

GJ3X-56

PLATE 3
BIRWELL GAMMA-RAY NEUTRON LOG

COMPANY USCS - ERDA
WELL PH-1
FIELD PEDRO MOUNTAIN
COUNTY CARBON
STATE WYOMING

LOG MEASURED FROM TOP OF CASING 1.9' Above From Bottom
DRAINAGE MEASURED FROM T.O.C.

SEC. 17
TWP. 27N
R6R. 83W

COORDINATES
SE 1/4
SE 1/4
NW 1/4
NE 1/4

DATE 11 MAY 76

LOG NO. ONE
DRILLER GS-SNL
LOG NO. 21521
WELL LOG NO. 21551

TYPE LOG, INSTR. 01
TYPE RUN, IN HOUR N/A
START TIME N/A
STOP TIME N/A
LOG TIME 2:10

OPER. BY HASTINGS
RECORDED BY J. STUCKLEZ

LOG LOCATION GRAND JUNCTION
LOG NO. ONE

CASING RECORD
FROM 0' TO 1.9'
SIZE 4" O.D.
DATE 1957
T.D. 170'

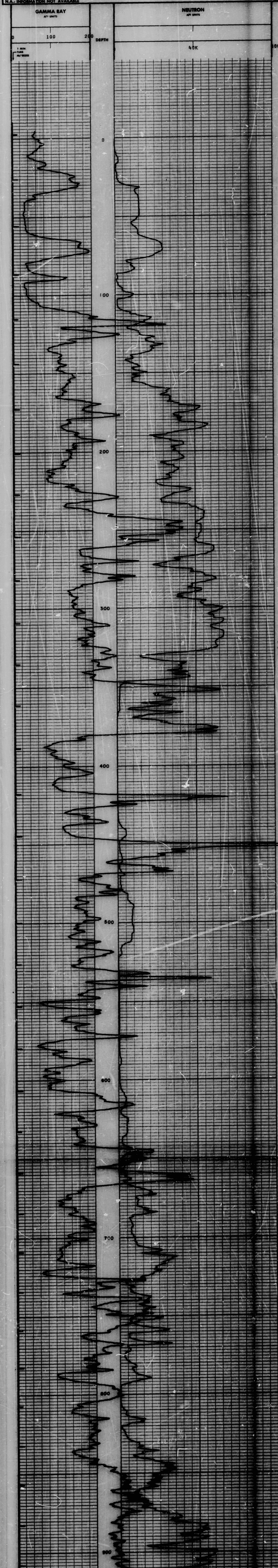
DATE 1957
BY T.D.

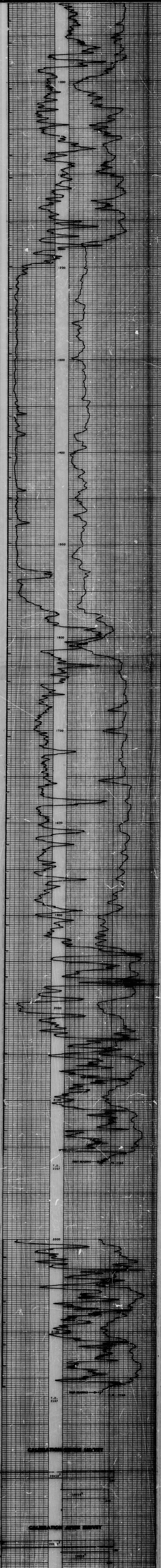
| EQUIPMENT DATA | | | |
|------------------------|-----------|-------------------|-----------|
| GAMMA RAY | | NEUTRON | |
| RUN NO. | ONE | RUN NO. | ONE |
| TOOL MODEL NO. | LALA-8001 | TOOL TYPE | NHL |
| TOOL SERIAL NO. | | TOOL MODEL NO. | LALA-800 |
| DIAMETER | 1" / 16 | TOOL SERIAL NO. | |
| DETECT. MODEL NO. | E-1055 | DIAMETER | 1" / 16 |
| TYPE | SCINT. | DETECT. MODEL NO. | E-1031 |
| LENGTH | 2.5" | TYPE | JES GH |
| DIST. TO H. SOURCE | 101" | LENGTH | 6" |
| | GENERAL | SOURCE MODEL NO. | LABA 3001 |
| TRUCK NO. | 3016 | SERIAL NO. | 287 |
| SERVICE ORDER/INV. NO. | | SPACING | 15.4" |
| | | TYPE | PURBE |
| | | STRENGTH-M/SEC | 62X107 |

| LOGGING DATA | | | | | | | | | | |
|--------------|-------|---------|----|---|-----------|---------------|-----|------------|-----------|--------------|
| GAMMA RAY | | | | | NEUTRON | | | | | |
| RUN NO. | | GENERAL | | | ZERO DIV. | API GR. UNITS | TC | CPM | ZERO DIV. | API H. UNITS |
| | | DEPTH | | | L. OR R. | PER LOG DIV. | SEC | FULL SCALE | L. OR R. | PER LOG DIV. |
| 1 | 2157' | 0' | 25 | 3 | 20X10 | -0- | 20 | 3 | 40X10 | -0- |
| | | | | | | | | | | N/A |

REFERENCE LITERATURE:
REMARKS: THIS WORK WAS PERFORMED UNDER UNITED STATES ATOMIC ENERGY COMMISSION BY-PRODUCT MATERIAL LICENSE NO. 38-05651-01 AND SPECIAL NUCLEAR MATERIALS LICENSE NO. 59A-143

N.A.: INFORMATION NOT AVAILABLE





CALIBRATION AFTER SURVEY



CALIBRATION DATA

| | | | | | | | |
|----------|----------------|-------|-------|----------|--------------|------|-----------|
| COMPANY | USGS - ERDA | WELL | PM-1 | LOCATION | RED MOUNTAIN | DATE | 11 MAY 76 |
| WELL | PM-1 | DEPTH | 2157' | STATE | WYOMING | DATE | 11 MAY 76 |
| LOCATION | SE 1/4, SE 1/4 | SEC. | 17 | TMP. | 27N, RGE. | 83W | |
| COUNTY | CARBON | BLV. | N/A | D.S. | N/A | | |
| STATE | WYOMING | | | | | | |

BIRDWELL DENSITY LOG

COMPANY USGS - ERDA
 WELL PM - 1
 FIELD PEDRO MOUNTAIN
 COUNTY CARBON STATE WYOMING
 LOCATION SE 1/4, SE 1/4
 SEC. 17 TWP. 27N RGE. 83W
 ELEV. N/A
 BIRDMOUNT DATUM GROUND LEVEL
 LOG MEASURED FROM TOP OF CASTING 1.5 ft. above perm. datum
 CALIBRATION MEASURED FROM T.O.C.
 DATE 11 MAY 76
 RUN NO. ONE
 TOOL SERIAL NO. 7
 DIAMETER 1-5/8"
 SUB 8
 DETECT. MODEL NO. CA1
 LOG NO. 1937
 DX 1937
 TO 1937
 FROM 1937
 SIZE 1/2"
 WT. 0.1
 CPM 0
 TO 1937
 FROM 1937
 SIZE 1/2"
 WT. 0.1
 CPM 0

GAMMA-GAMMA EQUIPMENT DATA

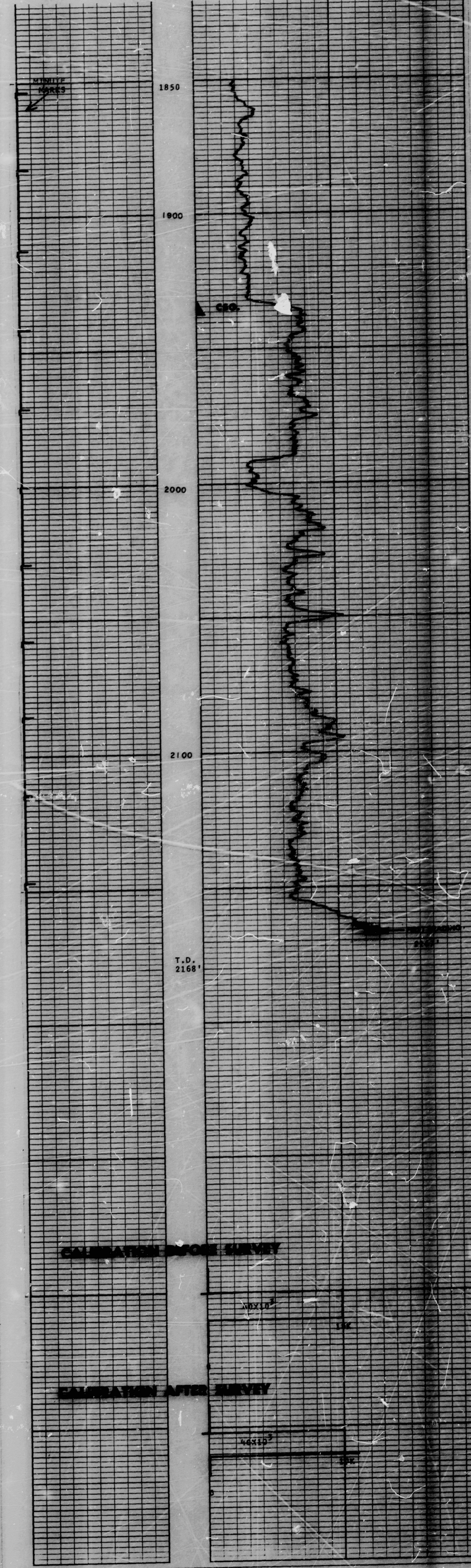
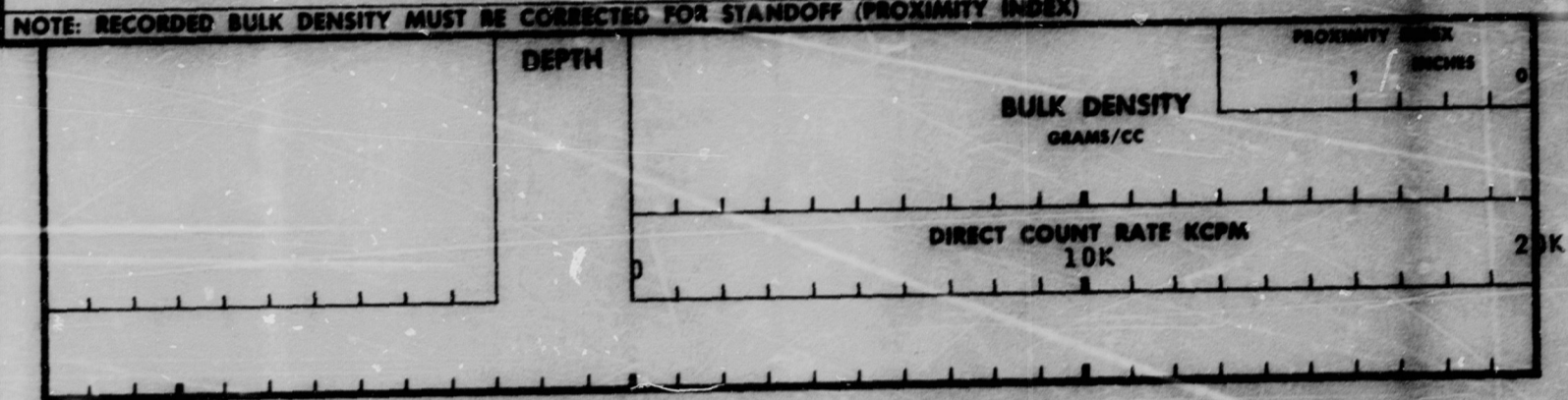
| | | | |
|-------------------|------------|---------------------|--------------------|
| RUN NO. | ONE | TOOL SPACING | 29" |
| TOOL MODEL NO. | L AHA-7001 | SOURCE NO. | S 287 CE 137 200 K |
| TOOL SERIAL NO. | 7 | BENTON IOD. IOD. | N/A |
| DIAMETER | 1-5/8" | DISTANCE B OR B' | N/A |
| SUB | 8 | NOMINAL HOLES DIAM. | 2.3" |
| DETECT. MODEL NO. | CA1 | THICKNESS | 1.016 |

GAMMA-GAMMA LOGGING DATA

| RUN NO. | DEPTHS FROM TO | SPEED MIN | TC SEC | CPM FULL SCALE | DIRECT CPM/DIV. | LINEAR GMS/DIV. | PRIMARY REFERENCE |
|---------|----------------|-----------|--------|----------------|-----------------|-----------------|--|
| 1 | 2137' 1850' | 30 | 2 | 40X10 | 1K | N/A | WATER 1.00 G/CC ICE 0.92 G/CC AIR 1.29 G/CC SOIL 1.60 G/CC SAND 1.65 G/CC GRAVEL 1.65 G/CC CLAY 1.60 G/CC SILT 1.40 G/CC SANDSTONE 1.60 G/CC LIMESTONE 2.70 G/CC GYP 2.30 G/CC ANTRACITE 1.30 G/CC COAL 1.20 G/CC BITUMEN 1.20 G/CC OIL 0.85 G/CC SOLUBLE SALTS 2.17 G/CC |

REMARKS: THIS WORK WAS PERFORMED UNDER UNITED STATES ATOMIC ENERGY COMMISSION BY-PRODUCT MATERIAL LICENSE NO. 25-9451-1

NOTE: RECORDED BULK DENSITY MUST BE CORRECTED FOR STANDOFF (PROXIMITY INDEX)

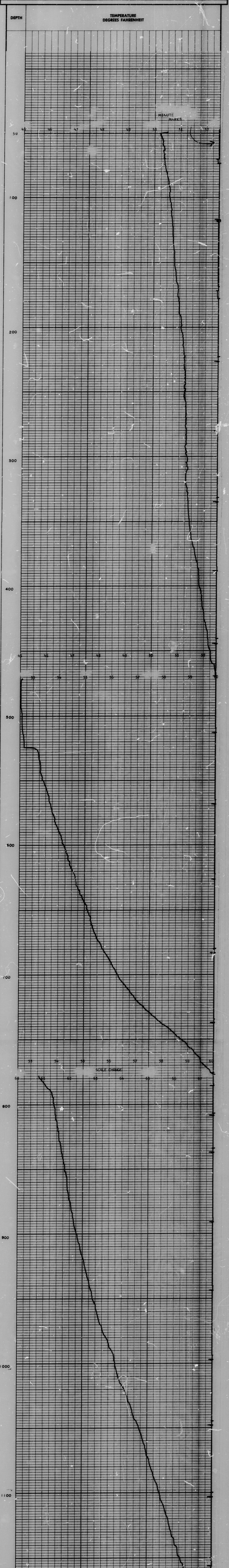


CALIBRATION DATA

| | | | |
|----------|-----------------------------|-----------|------------|
| COMPANY | USGS - ERDA | DRAWER | T.D. 2197' |
| WELL | PM - 1 | BIRDMOUNT | T.D. 2168' |
| FIELD | PEDRO MOUNTAIN | BIRDMOUNT | P.R. 2167' |
| LOCATION | SE 1/4, SE 1/4 | ELEV. | K.A. N/A |
| | SEC. 17, TWP. 27N, RGE. 83W | D.F. | N/A |
| COUNTY | CARBON | O.I. | N/A |
| STATE | WYOMING | DATE | 11 MAY 76 |

| | | | |
|--|------------|-------------------------------------|----------------|
| BIRDWELL | | PLATE 5 BIRDWELL TEMPERATURE LOG | |
| COMPANY LOGS - ERDA | | WELL PH-1 | |
| FIELD PEDRO MOUNTAIN | | STATE WYOMING | |
| LOCATION: SE 1/4 | SEC. 17 | NE 1/4 | OTHER SERVICES |
| TW. 27N | 1.5 | RD 83W | LOGS GR. HOLE |
| | | 1.5 | ES. HOLE |
| | | | REV. K.A. |
| | | | REV. D.F. |
| | | | Q.L. W/A |
| PERMANENT DATUM, GROUND LEVEL | | | |
| LOG MEASURED FROM 1.0' C. - 1.5' F. ABOVE PUMP DRAIN | | | |
| DRILLING MEASURED FROM TOP OF CASING | | | |
| DATE 11 MAY 76 | | | |
| RUN NO. ONE | | | |
| TYPE LOG TL | | | |
| DEPTH - DIALER 2137' | | | |
| DEPTH - LOGGER NOT REACHED | | | |
| BLM LOG INSTR. 15181 | | | |
| TYPE FLUID IN HOLE 200 | | | |
| SALINITY PPM CL. N/A | | | |
| DENSITY LB./GAL. 5.09 | | | |
| LEVEL 7.19 | | | |
| MAX REC. TEMP. - F. 1 HR. 51.2 | | | |
| REC'D BY TIME 1 HR. 51.2 | | | |
| WITNESSED BY ERAND JCL | | | |
| LOCATION | | | |
| BORE HOLE RECORD | | CASING RECORD | |
| RUN NO. 1 | DATE 1957 | SIZE 18-1/2 | TO 18-5 |
| BIT DIA. 133/16 | TYPE 1.8-D | WT. 0.1 | FROM 17.0 |
| | | | TO 133/16 |

| | | | |
|-----------------------------------|--|--|--|
| EQUIPMENT DATA | | WELL DATA | |
| TYPE LOG TL | | TYPE WELL | |
| RUN NO. ONE | | RUN NO. | |
| TOOL MODEL NO. LDH6010 | | PROD. GR. INJ. RATE | |
| TOOL SERIAL NO. STD | | WELL HEAD PRESSURE | |
| DIAM. 1-5/8" | | TYPE & AMT. CEMENT | |
| SPEED FT./MIN. 60 | | LENGTH OF TIME | |
| T.C.-SEC. N/A | | PROD. OR INJECTING | |
| SCALE 12=6 DIV | | SHUT IN SINCE CEMENTING | |
| GENERAL | | PURPOSE OF SURVEY DETERMINE TEMP OF ALL POINTS IN BOREHOLE | |
| TRUCK NO. 3016 | | | |
| SERVICE ORDER/INV. NO. | | | |
| REMARKS: N.A. Means not available | | | |





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CALIBRATION DATA

| | | | |
|----------|---|----------|------------------|
| COMPANY | USGS - ERDA | DRILLER | T.D. 2197' |
| WELL | PM-1 | BIRDWELL | T.D. NOT REACHED |
| FIELD | PEDRO MOUNTAIN | BIRDWELL | F.R. 1518' |
| LOCATION | SE 1/4, SE 1/4 SEC. 17, TWP. 27N, RGE. 83W | SLEV. | K.B. N/A |
| COUNTY | CARBON | | D.F. N/A |
| STATE | WYOMING | DATE | 11 MAY 76 |
| | | | G.L. N/A |



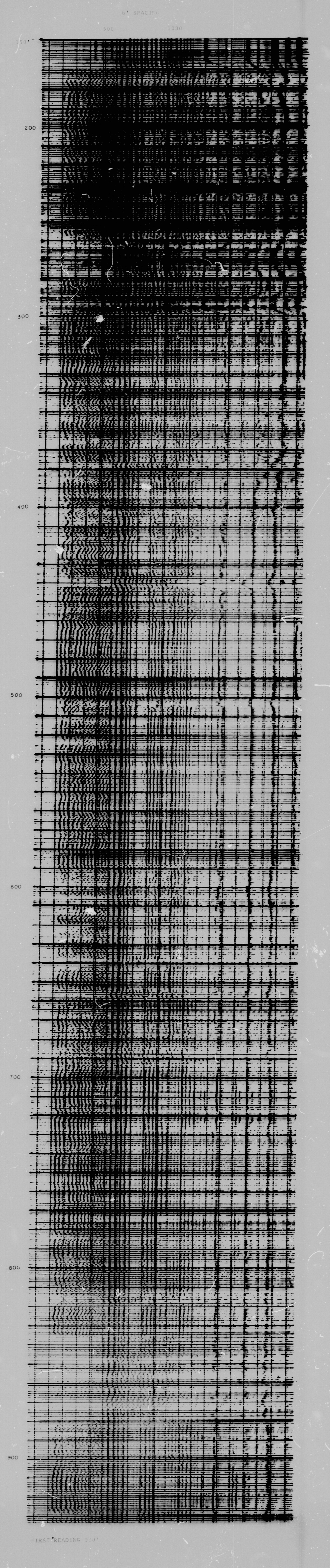
BIRDWELL

PLATE 6
BIRDWELL THREE-DIMENSIONAL
VELOCITY LOG

| | | | |
|---------|----------------|------------------------|---|
| COMPANY | USGS - ERDA | STATE | WYOMING |
| WELL | PM-1 | COUNTY | CARBON |
| FIELD | PEDEO MOUNTAIN | LOCATION | SE 1/4, SE 1/4, SEC. 17, TWP. 27N, RGE. 83W |
| DATE | 11 MAY 76 | LOG MEASURED FROM | LOG MEASURED FROM |
| DRILLER | T.D. 2197 | DRILLING MEASURED FROM | DRILLING MEASURED FROM |

| EQUIPMENT DATA | |
|-----------------------------------|---------------------------|
| SURFACE | SUB-SURFACE |
| RUN NO. ONE - 6' | RUN NO. ONE |
| CAMERA MODEL NO. LEAD-1001 | TX TRANSDUCER SIZE 2-1/4" |
| SWEEP DELAY - #SEC 0 | ISOLATOR LENGTH 6' |
| TOTAL SWEEP TIME - #SEC 2000 | CENTER TO CENTER 74' |
| LOGGING SPEED FT./MIN. 50 | BUMPER O.D. 1" |
| DEPTH SCALE FT./MARK 10 | BOREHOLE GAIN - DB |
| GENERAL | |
| HOIST TRUCK NO. 3016 | DATE, PRIMARY |
| INST. TRUCK NO. 3016 | TYPE CEMENT |
| STATION 37 | AMOUNT |
| | ADDITIVES BY % |
| WELL DATA | |
| TYPE WELL | DATE, SQUEEZE |
| COMPLETION DATE | TYPE CEMENT |
| WELL DRILLED WITH ROTARY CABLE T. | AMOUNT |
| | ADDITIVES BY % |
| CEMENTING DATA | |
| REMARKS | |

DEPT. 4



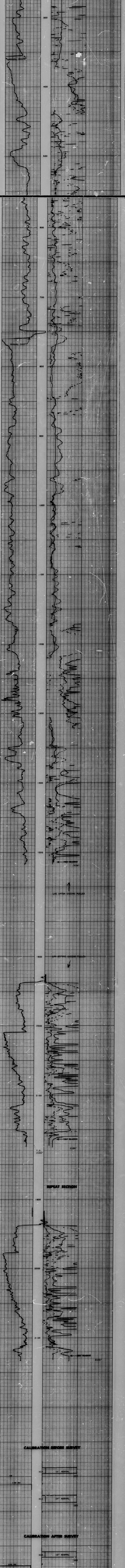
| CALIBRATION DATA | | | |
|------------------|-----------------------------|----------|------------------|
| COMPANY | USGS - ERDA | DRILLER | T.D. 2197 |
| WELL | PM-1 | BIRDWELL | T.D. NOT REACHED |
| FIELD | PEDRO MOUNTAIN | BIRDWELL | F.R. 930' |
| LOCATION | SE 1/4, SE 1/4 | ELEV. | K.B. N/A |
| COUNTY | SEC. 17, TWP. 27N, RGE. 83W | D.F. | N/A |
| STATE | WYOMING | G.L. | N/A |
| DATE | 11 MAY 76 | | |

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| | | | | | | | | | |
|----------|--|--------|-----------|---------|----------------|---------|-----------|--------|----------|
| COMPANY | USGS - ERDA | WELL | PH - 1 | FIELD | PEDRO MOUNTAIN | COUNTY | CARBON | STATE | WYOMING |
| LOCATION | SE 1/4, SE 1/4, SEC. 17, TWP. 27N, RGE 83E | DATE | 11 MAY 76 | DRILLER | F.D. 2197 | LOGGERS | F.R. 2164 | DRIVER | K.B. N/A |
| LOGGERS | W.D. 2164 | DRIVER | N/A | LOG | 1 | LOG | 2 | LOG | 3 |
| LOG | 1 | LOG | 2 | LOG | 3 | LOG | 4 | LOG | 5 |
| LOG | 6 | LOG | 7 | LOG | 8 | LOG | 9 | LOG | 10 |
| LOG | 11 | LOG | 12 | LOG | 13 | LOG | 14 | LOG | 15 |
| LOG | 16 | LOG | 17 | LOG | 18 | LOG | 19 | LOG | 20 |
| LOG | 21 | LOG | 22 | LOG | 23 | LOG | 24 | LOG | 25 |
| LOG | 26 | LOG | 27 | LOG | 28 | LOG | 29 | LOG | 30 |
| LOG | 31 | LOG | 32 | LOG | 33 | LOG | 34 | LOG | 35 |
| LOG | 36 | LOG | 37 | LOG | 38 | LOG | 39 | LOG | 40 |
| LOG | 41 | LOG | 42 | LOG | 43 | LOG | 44 | LOG | 45 |
| LOG | 46 | LOG | 47 | LOG | 48 | LOG | 49 | LOG | 50 |
| LOG | 51 | LOG | 52 | LOG | 53 | LOG | 54 | LOG | 55 |
| LOG | 56 | LOG | 57 | LOG | 58 | LOG | 59 | LOG | 60 |
| LOG | 61 | LOG | 62 | LOG | 63 | LOG | 64 | LOG | 65 |
| LOG | 66 | LOG | 67 | LOG | 68 | LOG | 69 | LOG | 70 |
| LOG | 71 | LOG | 72 | LOG | 73 | LOG | 74 | LOG | 75 |
| LOG | 76 | LOG | 77 | LOG | 78 | LOG | 79 | LOG | 80 |
| LOG | 81 | LOG | 82 | LOG | 83 | LOG | 84 | LOG | 85 |
| LOG | 86 | LOG | 87 | LOG | 88 | LOG | 89 | LOG | 90 |
| LOG | 91 | LOG | 92 | LOG | 93 | LOG | 94 | LOG | 95 |
| LOG | 96 | LOG | 97 | LOG | 98 | LOG | 99 | LOG | 100 |

| CHANGES IN MUD TYPE OR ADDITIONAL SAMPLES | | TYPE LOG | DEPTH | SCALE CHANGE | SCALE DEPTH |
|---|-------|----------|-------|--------------|-------------|
| DATE | DEPTH | | | | |
| | | | | | |

| SPONTANEOUS-POTENTIAL | | DEPTH | RESISTIVITY | RESISTIVITY |
|-----------------------|--|-------|-------------|-------------|
| MILLIVOLTS | | | OHMS M/M | OHMS M/M |
| | | | | |



| CALIBRATION DATA | | | |
|------------------|--|----------|-----------|
| COMPANY | USGS - ERDA | DRILLER | F.D. 2197 |
| WELL | PH - 1 | BIRDWELL | F.D. 2164 |
| FIELD | PEDRO MOUNTAIN | BIRDWELL | F.R. 2164 |
| LOCATION | SE 1/4, SE 1/4, SEC. 17, TWP. 27N, RGE 83E | ELEV. | K.B. N/A |
| COUNTY | CARBON | DF. | N/A |
| STATE | WYOMING | DATE | 11 MAY 76 |
| | | CL. | N/A |

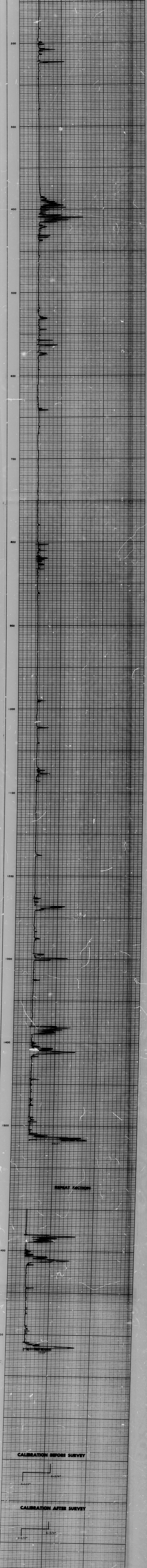
GJRX-56

| | | | |
|---|--|--|--|
| BIRDWELL CALIBER LOG COMPANY USGS - ERDA | | WELL PM - 1 FIELD PEDRO MOUNTAIN COUNTY CARBON LOCATION SE 1/4, SEC. 17, T. 27N, R. 83W STATE WYOMING | |
| DATE LOG 11 MAY 76 FROM LOG 0145 DEPTH - ORIGIN 2197' BTL. LOG NUMBER 1011 SKETCHED TOP COR. INSTR. 1001 MANUFACT. P.M. CL. N/A DIAMETER (I. O. D.) 2 1/2" MAX. REC. TEMP. - F. 25 OPER. NO. TIME 2 HRS OPERATED BY MACTUNGLES | | ORIGINAL TOTAL DEPTH TYPE WELL OPEN HOLE SHOT WITH AMOUNT FM TO AMOUNT FM TO SPECIAL WELL CONDITIONS PURPOSE OF SURVEY | |
| BORE HOLE RECORD NO. 1 BY NX 9172 DATE 1937 TO 1937 | | CASING RECORD NO. 1 BY NX 9172 DATE 1937 TO 1937 | |

| EQUIPMENT DATA | | WELL DATA | |
|------------------|--------------|-------------------------|----------|
| TYPE LOG | CALIBER | ORIGINAL TOTAL DEPTH | F.B.T.D. |
| TOOL MODEL | LEBB 7J01 | TYPE WELL | |
| SERIAL NO. | 13 | OPEN HOLE SHOT WITH | |
| TOOL DIAMETER | 1 1/2" | AMOUNT | FM TO |
| SPEED FT. / MIN. | 30 | AMOUNT | FM TO |
| SCALE | 1" = 2' DIV. | SPECIAL WELL CONDITIONS | |
| MIN. ARM DIAM. | 1 1/8" | PURPOSE OF SURVEY | |
| MAX. ARM DIAM. | 1 1/2" | | |
| TRUCK NO. | 3016 | | |

REMARKS IN A MEANS NOT AVAILABLE

SERVICE ORDER/INV. NO.



| CALIBRATION DATA | | | |
|------------------|---------------------------------|---------------------------|------------|
| COMPANY | USGS - ERDA | DRILLER | T.D. 2197' |
| WELL | PM - 1 | BIRDWELL T.D. NOT REACHED | |
| FIELD | PEDRO MOUNTAIN | BIRDWELL P.R. 1518' | |
| LOCATION | SE 1/4, SEC. 17, T. 27N, R. 83W | ELEV. | K.B. N/A |
| COUNTY | CARBON | D.F. | N/A |
| STATE | WYOMING | DATE | 11 MAY 76 |
| | | | GL N/A |