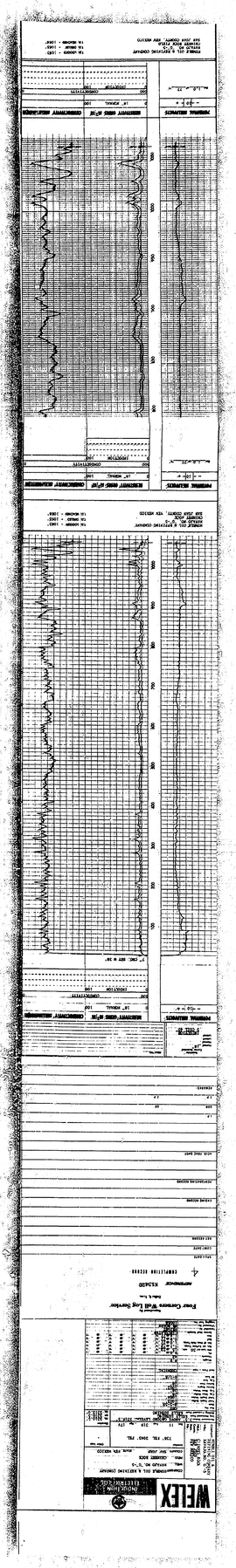
W.N.M.C.F. MICROGRAPHICS

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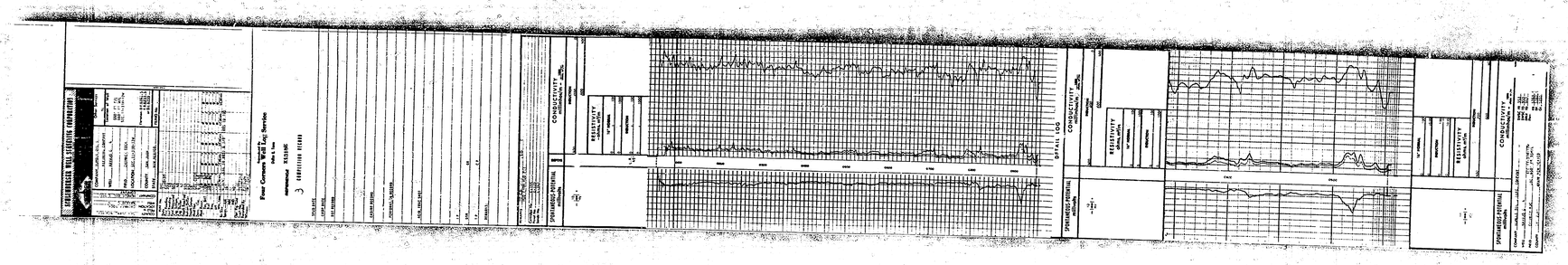

WELEX
INDUCTION
ELECTRIC LOG
COMPANY: JORDAN OIL & GASSING COMPANY
WELL: ROSALIE "B" NO. 20
FIELD: CYPRESS ROCK
COUNTY: SAN JUAN STATE: NEW MEXICO
API NO.: 30-045-29-0001
OTHER SERVICES: GR-CCL-CBL
LOCATION: 1650' FSL & 1650' FWL
SEC. 20 TWP. 29 N RGE. 13 W
PERMANENT DATUM: GROUND LEVEL
ELEV.: K.B. 5,678' D.F. G.L. 5,665'
LOG MEASURED FROM: K.B. 13' ABOVE PERM. DATUM
DRILLING MEASURED FROM: K.B.
DATE: 10-15-2000
RUN NO.: ONE
TYPE LOG: CBL-VDL-GR
DEPTH-DRILLER: 2,000'
DEPTH-LOGGER: 1,998'
BTM. LOG INTERVAL: 1,998'
TOP LOG INTERVAL: SURFACE
CASING-DRILLER: 5-1/2" @ 2,000'
CASING-LOGGER: 1,998'
BIT SIZE: 7-7/8"
TYPE FLUID IN HOLE: WATER
DENS.: 8.4 LB/GAL VISC.: 28 SEC
PH: 7.0 FLUID LOSS: 10 ML
SOURCE OF SAMPLE: CIRCULATED
RM @ MEAS. TEMP.: 0.25 @ 70°F
RMF @ MEAS. TEMP.: 0.20 @ 70°F
RMC @ MEAS. TEMP.: 0.30 @ 70°F
SOURCE: RMF: MEASURED RMC: CALCULATED
RM @ BHT: 0.12 @ 120°F
TIME SINCE CIRCULATION: 12 HRS
MAX. REC. TEMP.: 120°F
EQUIP. LOCATION: 3407
RECORDED BY: R. SCHULTZ
WITNESSED BY: MR. JOHNSON
RUN NO.: ONE
BOTTOM DRILLER: 1,998'
TOP LOG: SURFACE
CASING DRILLER: 1,998'
BIT SIZE: 7-7/8"
REMARKS: RUN WITH 5-1/2" CENTRALIZERS @ 1,998', 1,900', 1,800', 1,700', 1,600', 1,500', 1,400', 1,300', 1,200', 1,100', 1,000', 900', 800', 700', 600', 500', 400', 300', 200', 100'




W.E.L.E.X. INCORPORATED
LOG ANALYSIS UNIT

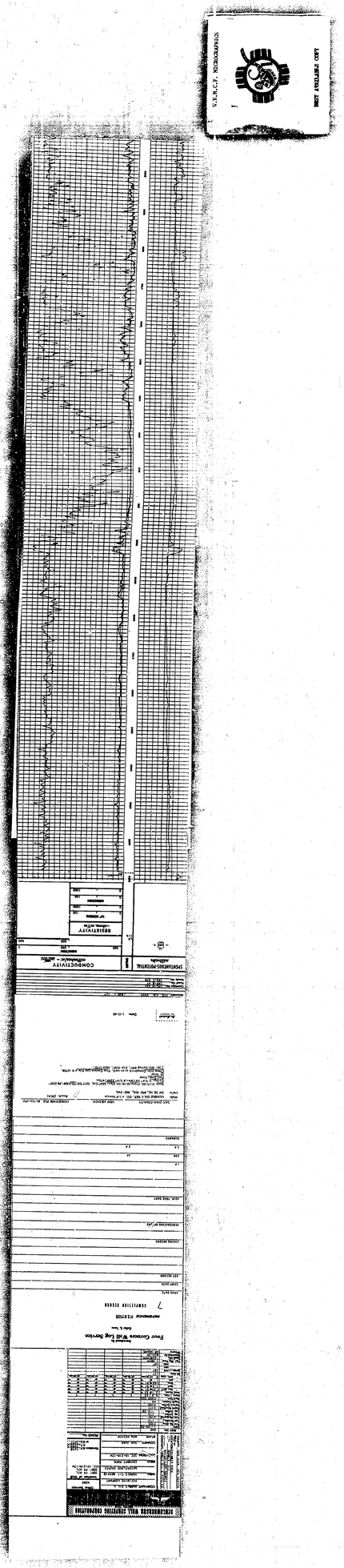

WELEX
Four Centuries Well Log Service
COMPLETION RECORD
1" DUAL IND
1" DUAL LAT
1" SNP
1" DEN
1" CNL
1" SONIC
1" DIP
1" CBL
1" MICRO
1" DIL
1" GR
1" CAL
1" SP
1" RES
1" TEMP
1" PROX
1" DIFF TEMP
1" CONT
1" CORR
1" PERF
1" TDT
1" PRESS
1" FLOW
1" CCL
1" GAMMA
1" NEUTRON
1" CEMENT
1" TRACER
1" PACKER
1" TUBING
1" CASING
1" LINER
1" SCREEN
1" PERFORATIONS
1" OPEN HOLE
1" CORE
1" DST
1" SIDEWALL
1" MUD
1" WATER
1" GAS
1" OIL
1" SHOW
1" DRY
1" TEST
1" PRODUCTION
1" INJECTION
1" ABANDONMENT
1" SQUEEZE
1" ACID
1" FRAC
1" SAND
1" GRAVEL
1" CEMENT
1" PLUG
1" BRIDGE
1" WHIPSTOCK
1" FISH
1" JUNK
1" MILL
1" REAM
1" CORE
1" DST
1" SIDEWALL
1" MUD
1" WATER
1" GAS
1" OIL
1" SHOW
1" DRY
1" TEST
1" PRODUCTION
1" INJECTION
1" ABANDONMENT
1" SQUEEZE
1" ACID
1" FRAC
1" SAND
1" GRAVEL
1" CEMENT
1" PLUG
1" BRIDGE
1" WHIPSTOCK
1" FISH
1" JUNK
1" MILL
1" REAM

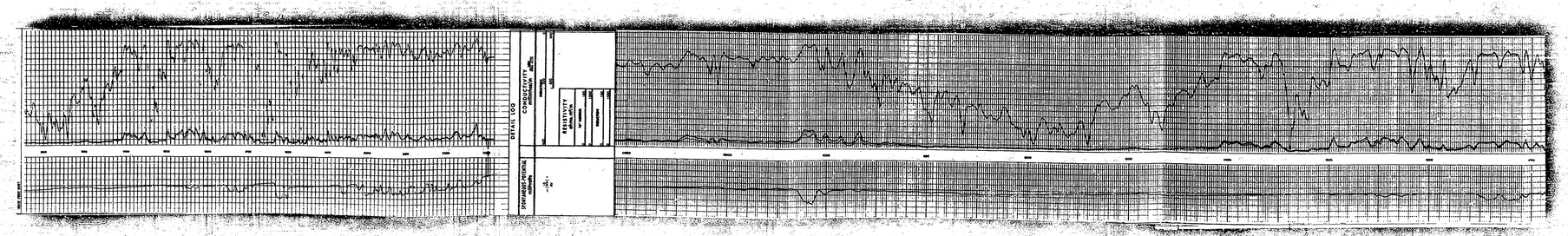

N.M.O.G.C.C. RECORDS
NOV 30 1971
HOBBS, OFFICE



M.N.N.C.P. MICROGRAPHICS

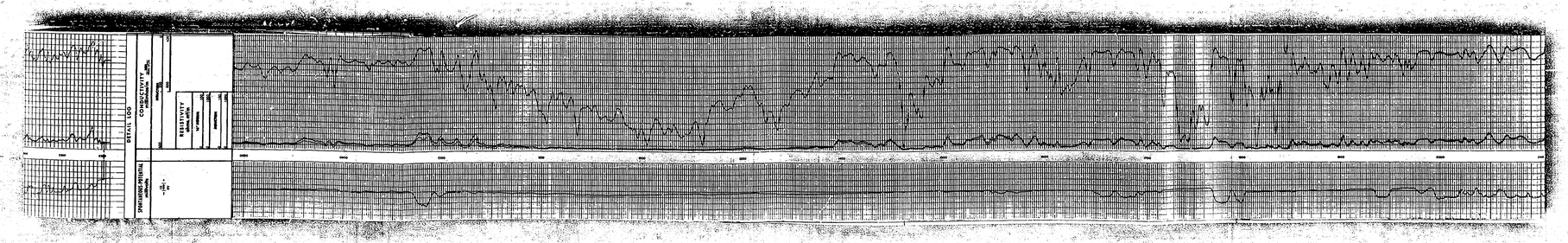
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Four Corners Well Log Services
COMPUTATION RECORD
SPONTANEOUS-POTENTIAL
RESISTIVITY
CONDUCTIVITY
INDUCTION LOG
Dual Induction Laterolog
Borehole Compensated Sonic Log
Gamma Ray-Neutron
Compensated Neutron-Formation Density
Dipmeter
Four Arm High Resolution Continuous Dipmeter
Cyberlook
Repeat Formation Tester
Cement Bond Log
Variable Density
Gamma Ray
Casing Collar Log
Perforating Record
Directional Survey
Gyroscopic Survey
Temperature Survey
Caliper Survey
Cement Volume Log
Mud Log
Core Analysis
Drill Stem Test
Fluid Sample Data
Other Services
Run No.
Date
Depth-Driller
Depth-Logger
Bottom Logged Interval
Top Logged Interval
Type Fluid in Hole
Salinity, PPM Cl
Density
Level
Max. Rec. Temp. Deg. F
Operating Rig Time
Recorded By
Witnessed By
Borehole Record
Bit
From
To
Casing Record
Size
Wgt.
Depth
Type Joint
Top Cement
Bottom Cement
Tool Type
Serial No.
Location
Standoff
Resistivity
Time Constant
Gain
Position
Conductivity
Time Constant
Gain
Position
Spontaneous Potential
Position
Remarks
Rig Name
Source of Sample
R_m @ Meas. Temp.
R_mf @ Meas. Temp.
R_mc @ Meas. Temp.
Source of R_mf & R_mc
R_m @ BHT
Time Since Circ.
Max. Rec. Temp. Deg. F
Equip. Location
Recorded By
Witnessed By
Run No.
Tool
Type Log
Depth-Driller
Depth-Logger
Bottom Logged Interval
Top Logged Interval
Type Fluid in Hole
Salinity, PPM Cl
Density
Level
Max. Rec. Temp. Deg. F
Operating Rig Time



W.R.M.C.P. MICROGRAPHICS

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U.S.N.C.F. MICROGRAPHICS

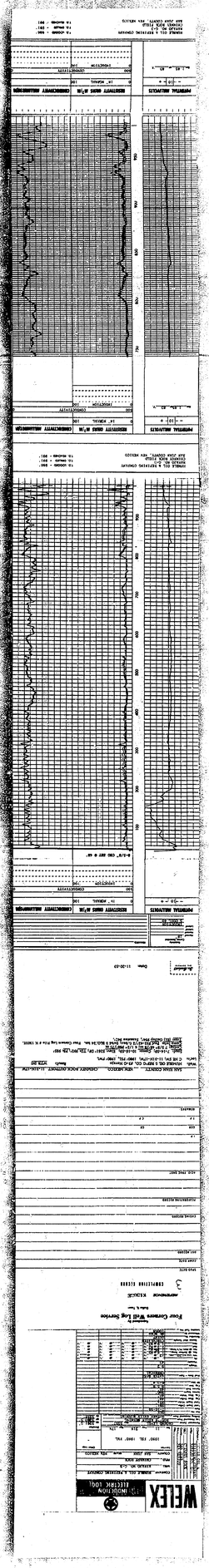
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V.R.M.G.F. MICROGRAPHICS

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WELEX
INDUCTION
ELECTRIC LOG
Four Cheeves Well Log Service
Four Cheeves Well Log Service
COMPLETION CARDS
3
Four Cheeves Well Log Service
Four Cheeves Well Log Service
Four Cheeves Well Log Service

WELEX

INDUCTION-ELECTRIC LOG

Company: HUMBLE OIL & REFINING COMPANY
Well: NAVAJO NO. "F"-43
Field: CHIMNEY ROCK
County: SAN JUAN State: NEW MEXICO

3310' FEL 330' FSL

Elev.: K.B. 6996' D.F. 6995' G.L. 6986'

Permanent Datum: G.L. Log Measured From: K.B. 10' Above Perm. Datum

Date	7-4-57
Run No.	One
Depth-Driller	5310'
Depth-Logger	5308'
Bottom Logged Interval	5308'
Top Logged Interval	2150'
Type Fluid in Hole	FRESH WATER
Salinity, PPM Cl	
Density	8.4 LB/GAL
Level	FULL
Max. Rec. Temp. Deg. F.	120°
Operating Time	7 HRS
Recorded By	MC COY
Witnessed By	TYNER

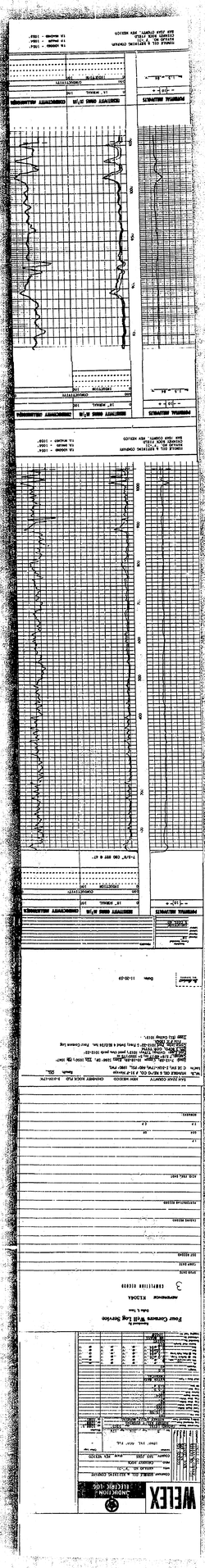
Run No. One
Type Log: IES
Depth-Driller: 5310
Depth-Logger: 5308
Bottom Logged Interval: 5308
Top Logged Interval: 2150
Type Fluid in Hole: FRESH WATER
Salinity, PPM Cl:
Density: 8.4 LB/GAL
Level: FULL
Max. Rec. Temp. Deg. F.: 120°
Operating Time: 7 HRS
Recorded By: MC COY
Witnessed By: TYNER

Surface Temp. 70° F
Bottom Hole Temp. 120° F

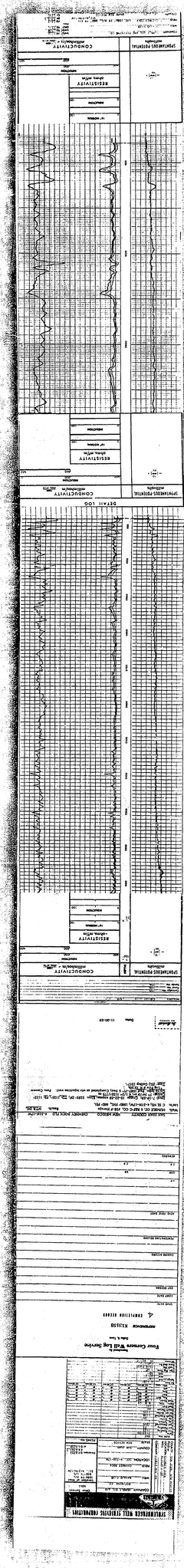
Measured From K.B. 10' Above Perm. Datum

Elev.: K.B. 6996' D.F. 6995' G.L. 6986'

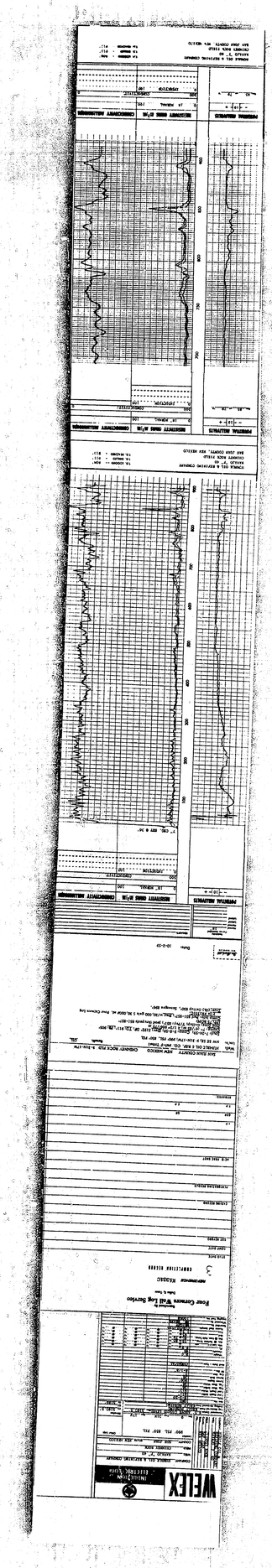
Permanent Datum: G.L. Log Measured From: K.B. 10' Above Perm. Datum

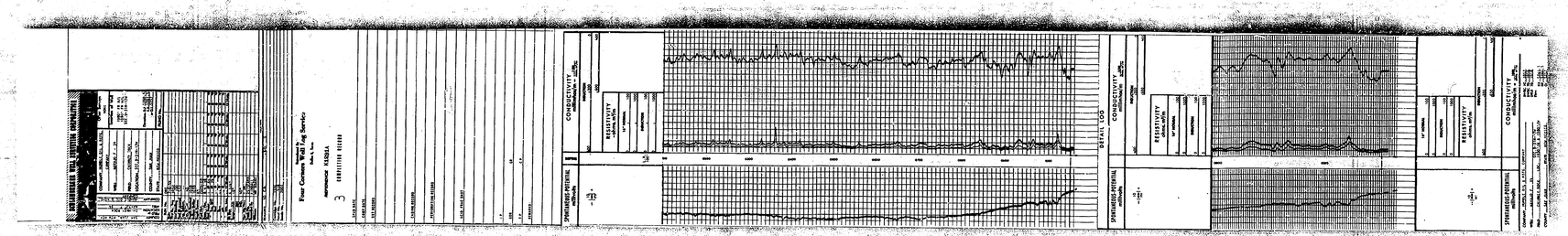

WELEX
JUNCTION
ILLINOIS 105
Power Cementing Multi-Leg Shoe/Collar
Duke L. Tool
COMPLETION RECORD
3
Date 11-20-19


LOST CREEK ZONE
U.W.K.C.F. MICROGRAPHICS


DETAIL LOG
SPONTANEOUS POTENTIAL
millivolts
CONDUCTIVITY
millimhos/m
millimhos
RESISTIVITY
ohms m²/m
16" normal
64" normal
SPONTANEOUS POTENTIAL
millivolts
CONDUCTIVITY
millimhos/m = millimhos
millimhos
RESISTIVITY
ohms m²/m
16" normal
64" normal
Dwight's
Four Common Well Log Service
Suite 1, Texas
A COMPUTATION RECORD
RESISTANCE
Date
Run No.
Depth-Driller
Depth-Logger
Bottom Log Interval
Casing Driller
Casing Logger
Bit Record
Type Fluid in Hole
Density
Viscosity
pH
Fluid Loss
Source of Sample
Rm @ Meas. Temp.
Rmf @ Meas. Temp.
Rmc @ Meas. Temp.
Source of Rmf
Source of Rmc
Rm @ BHT
Time Since Circ.
Max. Rec. Temp.
Equip. No.
Location
Recorded By
Witnessed By
SAN JUAN COUNTY
NEW MEXICO
CHARGE FACILITY
4-15N-13W
Well
MONROE OIL & REFG. CO. #4 Federal
Field
C SE NE 4-15N-13W 1980' FNL 660' FEL
Other Services
SGR-SP-DLL-MSFL
Permanent Datum
GL
Elev.
Log Measured from
KB
Ft. Above Perm. Datum
Drlg. Measured from
KB
Date
11-26-69
Run No.
ONE
Depth-Driller
5180
Depth-Logger
5178
Bottom Log Interval
5178
Casing Driller
8 5/8" @ 1200'
Casing Logger
1200'
Bit Record
7 7/8"
Type Fluid in Hole
Gel Chem
Density
10.0
Viscosity
45
pH
10.5
Fluid Loss
8.0
Source of Sample
Flowline
Rm @ Meas. Temp.
1.10 @ 70°F
Rmf @ Meas. Temp.
.85 @ 70°F
Rmc @ Meas. Temp.
1.40 @ 70°F
Source of Rmf
Flowline
Source of Rmc
Flowline
Rm @ BHT
.60 @ 130°F
Time Since Circ.
12 hrs.
Max. Rec. Temp.
130°F
Equip. No.
1110
Location
C SE NE 4-15N-13W 1980' FNL 660' FEL
Recorded By
Witnessed By
Mr. Jones
Run No.
Depth-Driller
Depth-Logger
Bottom Log Interval
Casing Driller
Casing Logger
Bit Record
Type Fluid in Hole
Density
Viscosity
pH
Fluid Loss
Source of Sample
Rm @ Meas. Temp.
Rmf @ Meas. Temp.
Rmc @ Meas. Temp.
Source of Rmf
Source of Rmc
Rm @ BHT
Time Since Circ.
Max. Rec. Temp.
Equip. No.
Location
Recorded By
Witnessed By
Mr. Jones
Run No.
Depth-Driller
Depth-Logger
Bottom Log Interval
Casing Driller
Casing Logger
Bit Record
Type Fluid in Hole
Density
Viscosity
pH
Fluid Loss
Source of Sample
Rm @ Meas. Temp.
Rmf @ Meas. Temp.
Rmc @ Meas. Temp.
Source of Rmf
Source of Rmc
Rm @ BHT
Time Since Circ.
Max. Rec. Temp.
Equip. No.
Location
Recorded By
Witnessed By
Mr. Jones
Run No.
Depth-Driller
Depth-Logger
Bottom Log Interval
Casing Driller
Casing Logger
Bit Record
Type Fluid in Hole
Density
Viscosity
pH
Fluid Loss
Source of Sample
Rm @ Meas. Temp.
Rmf @ Meas. Temp.
Rmc @ Meas. Temp.
Source of Rmf
Source of Rmc
Rm @ BHT
Time Since Circ.
Max. Rec. Temp.
Equip. No.
Location
Recorded By
Witnessed By
Mr. Jones
STRATIGRAPHIC WELL SERVICES CORPORATION
COMPANY MONROE OIL & REFG. CO.
WELL #4 Federal
FIELD C SE NE 4-15N-13W
COUNTY San Juan
STATE New Mexico
Permanent Datum: GL
Elev.: K.B.
Log Measured from: KB
Ft. Above Perm. Datum
Drlg. Measured from: KB
Date: 11-26-69
Run No.: ONE
Depth-Driller: 5180
Depth-Logger: 5178
Bottom Log Interval: 5178
Casing Driller: 8 5/8" @ 1200'
Casing Logger: 1200'
Bit Record: 7 7/8"
Type Fluid in Hole: Gel Chem
Density: 10.0
Viscosity: 45
pH: 10.5
Fluid Loss: 8.0
Source of Sample: Flowline
Rm @ Meas. Temp.: 1.10 @ 70°F
Rmf @ Meas. Temp.: .85 @ 70°F
Rmc @ Meas. Temp.: 1.40 @ 70°F
Source of Rmf: Flowline
Source of Rmc: Flowline
Rm @ BHT: .60 @ 130°F
Time Since Circ.: 12 hrs.
Max. Rec. Temp.: 130°F
Equip. No.: 1110
Location: C SE NE 4-15N-13W 1980' FNL 660' FEL
Recorded By
Witnessed By: Mr. Jones

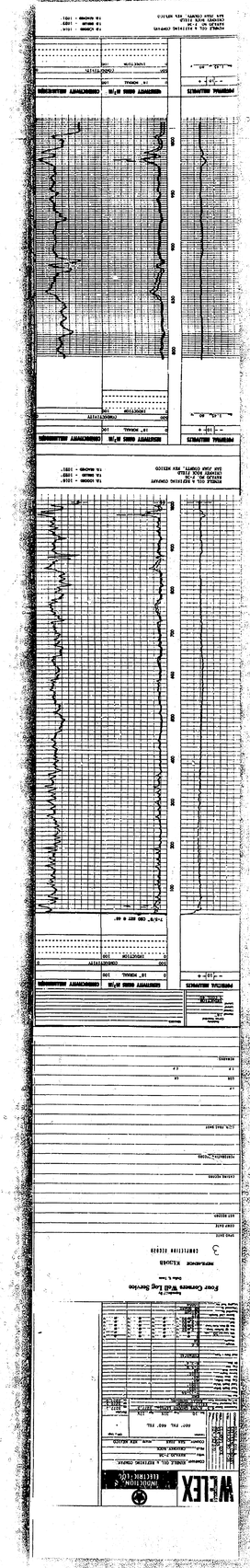

U.S.G.S. RECORDING
LOG JOURNAL 1968

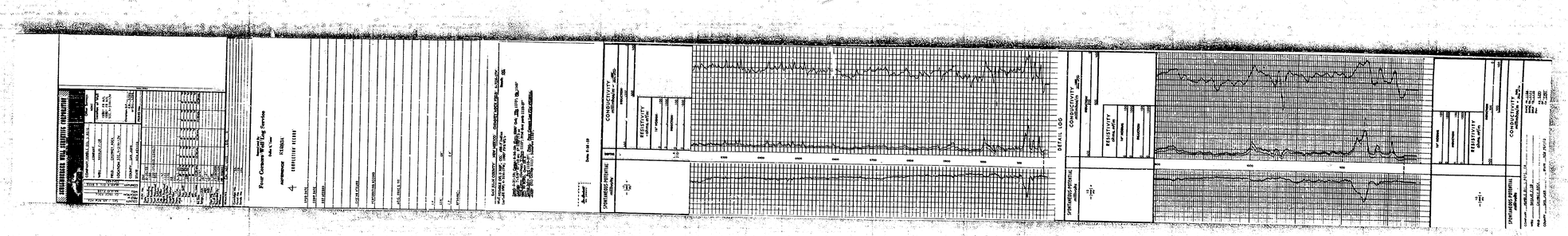




V.N.M.C.P. MICROGRAPHICS

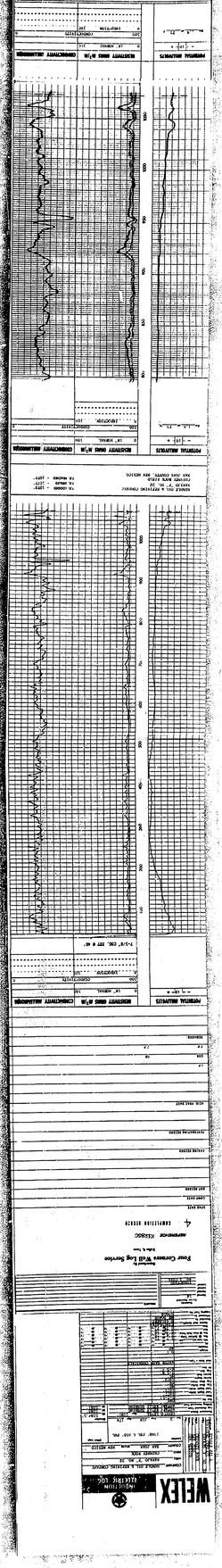
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WELEX
MONTAIGNE
ELECTRONIQUE
Four Coverage Well Log Service
Data & Time
REFERENCE K13049
COMPLETION RECORD
ENGINEER
LOGGING UNIT
CASING
CASING SIZE
BIT RECORD
FIELD
COUNTY
STATE
LOCATION
SECTION
TOWNSHIP
RANGE
PERMANENT DATUM
ELEVATION
LOG MEASURED FROM
DRILLING MEASURED FROM
DATE
RUN NO.
DEPTH DRILLER
DEPTH LOGGER
BTM LOG INTER
TOP LOG INTER
CASING DRILLER
CASING LOGGER
BOTTOM LOG INTERVAL
TOP LOG INTERVAL
TYPE FLUID IN HOLE
DENS VISC
PH FLUID LOSS
SOURCE OF SAMPLE
RM @ MEAS TEMP
RMF @ MEAS TEMP
RMC @ MEAS TEMP
SOURCE RMF RMC
RM @ BHT
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4. COMPLETION RECORD


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