

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

GEOPHYSICAL LOGS FOR DAWSON, McCONE, RICHLAND,
AND ROSEBUD COUNTIES, MONTANA

Chapter F of
Preliminary Report of 1977 Coal Drilling in
Eastern Montana and Northeastern Wyoming

By U.S. Geological Survey
and
Montana Bureau of Mines and Geology

Open-File Report 77-721-F

1978

This report has not been edited
for conformity with Geological
Survey editorial standards or
stratigraphic nomenclature.

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EXPLANATION OF DRILL-HOLE LOCATIONS

The location of a drill hole within a section is identified on the logs by a letter-designated tract system and by footage from section lines. Each section is subdivided into four quadrants, with the north-east quadrant designated as A, and continuing counterclockwise to D. Each quadrant is then subdivided into four equal parts with a similar letter designation. This is repeated until a section is subdivided into 256 units. Using this system, the largest subdivision in a section is listed first. For example, a tract designation of ABCD would be located in the $SE\frac{1}{4}SW\frac{1}{4}NW\frac{1}{4}NE\frac{1}{4}$ of the section.

PRELIMINARY REPORT OF 1977 COAL DRILLING IN EASTERN MONTANA
AND NORTHEASTERN WYOMING

GEOPHYSICAL LOGS FOR DAWSON, McCONE, RICHLAND,
AND ROSEBUD COUNTIES, MONTANA

INTRODUCTION AND ACKNOWLEDGMENTS

This is the sixth and final chapter on the 1977 drilling program (hole nos. 77291-77325) conducted by the Montana Bureau of Mines and Geology (MBMG), under Grant No. 14-08-0001-G-441 from the U.S. Geological Survey (USGS), in eastern Montana and northeastern Wyoming.

The drilling was done as part of a USGS program to evaluate and classify mineral lands in the public domain. Similar information from 997 drill holes and approximately 200 coal samples from the same areas and from western North Dakota was presented in earlier reports (USGS/MBMG 1973, 1974, 1976a, 1976b, 1977a, 1977b, 1977c, 1978a, 1978b, 1978c; USGS/NDGS 1976, 1977; and Kistner, 1977).

This report includes only geophysical logs. Core samples from some of the holes have been submitted to the U.S. Bureau of Mines for proximate analyses, determination of Btu/lb values, and form of sulfur present.

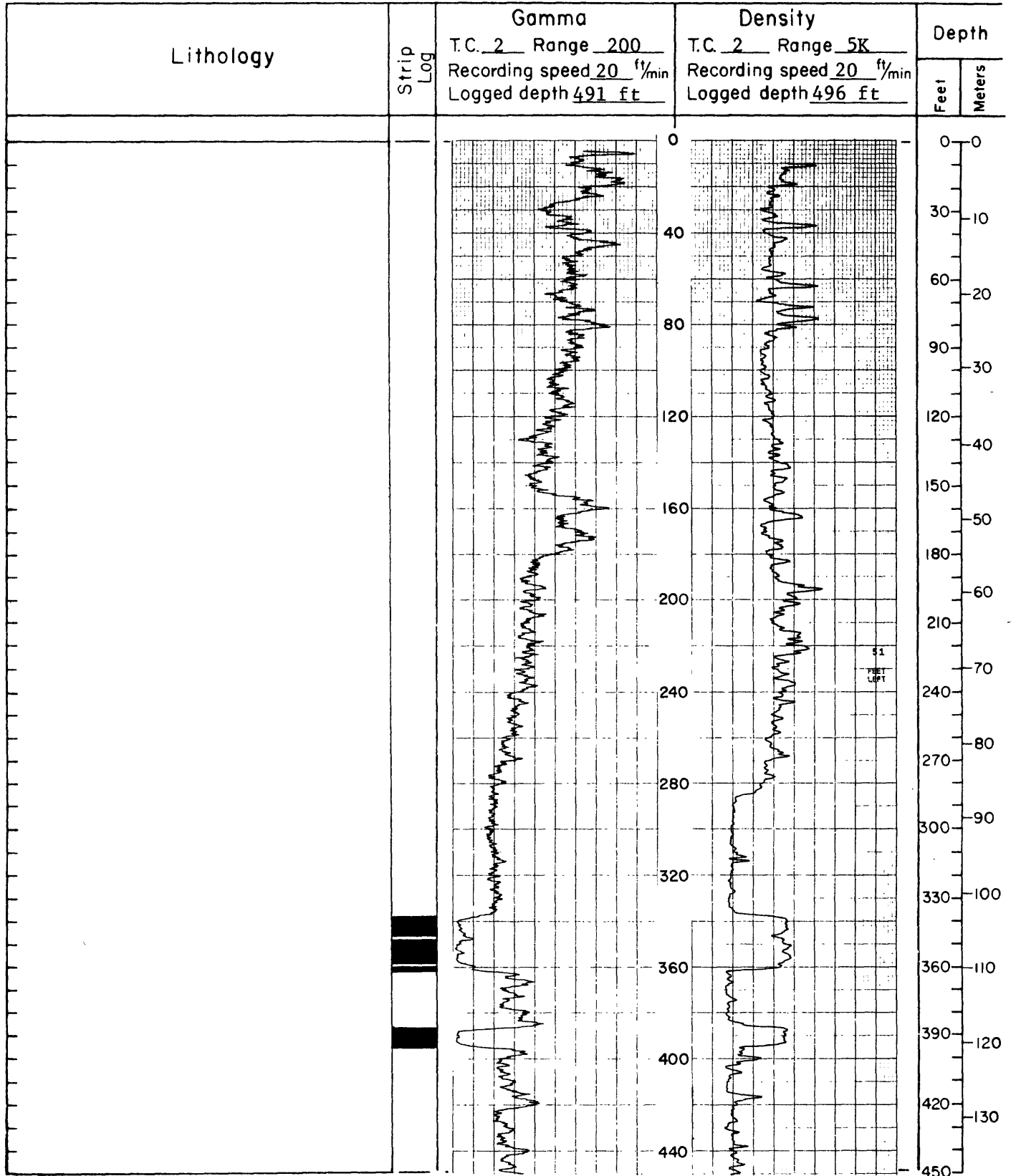
Fieldwork was carried out by the following MBMG personnel: Robert E. Matson, Chief, Energy Division; John Pinchock, geologist; and L. Sauer, J. Jensen, and K. Williams, technicians. Coordination and technical guidance were provided by Robert E. Matson, MBMG, and Elmer M. Schell, USGS.

Montana College of Mineral Science and Technology

Hole no: US-77291 Map: Colstrip SW Date: 11/16/77 State: Montana County: Rosebud
 Elev.: 3581 ft Location: T. 1 ^{N.} _{S.}, R. 41 ^{E.} _{W.}, Sec. 20, Tract DDAB Drilled depth: 500 ft
 Measured: 1150 ft ~~XXX~~ ^{FEL} 350 ft ~~XXX~~ Hole size: 5 in. Air Water Cored: Yes No

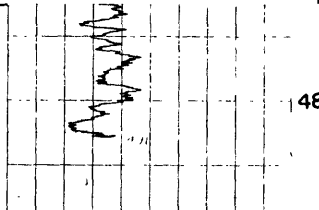
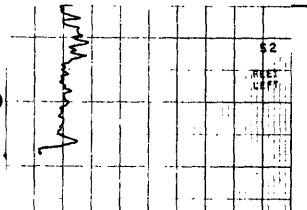
Remarks: _____

Recorded by: L. SAUER Geologist ~~XXX~~ ^{No} Recorded by: L. SAUER



Hole number (continued)

US - 77291

| Lithology | Strip Log | Gamma | Density | Depth | |
|-----------|-----------|--|---|-------|--------|
| | | T.C. <u>2</u> Range <u>200</u> Recording speed <u>20</u> ft/min Logged depth <u>491</u> ft | T.C. <u>2</u> Range <u>5K</u> Recording speed <u>20</u> ft/min Logged depth <u>496</u> ft | Feet | Meters |
| | |  |  | 450 | 140 |
| | | | | 480 | 150 |
| | | | | 510 | 160 |
| | | | | 540 | 170 |
| | | | | 570 | 180 |
| | | | | 600 | 190 |
| | | | | 630 | 200 |
| | | | | 660 | 210 |
| | | | | 690 | 220 |
| | | | | 720 | 230 |
| | | | | 750 | 240 |
| | | | | 780 | 250 |
| | | | | 810 | 260 |
| | | | | 840 | 270 |
| | | | | 870 | |
| | | | | 900 | |

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Hole no: US-77292 Map: Colstrip SW Date: 11/16/77 State: Montana County: Rosebud
 Elev.: 3635 ft Location: T. 1 N. 8, R. 41 E. W, Sec. 18, Tract DCDC Drilled depth: 20 ft
 Measured: 200 ft ^{RWK}FSL, 1900 ft ^{FEL}RWK Hole size: 5 in. Air Water Cored: Yes No

Remarks: Clinker; no logs.

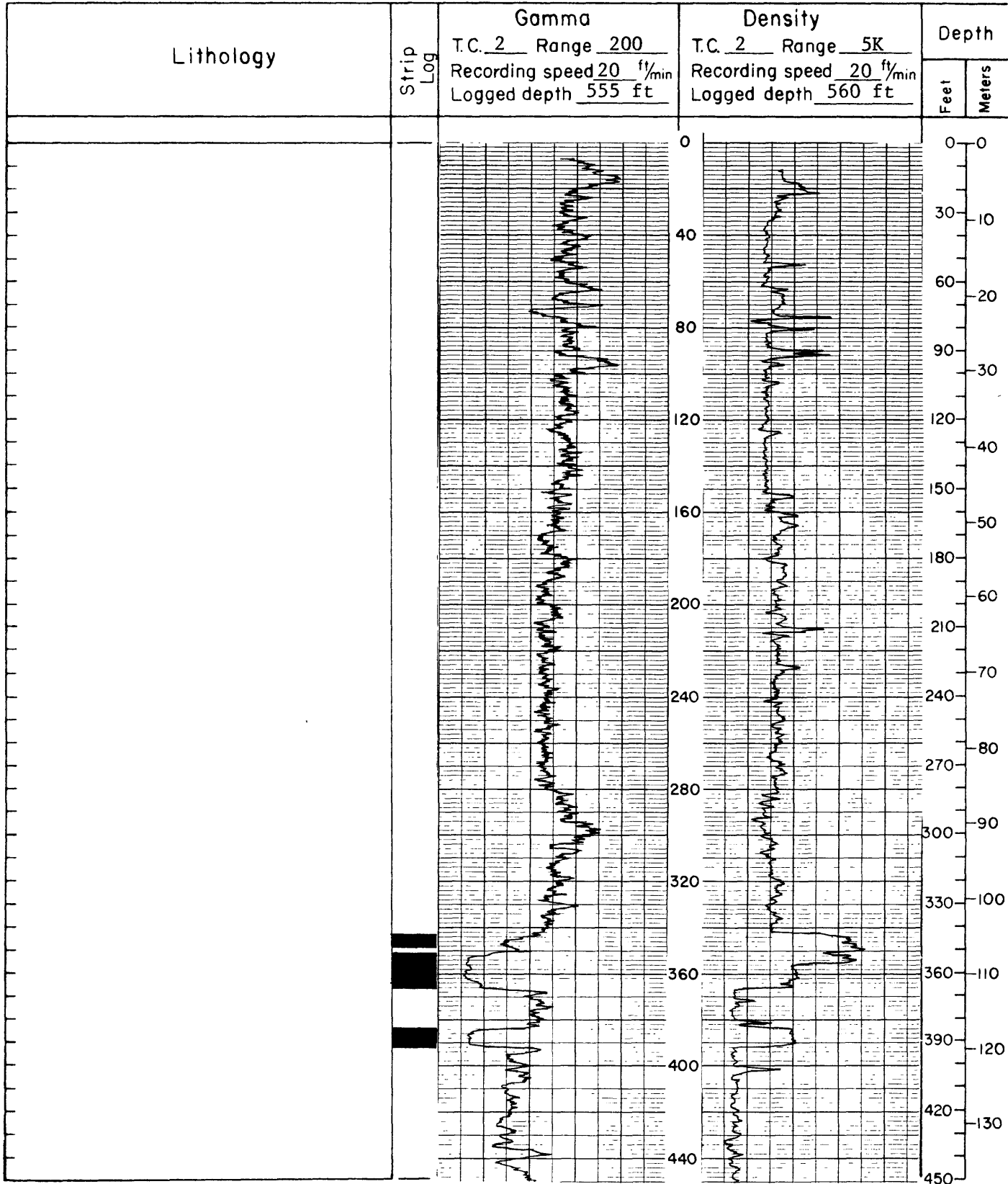
Recorded by: L. SAUER Geologist ^{xxx}No Recorded by: L. SAUER

| Lithology | Strip Log | Gamma | | Density | | Depth | |
|-----------|-----------|------------------------|------------------------------|------------------------|------------------------------|-------|--------|
| | | T.C. _____ Range _____ | Recording speed _____ ft/min | T.C. _____ Range _____ | Recording speed _____ ft/min | Feet | Meters |
| | | | | | | 0 | 0 |
| | | | | | | 30 | 10 |
| | | | | | | 60 | 20 |
| | | | | | | 90 | 30 |
| | | | | | | 120 | 40 |
| | | | | | | 150 | 50 |
| | | | | | | 180 | 60 |
| | | | | | | 210 | 70 |
| | | | | | | 240 | 80 |
| | | | | | | 270 | 90 |
| | | | | | | 300 | 100 |
| | | | | | | 330 | 110 |
| | | | | | | 360 | 120 |
| | | | | | | 390 | 130 |
| | | | | | | 420 | 130 |
| | | | | | | 450 | 130 |

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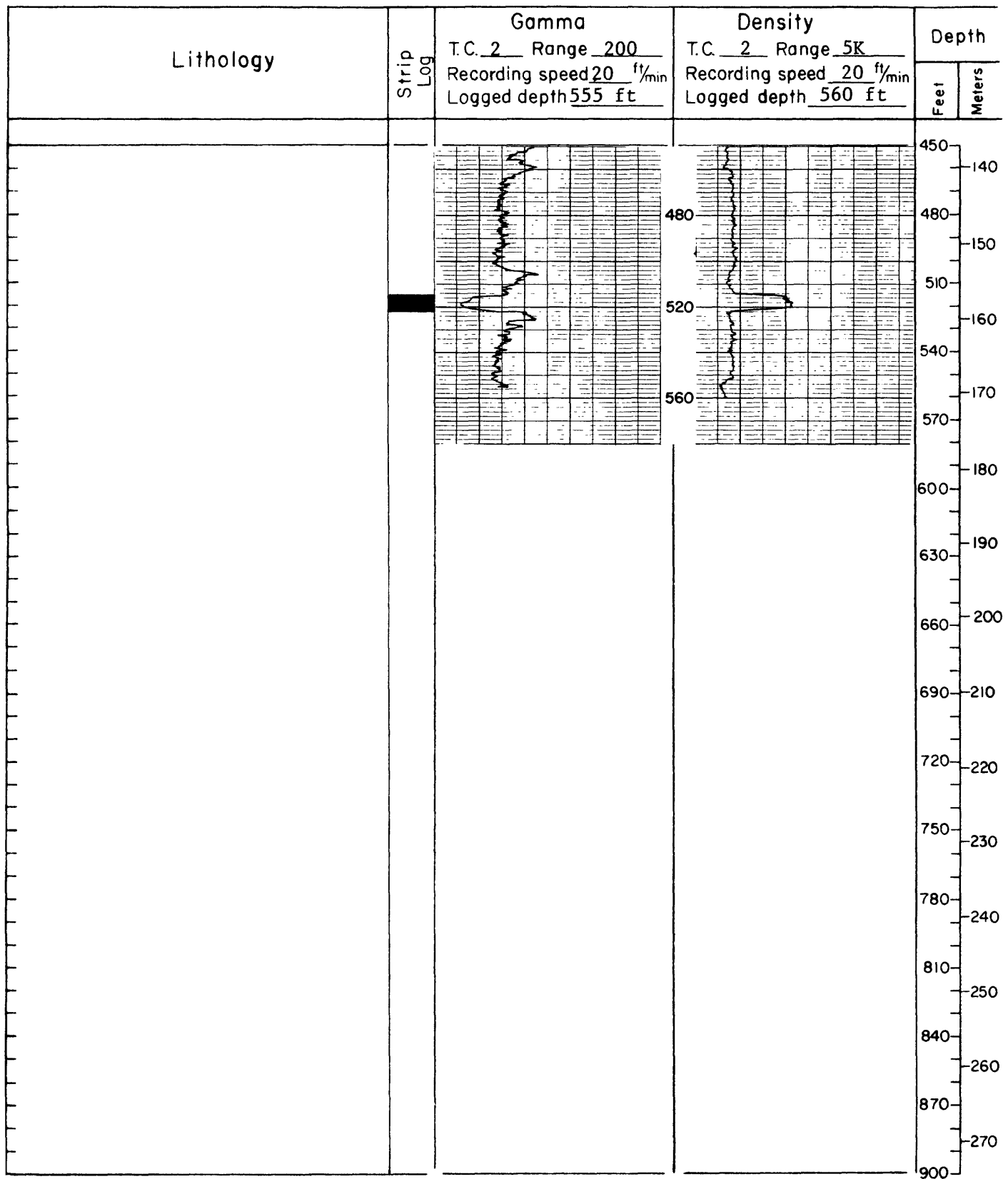
Hole no: US-77293 Map: Colstrip SW Date: 11/17/77 State: Montana County: Rosebud
 Elev.: 3633 ft Location: T. 1 N. 8, R. 41 E. W, Sec. 18, Tract DCBB Drilled depth: 580 ft
 Measured: 1050 ft ~~FSL~~, 2400 ft ~~FEL~~ Hole size: 4 3/4 in. Air Water Cored: Yes No
 Remarks: Hole caved at bottom could not reach T.D. on logs.

Recorded by: K. WILLIAMS Geologist ~~Yes~~ No Recorded by: L. SAUER



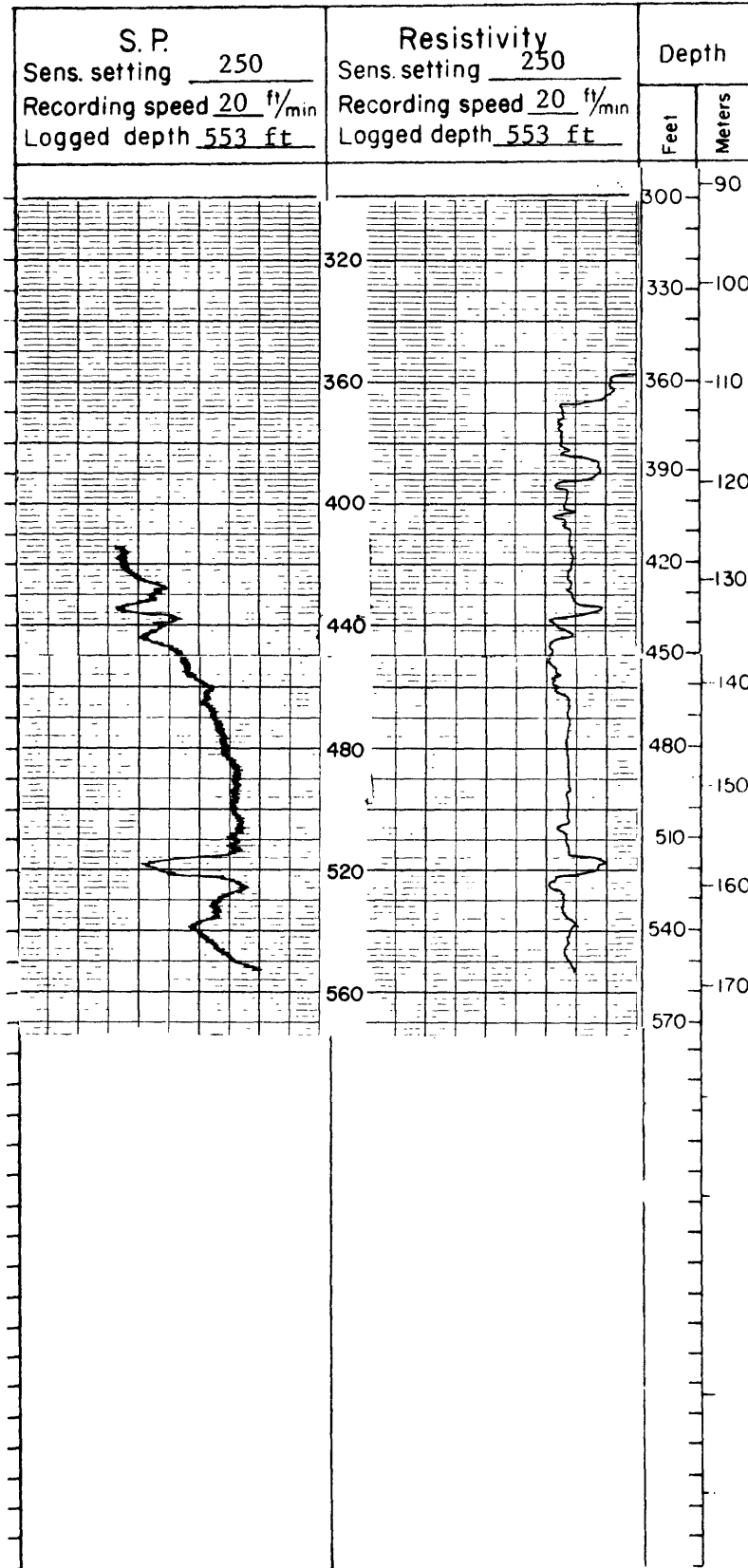
Hole number (continued)

US - 77293



Hole number (continued)

US - 77193



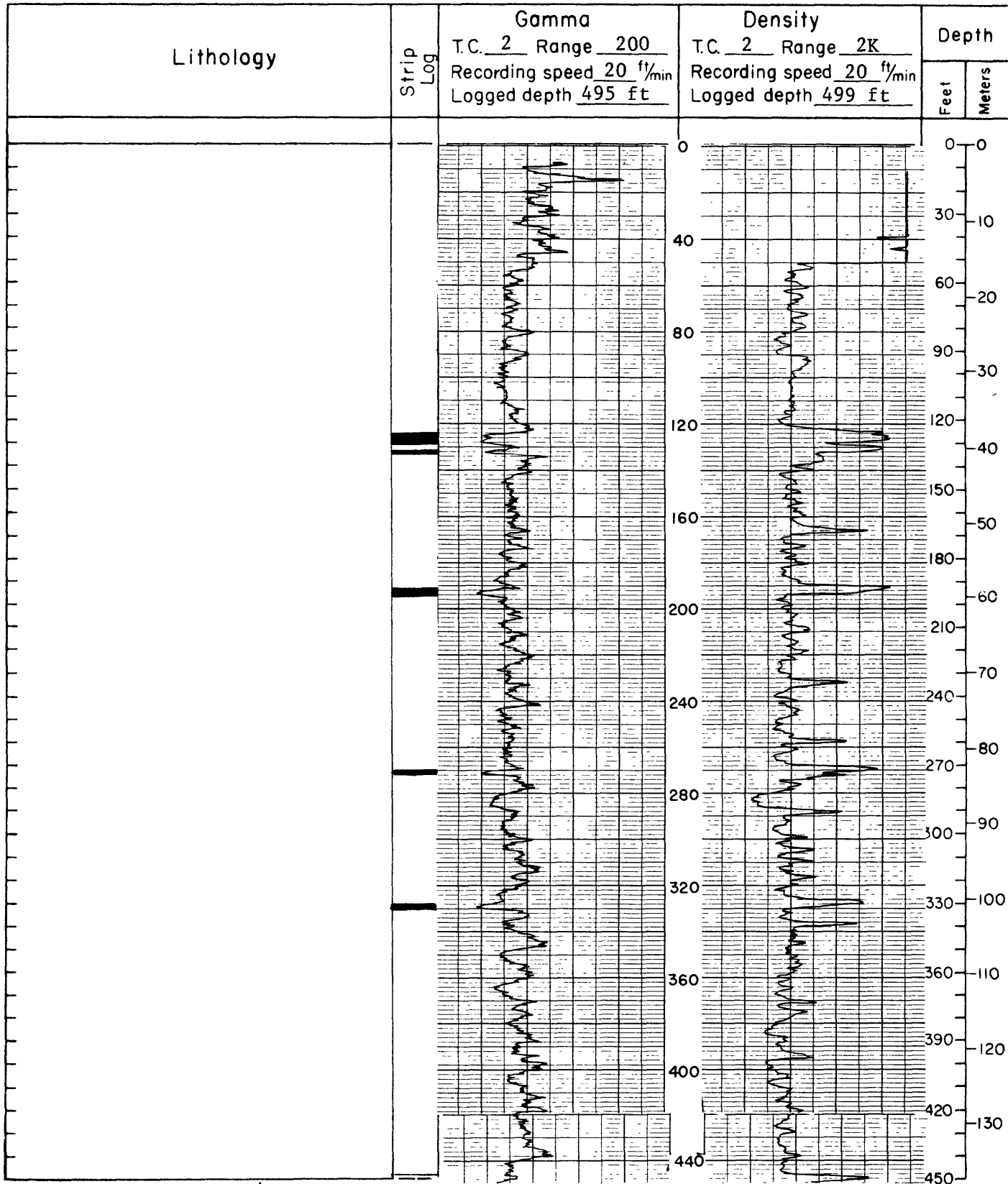
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Hole no: US-77294 Map: BLM-NE 31 Date: 11/29/77 State: Montana County: Dawson
 Elev.: 2604 ft Location: T. 21 N. 8, R. 51 E. W, Sec. 26, Tract AAAA Drilled depth: 500 ft
 Measured: 150 ft ~~FNL~~ ~~KSK~~, 75 ft ~~FEL~~ ~~KWK~~ Hole size: 4 3/4 in. Air Water Cored: Yes No

Remarks: _____

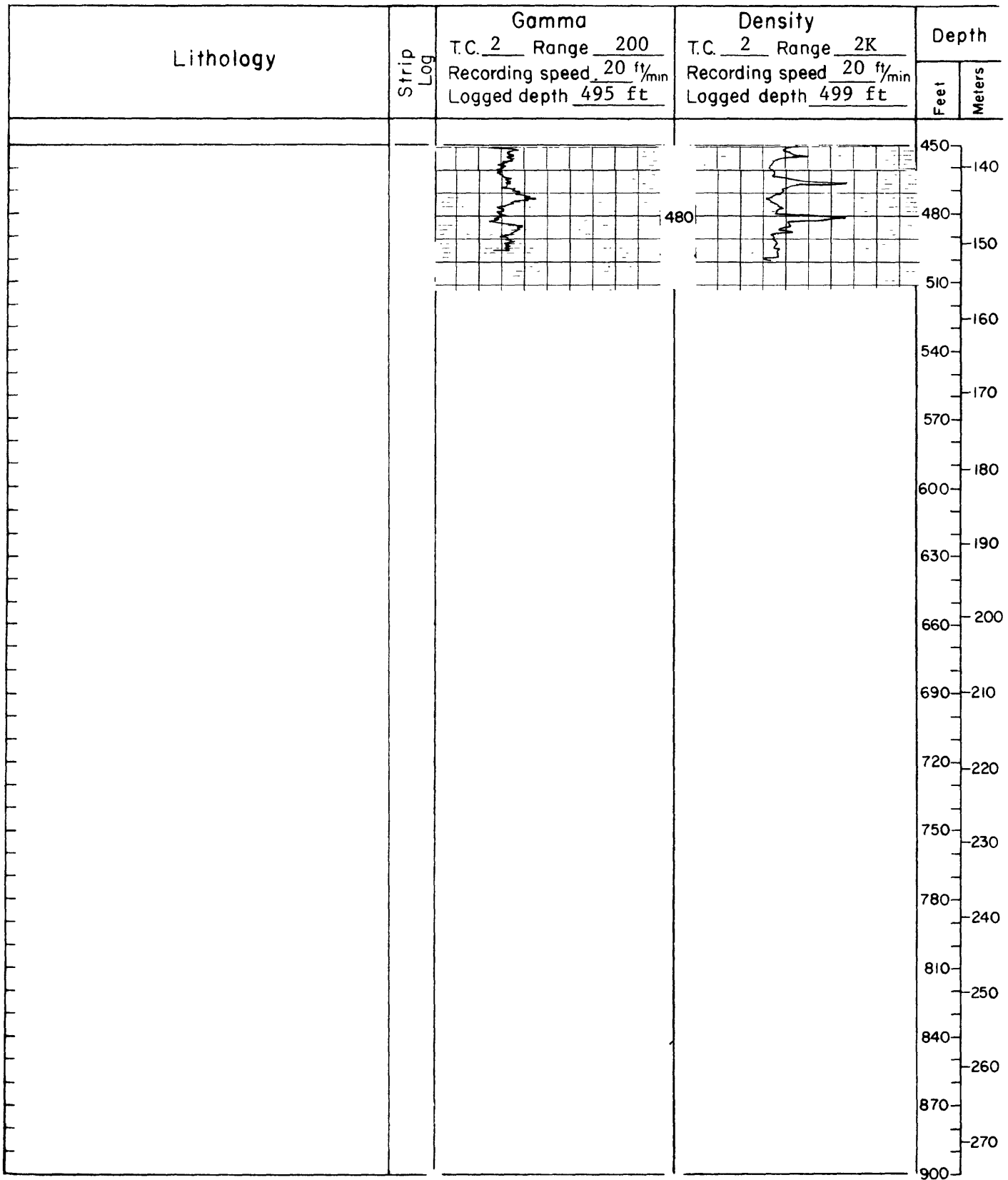
Recorded by: L. SAUER

Geologist ~~XXX~~ No _____ Recorded by: L. SAUER



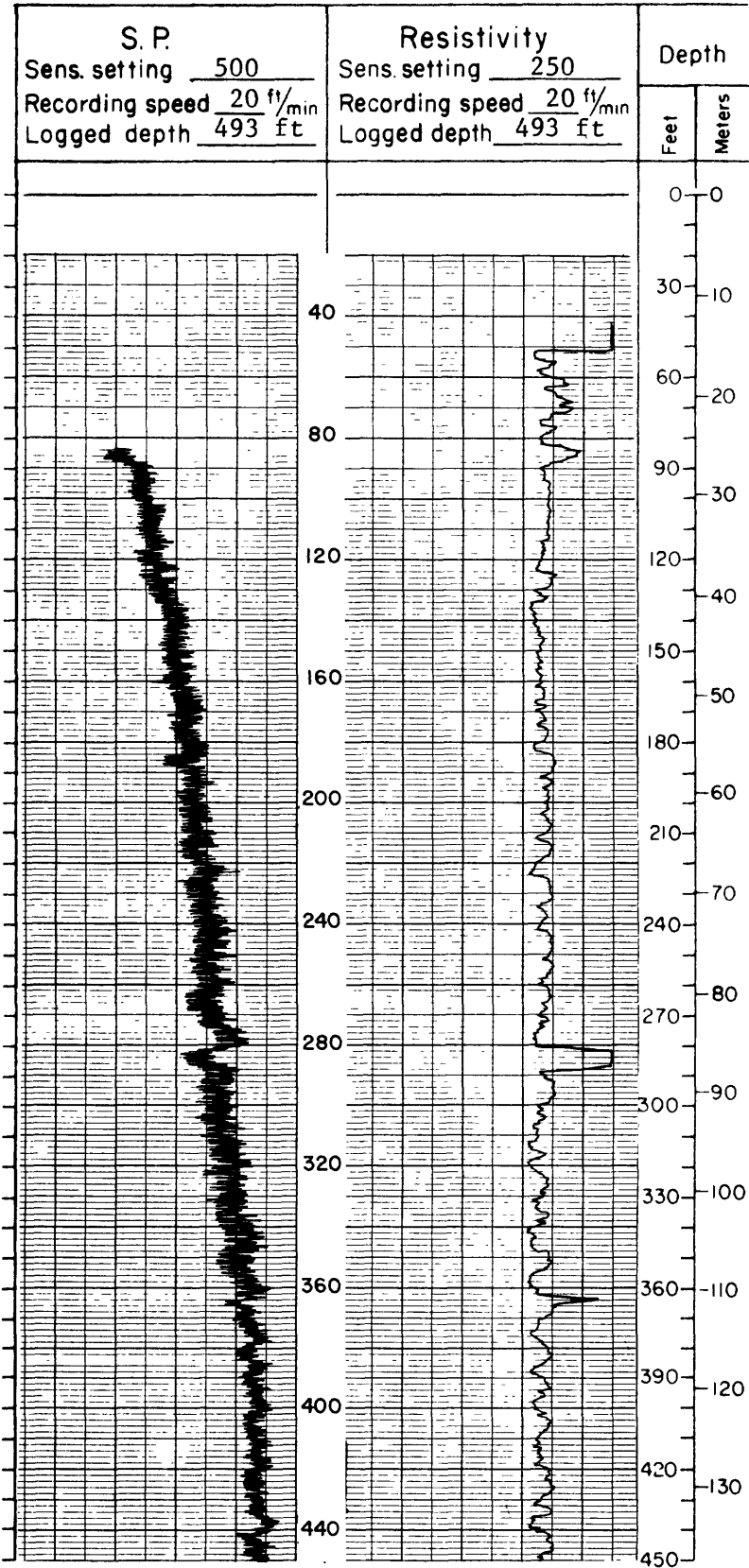
Hole number (continued)

US - 77294



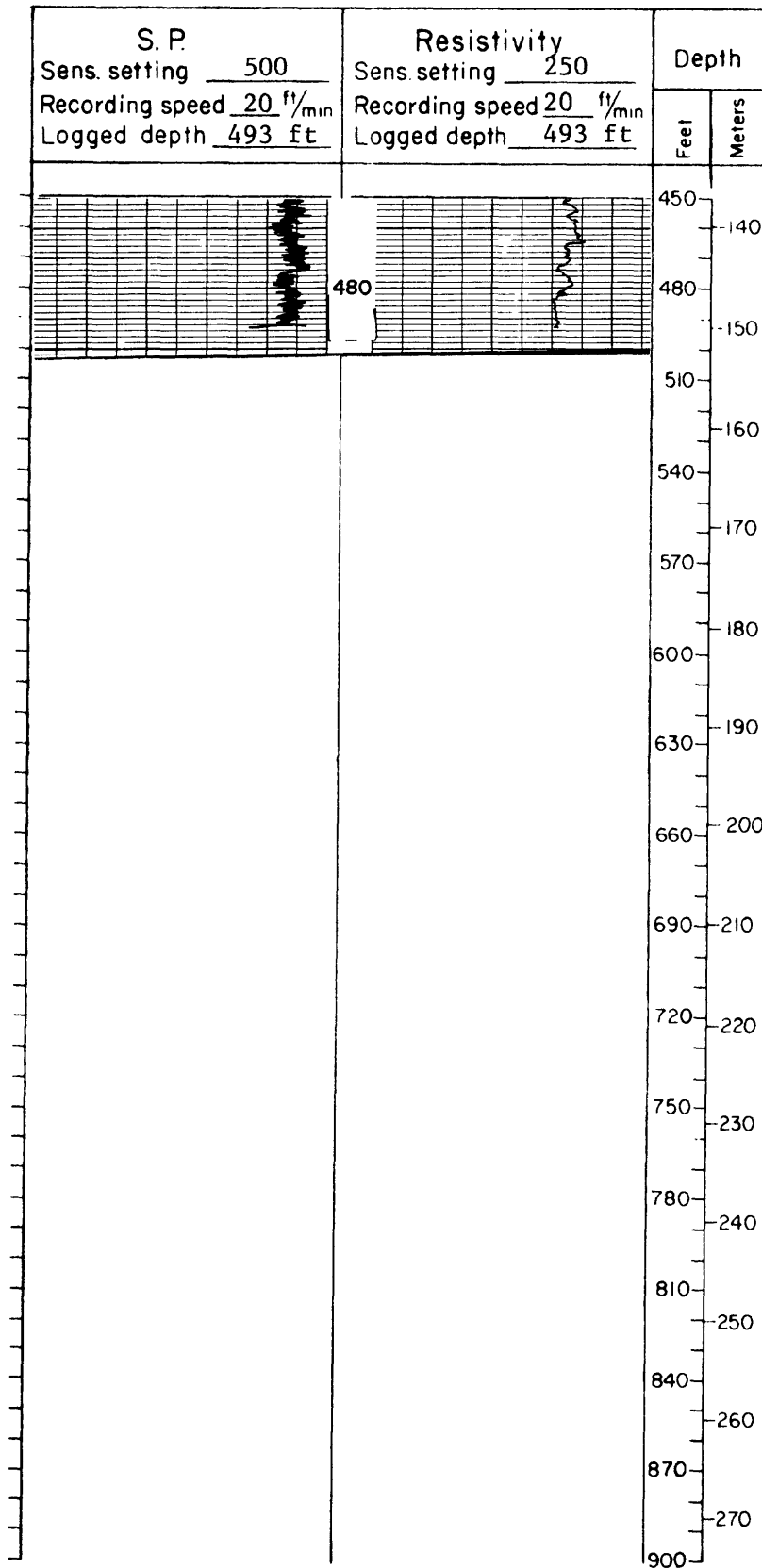
Hole number (continued)

US- 77294



Hole number (continued)

US - 77294

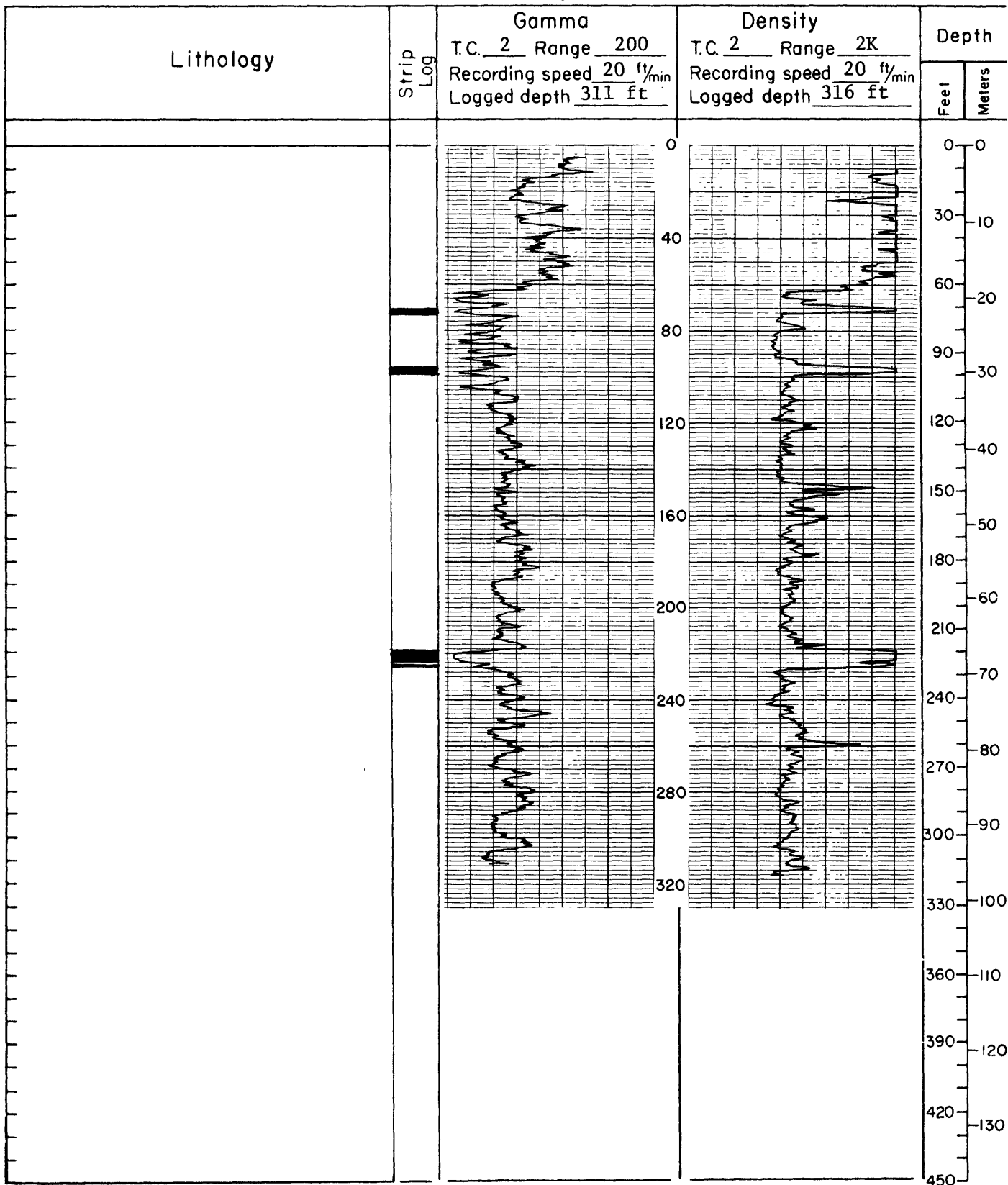


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Hole no US-77295 Map: BLM-NE 31 Date: 11/30/77 State: Montana County: Dawson
 Elev.: 2464 ft Location: T. 21 ^{N.} _{S.}, R. 51 ^{E.} _{W.}, Sec. 2, Tract ACCC Drilled depth: 320 ft
 Measured: 2500 ft ^{FNL} ~~RSL~~, 2370 ft ^{FEL} ~~RWL~~ Hole size: 4 3/4 in. Air Water Cored: Yes No

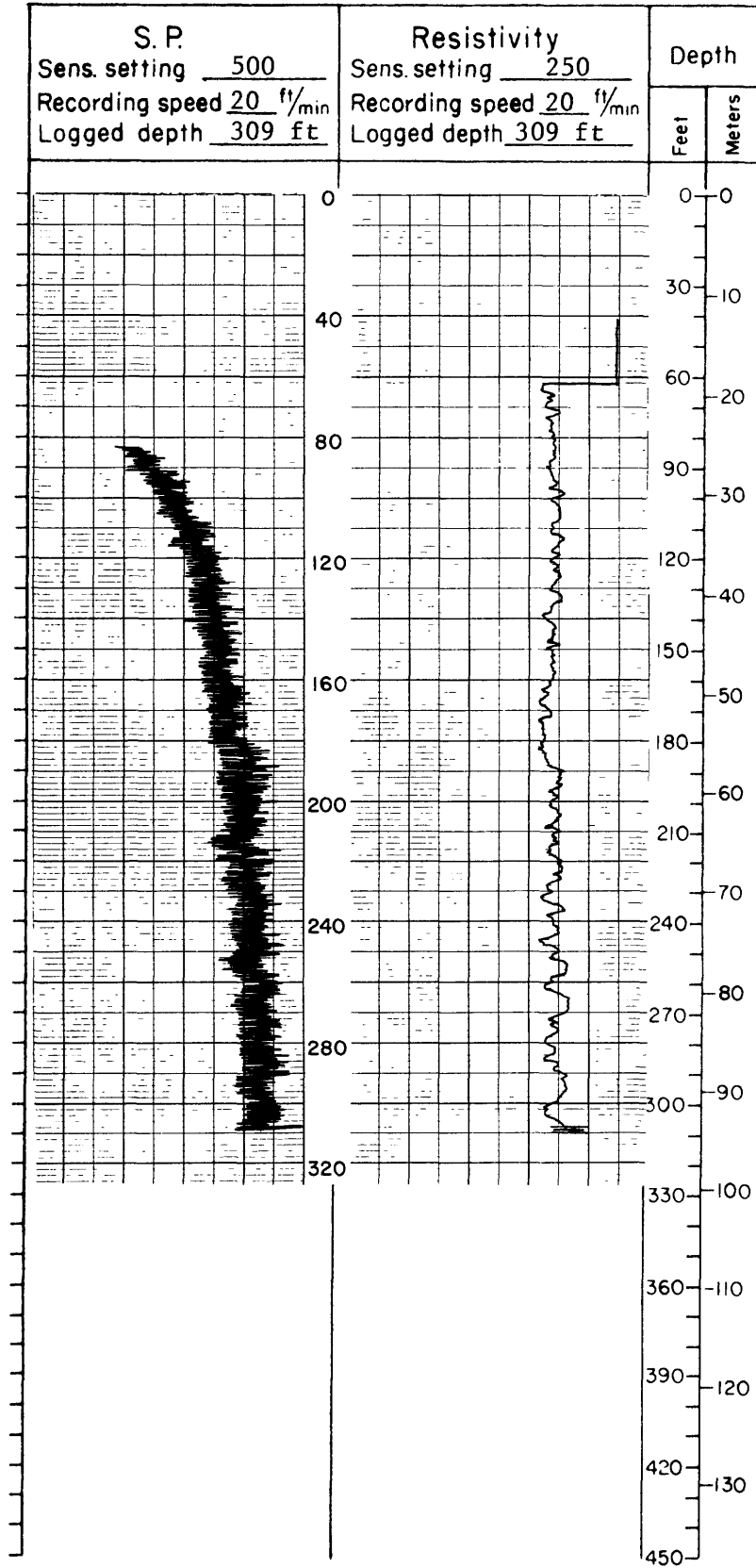
Remarks: _____

Recorded by: L. SAUER Geologist ^{YES} No _____ Recorded by: L. SAUER



Hole number (continued)

US - 77295



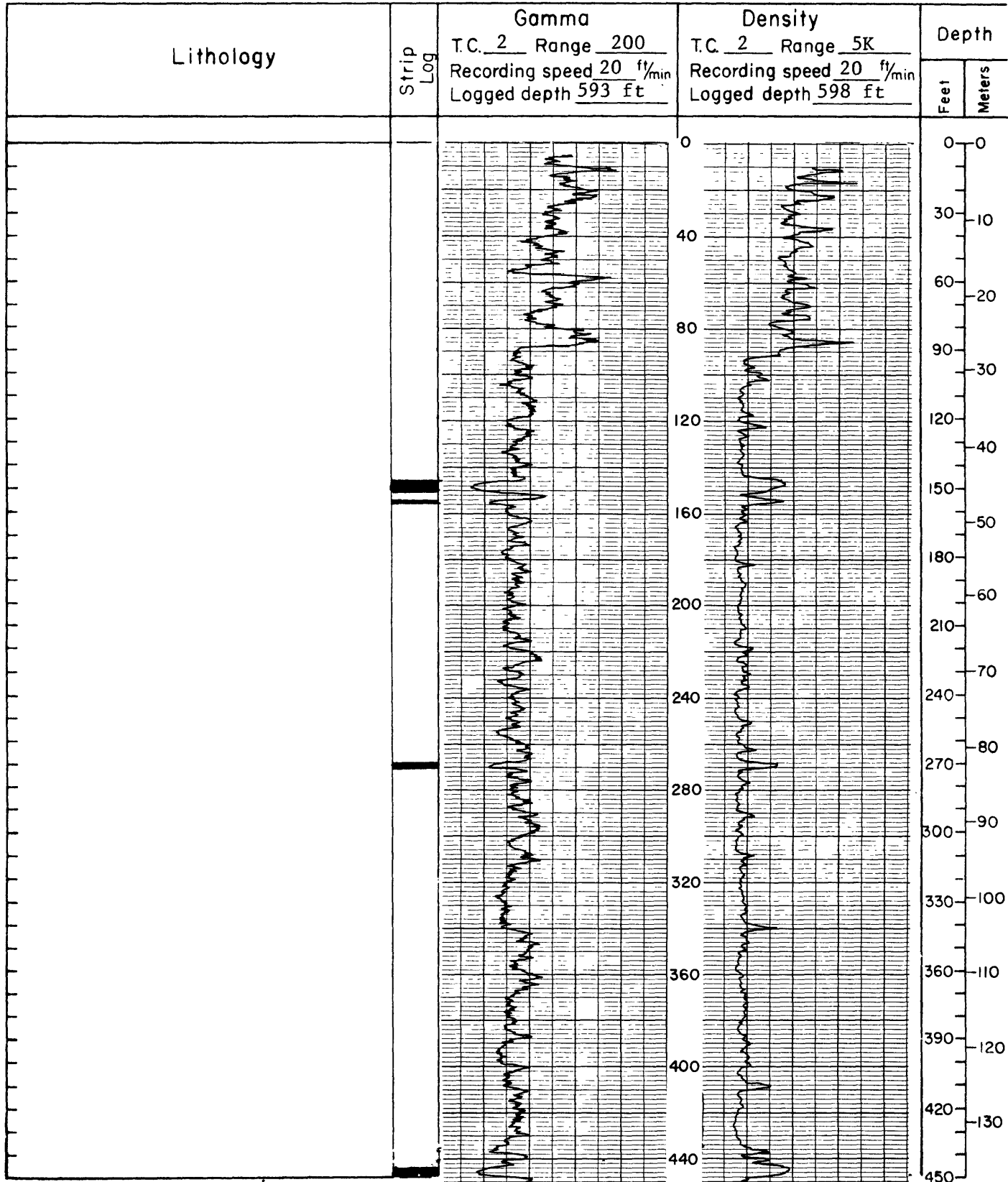
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Hole no: US-77296 Map: Lambert Date: 12/1/77 State: Montana County: Richland
 Elev.: 2552 ft Location: T. 22 N., R. 56 E., Sec. 30, Tract DBBD Drilled depth: 600 ft
 Measured: 2225 ft ~~FSL~~, 2235 ft ~~FEL~~ Hole size: 4 3/4 in. Air Water Cored: Yes No

Remarks: _____

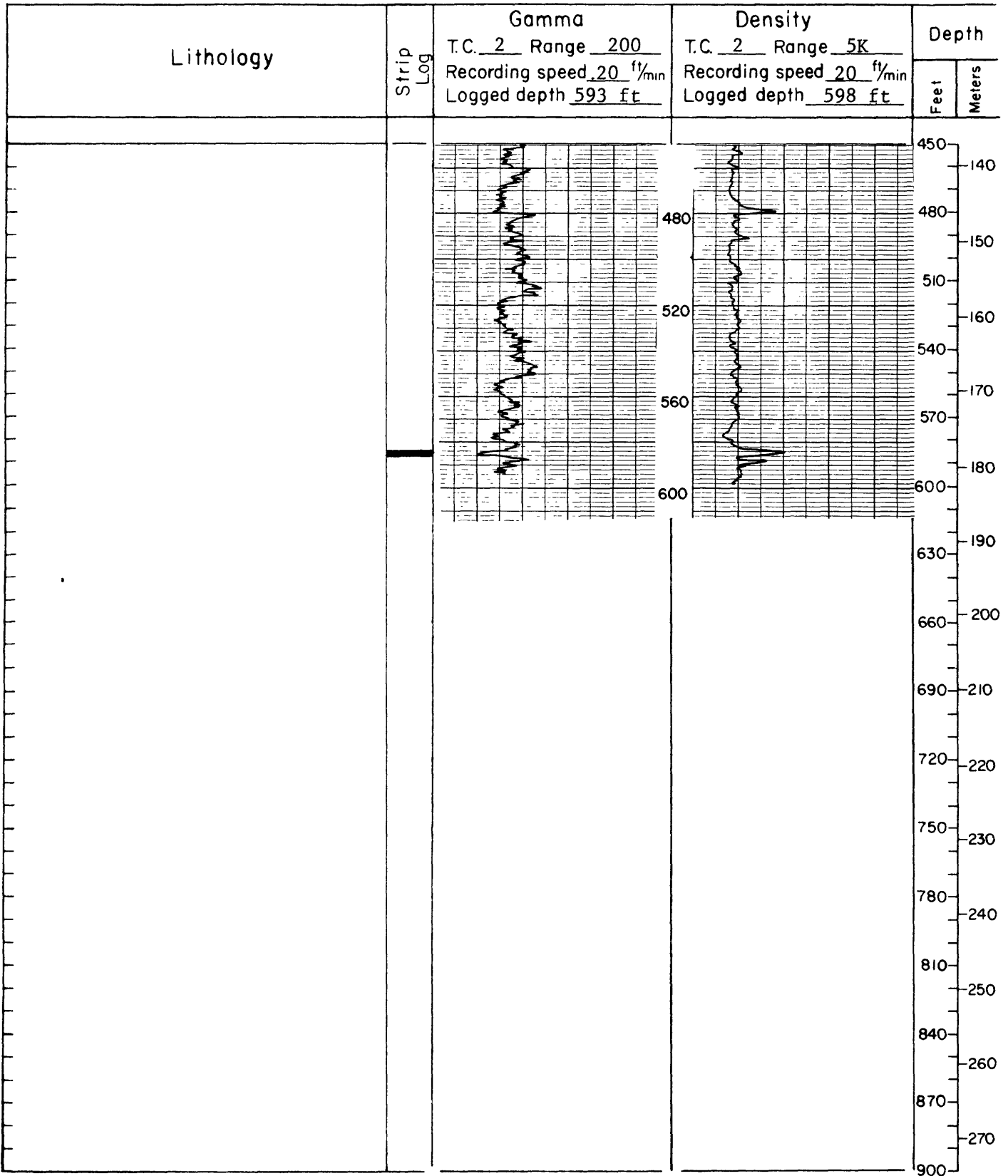
Recorded by: L. SAUER

Geologist ~~Yes~~ No Recorded by: L. SAUER



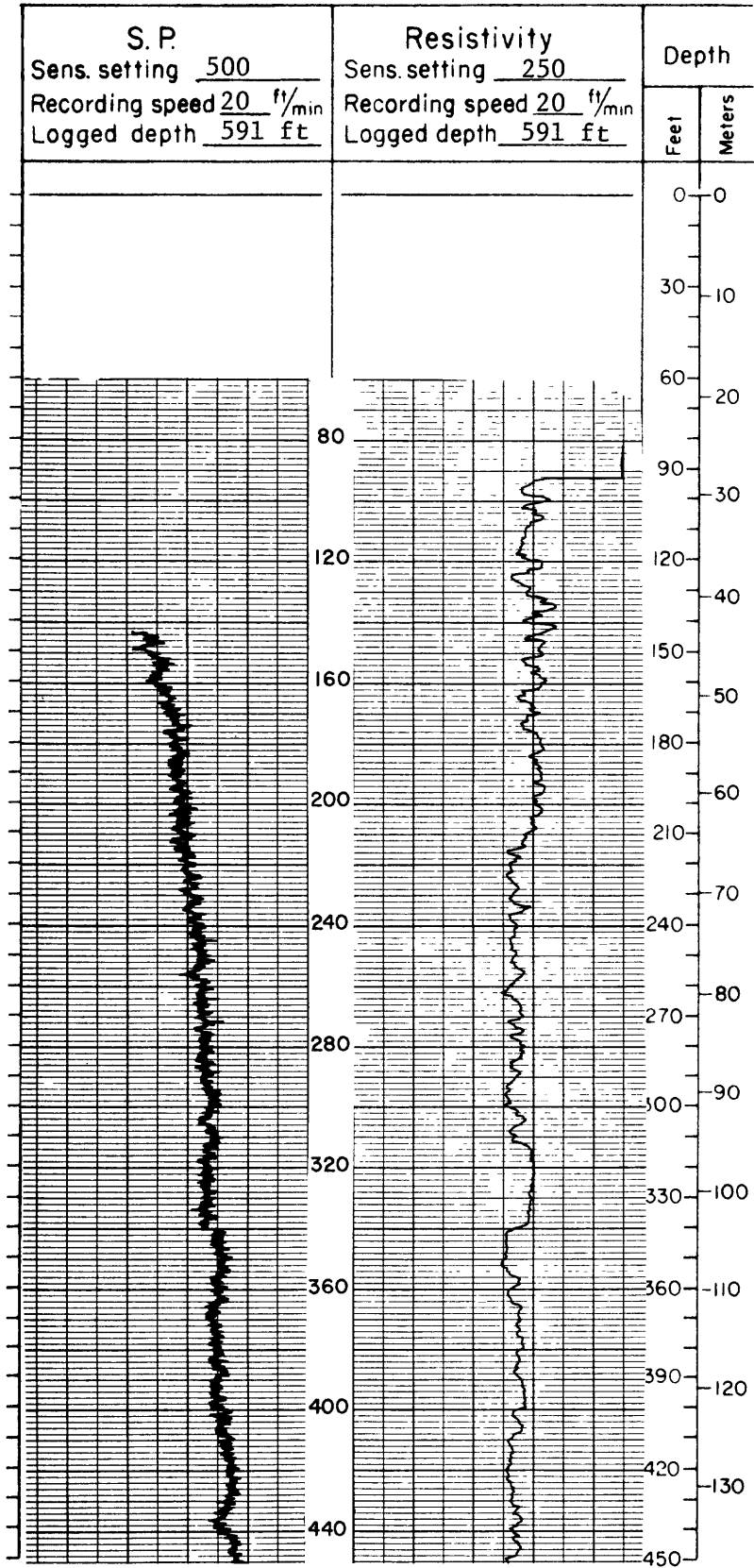
Hole number (continued)

US-77296



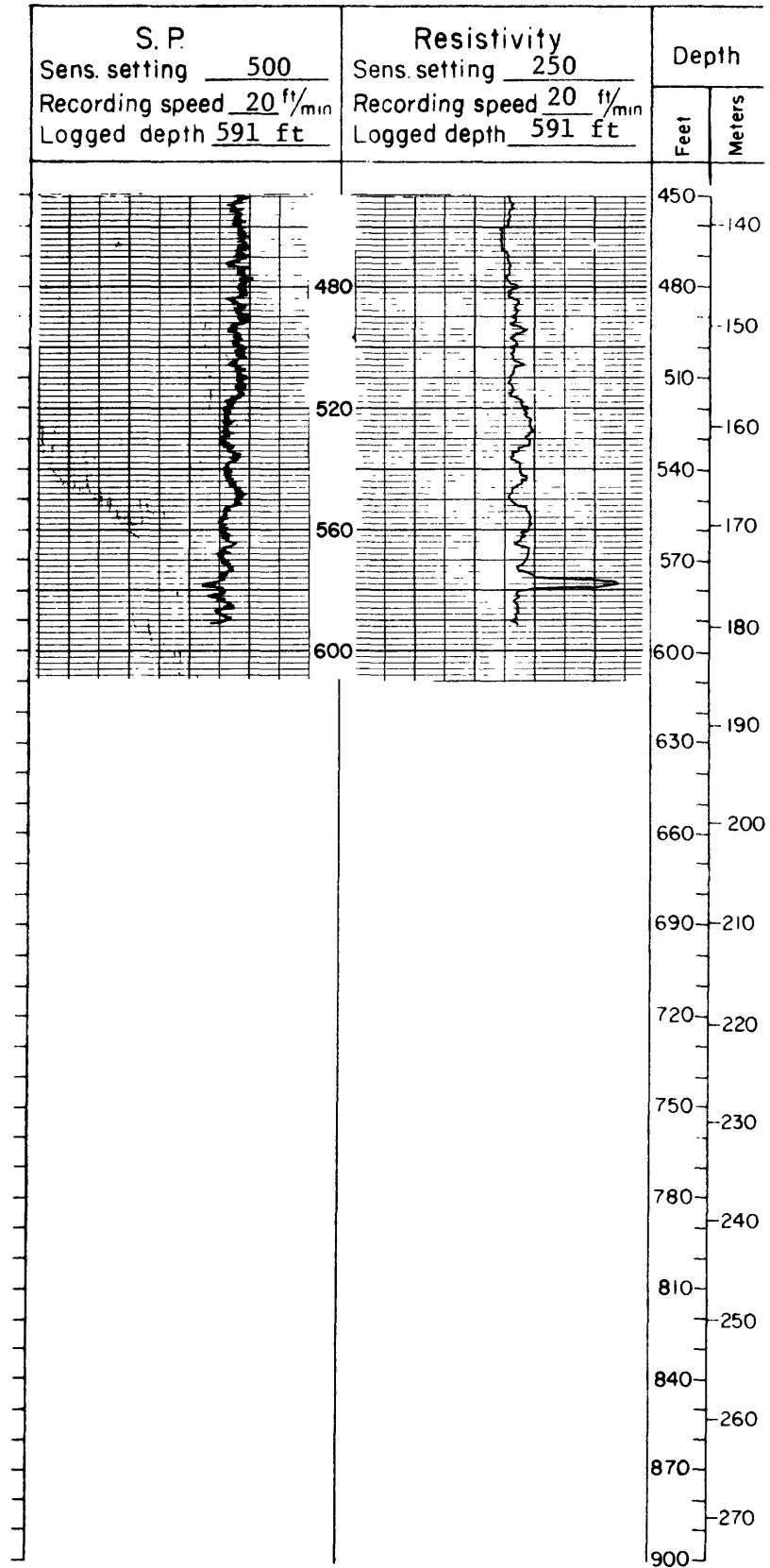
Hole number (continued)

US - 77296



Hole number (continued)

US - 77296

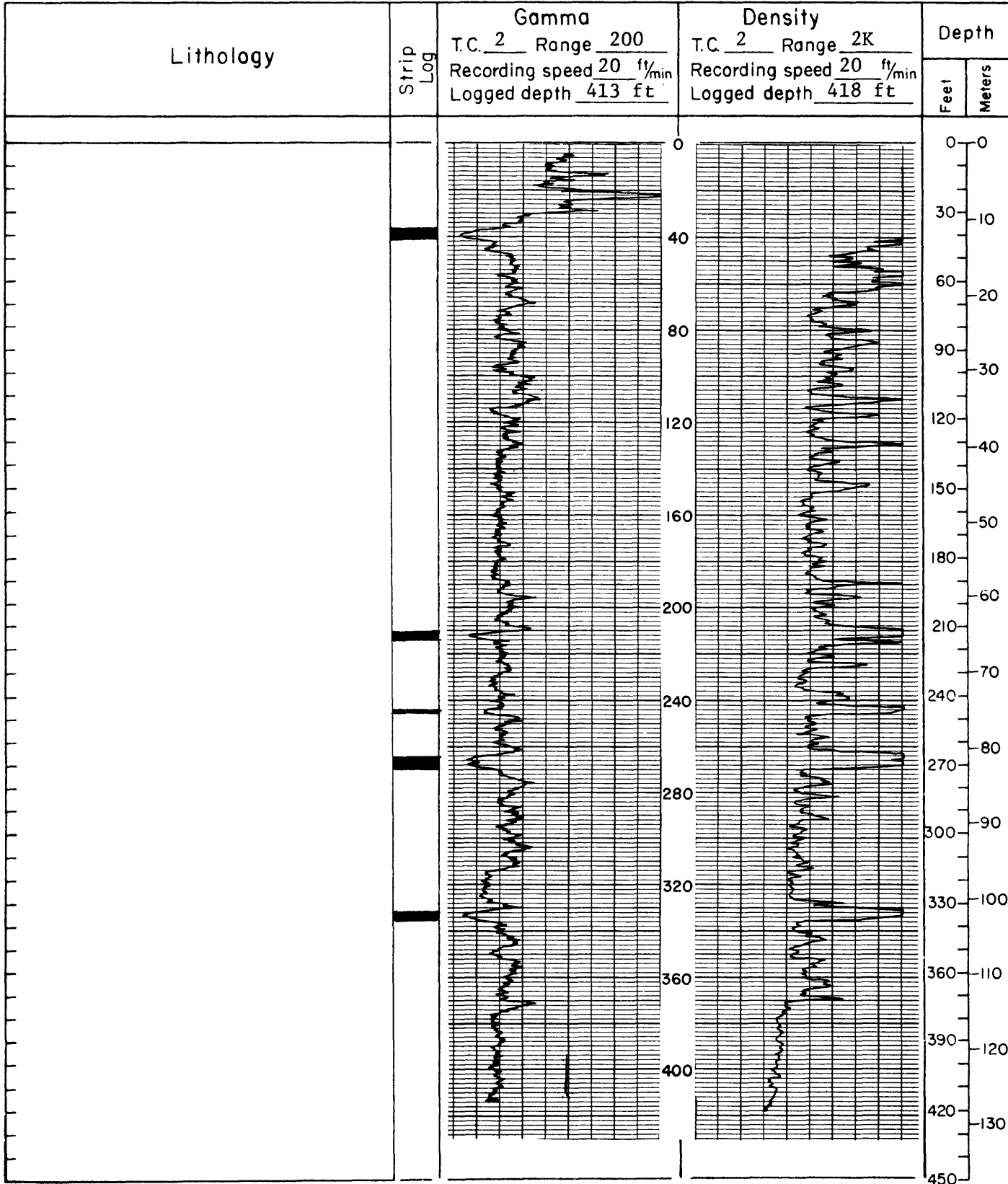


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Hole no: US-77297 Map: Crane NW Date: 12/2/77 State: Montana County: Richland
 Elev.: 2333 ft Location: T. 22 N. 8, R. 56 E. W. Sec. 24, Tract DDDD Drilled depth: 500 ft
 Measured: 10 ft ~~FSL~~, 75 ft ~~RWK~~ ^{FEL} Hole size: 4 3/4 in. Air Water Cored: Yes No

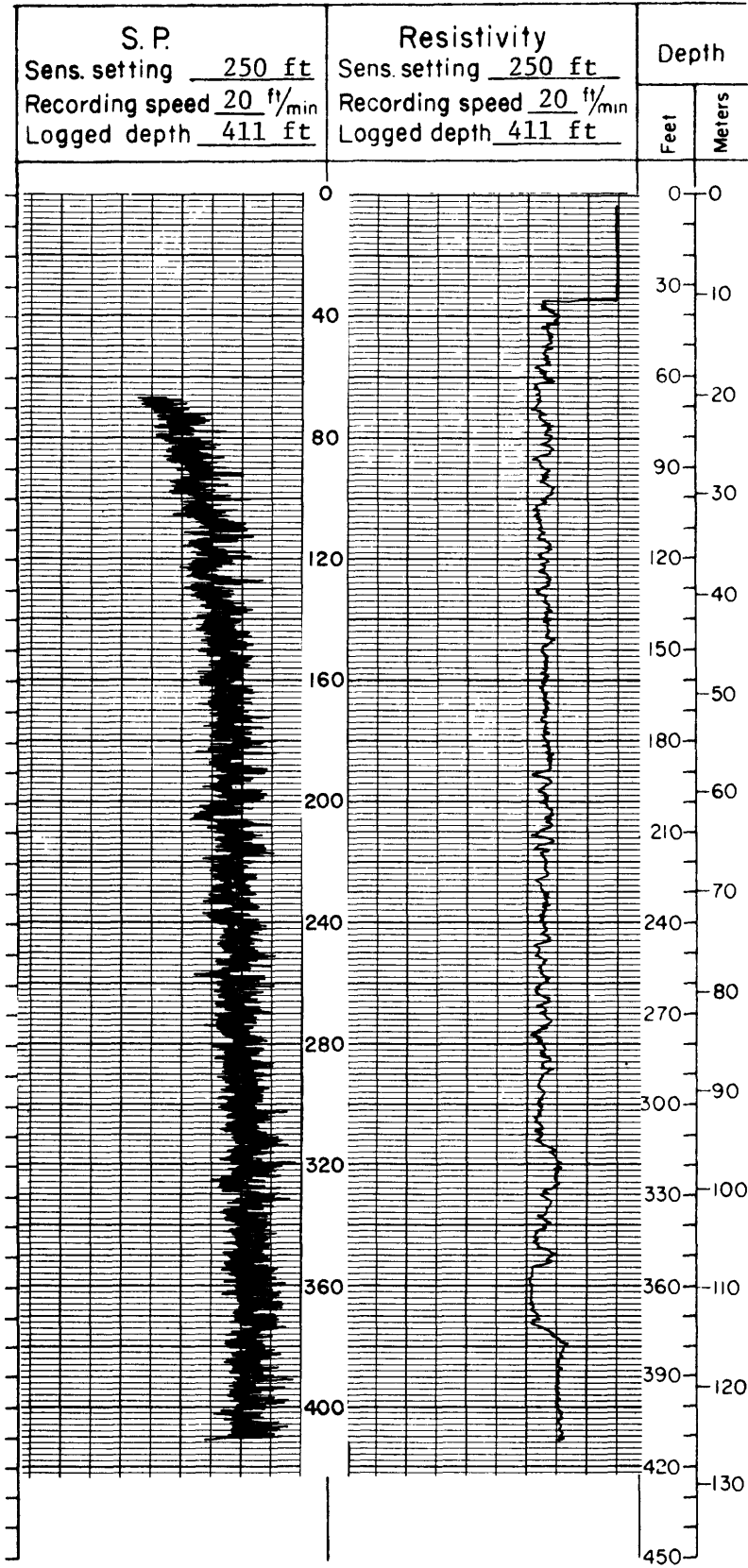
Remarks: _____

Recorded by: L. SAUER Geologist ^{Yes}/_{No} Recorded by: L. SAUER



Hole number (continued)

US-77297



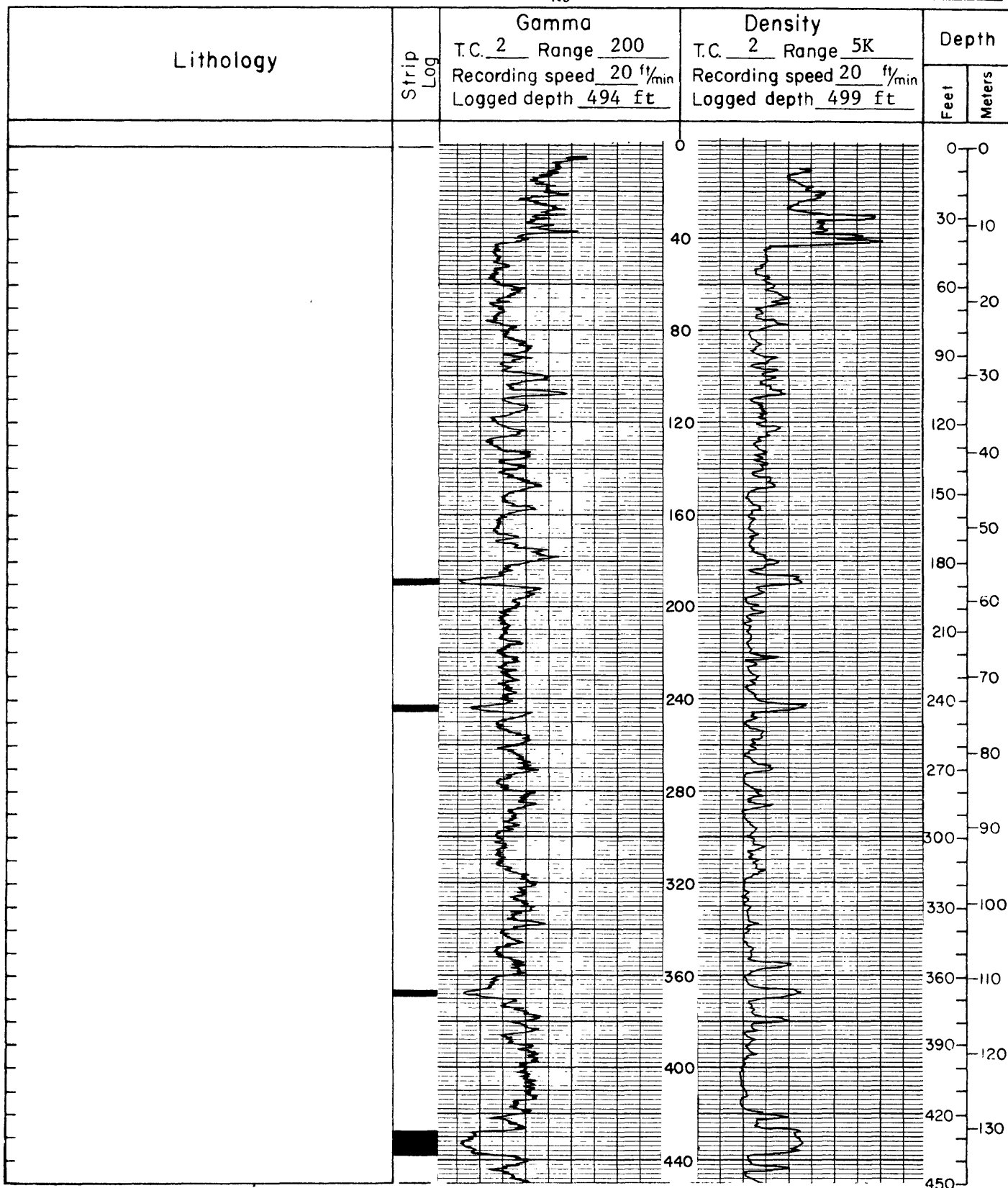
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Hole no: US-77298 Map: Crane NW Date: 12/14/77 State: Montana County: Richland
 Elev.: 2381 ft Location: T. 22 N., R. 57 E., Sec. 10, Tract BABC Drilled depth: 500 ft
 Measured: 520 ft ~~FNL~~ 1590 ft ~~FWL~~ Hole size: 4 3/4 in. Air Water Cored: Yes No

Remarks: _____

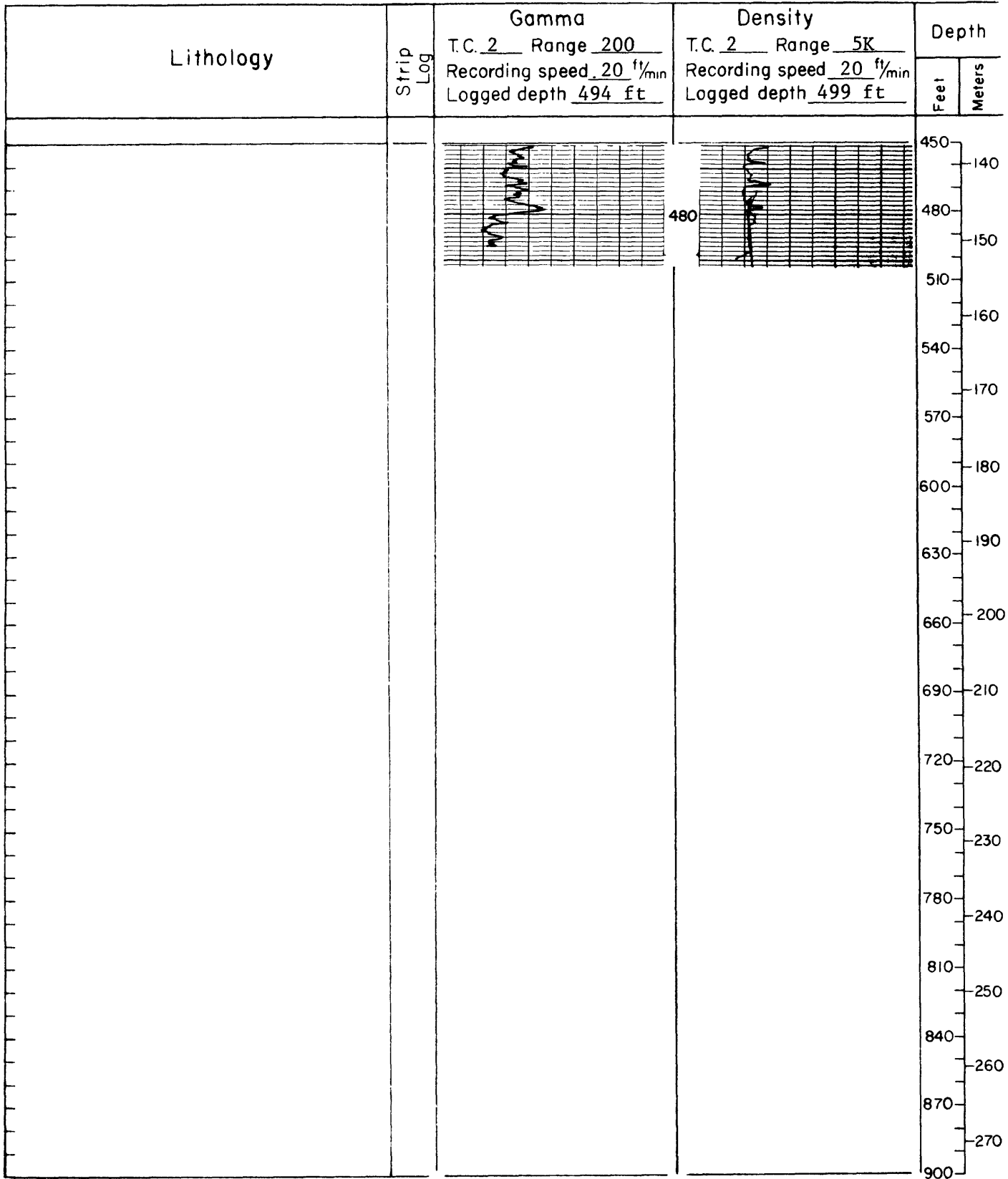
Recorded by: L. SAUER

Geologist ~~Yes~~ No Recorded by: K. WILLIAMS



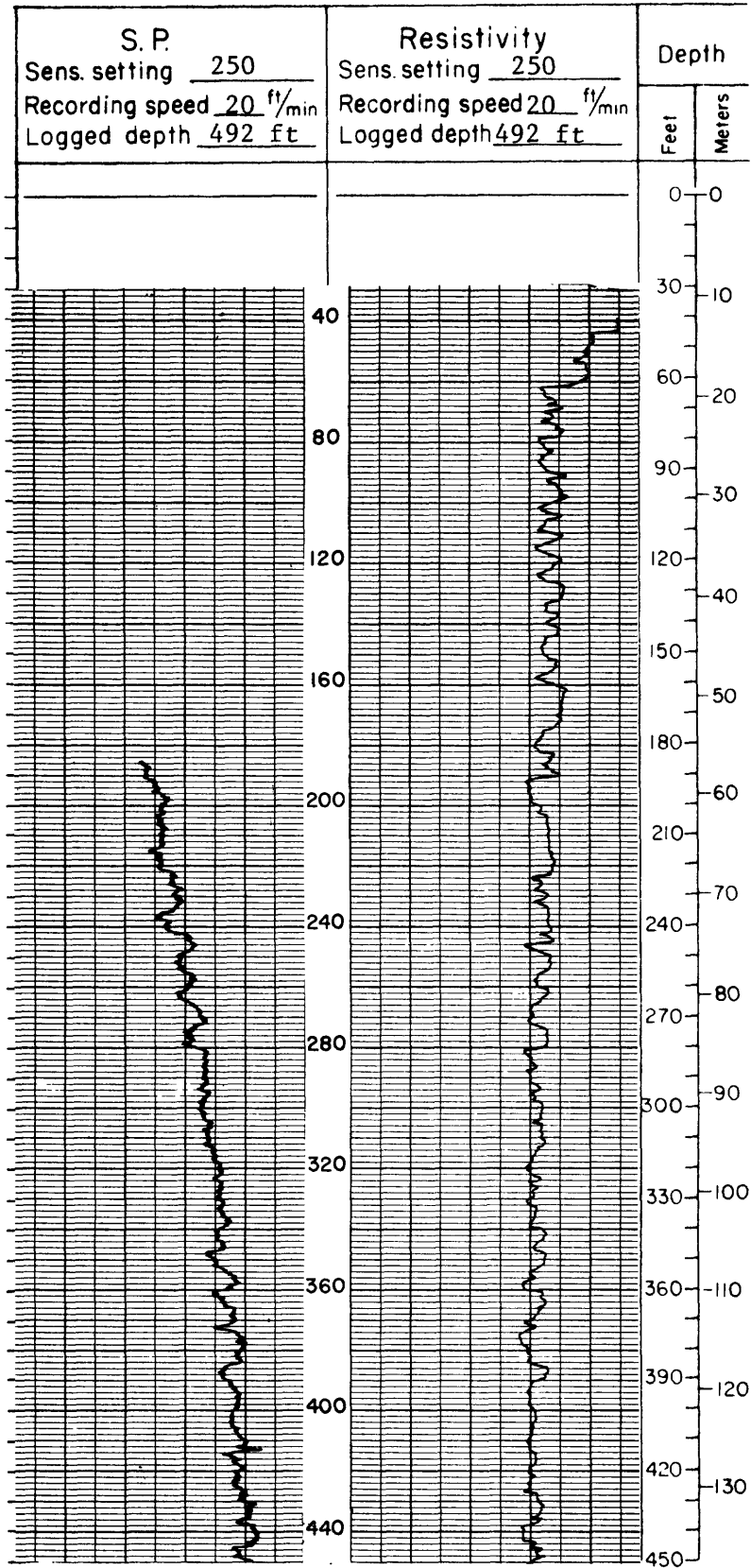
Hole number (continued)

US - 77298



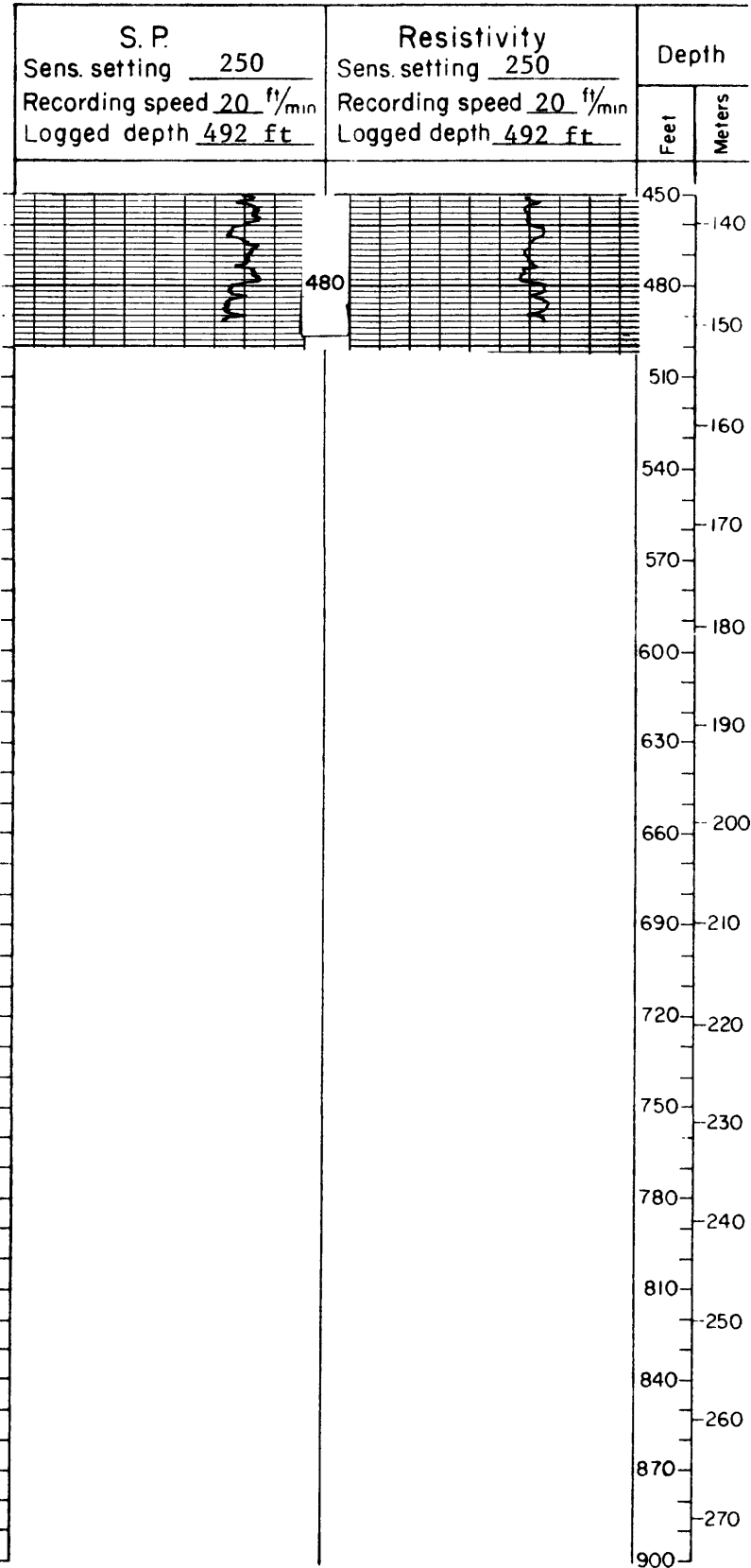
Hole number (continued)

US- 77298



Hole number (continued)

US - 77298



Montana College of Mineral Science and Technology

Hole no: US-77299 Map: Lambert Date: 12/14/77 State: Montana County: Richland

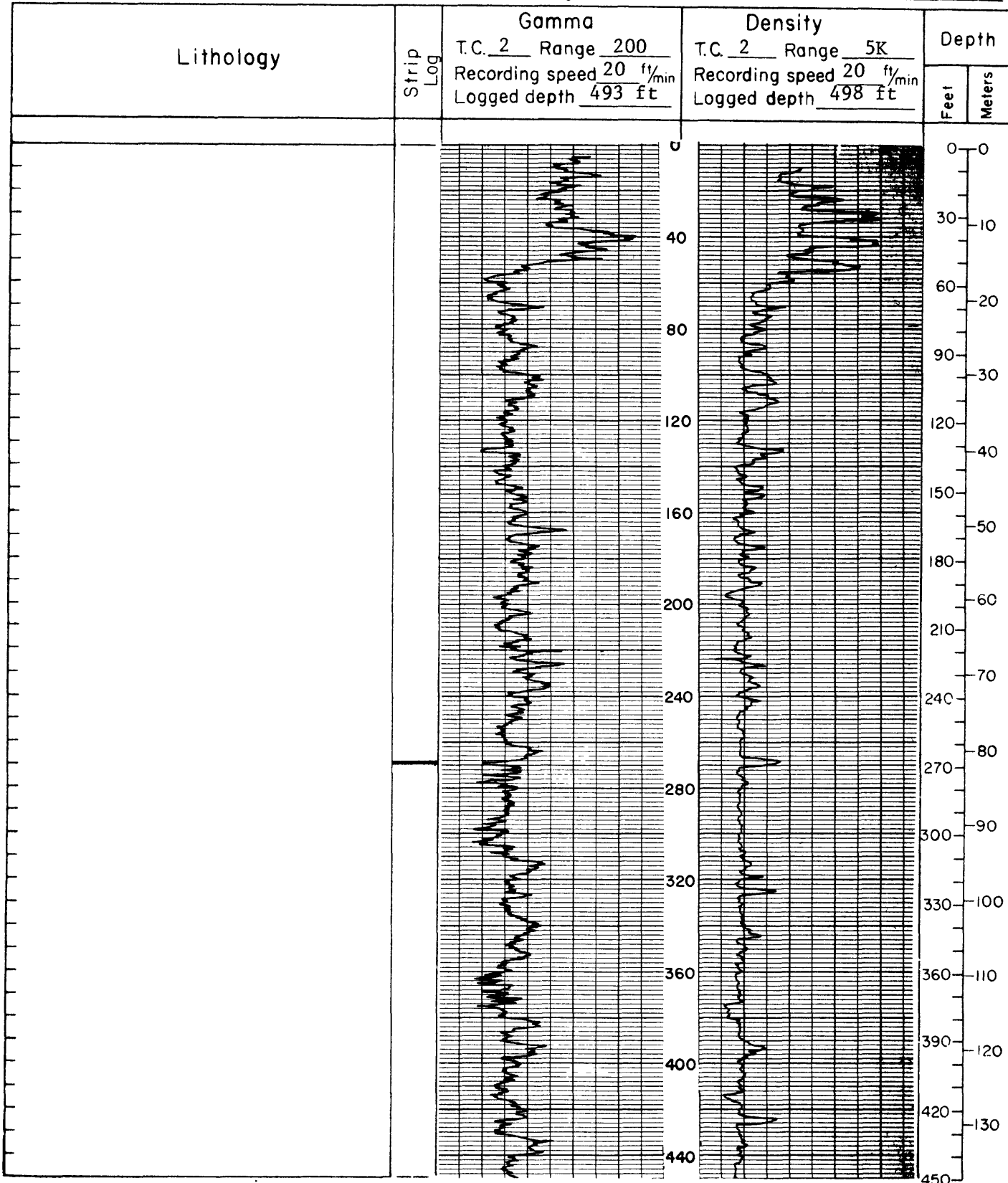
Elev.: 2591 ft Location: T. 23 N, R. 56 E, Sec. 34, Tract BABD Drilled depth: 500 ft

Measured: 600 ft ~~FNL~~ ~~XXX~~, 1880 ft ~~FWL~~ ~~XXX~~ Hole size: 4 3/4 in. Air Water Cored: Yes No

Remarks: _____

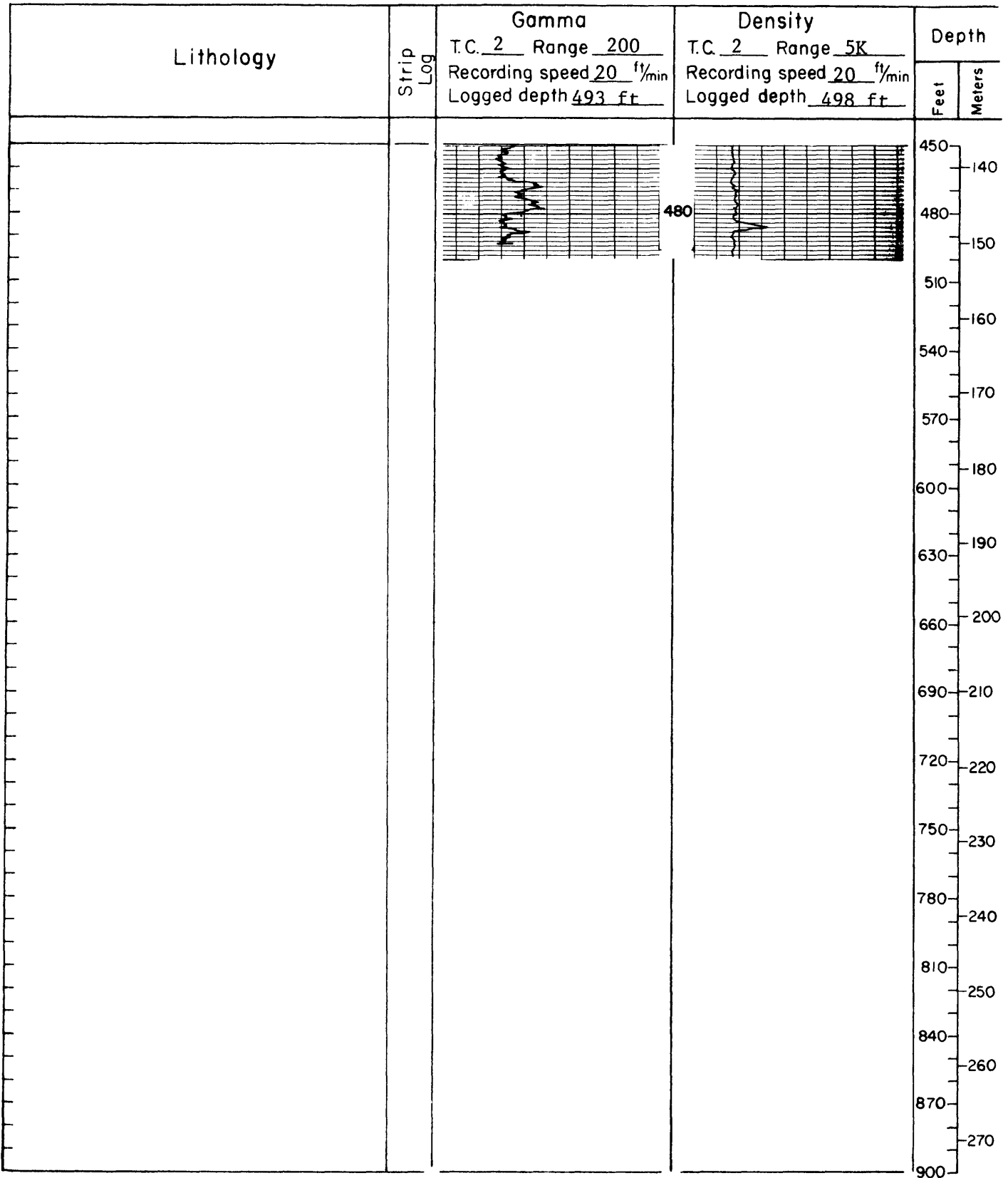
Recorded by: L. SAUER

Geologist ~~XXX~~ No _____ Recorded by: L. SAUER



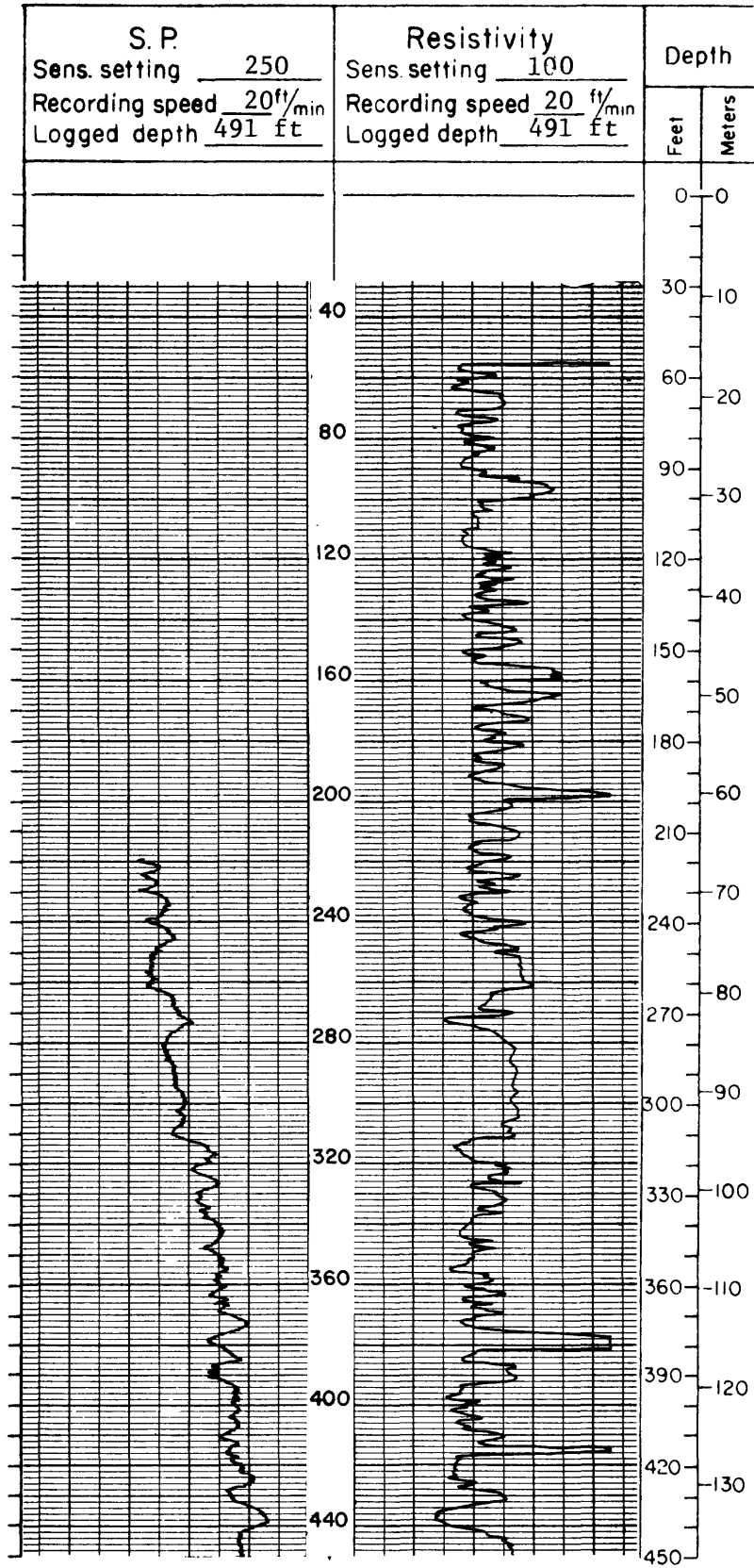
Hole number (continued)

US - 77299



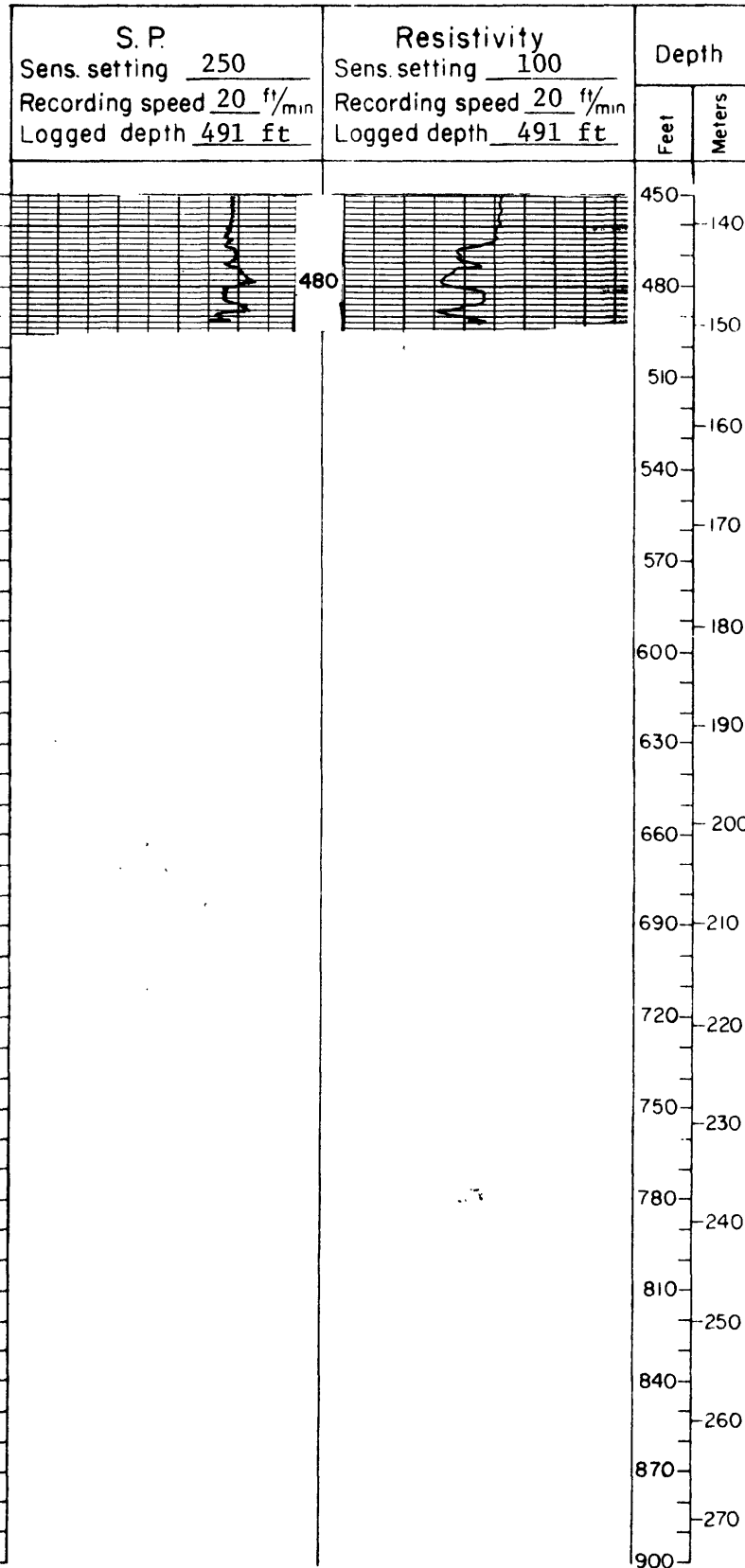
Hole number (continued)

US - 77299



Hole number (continued)

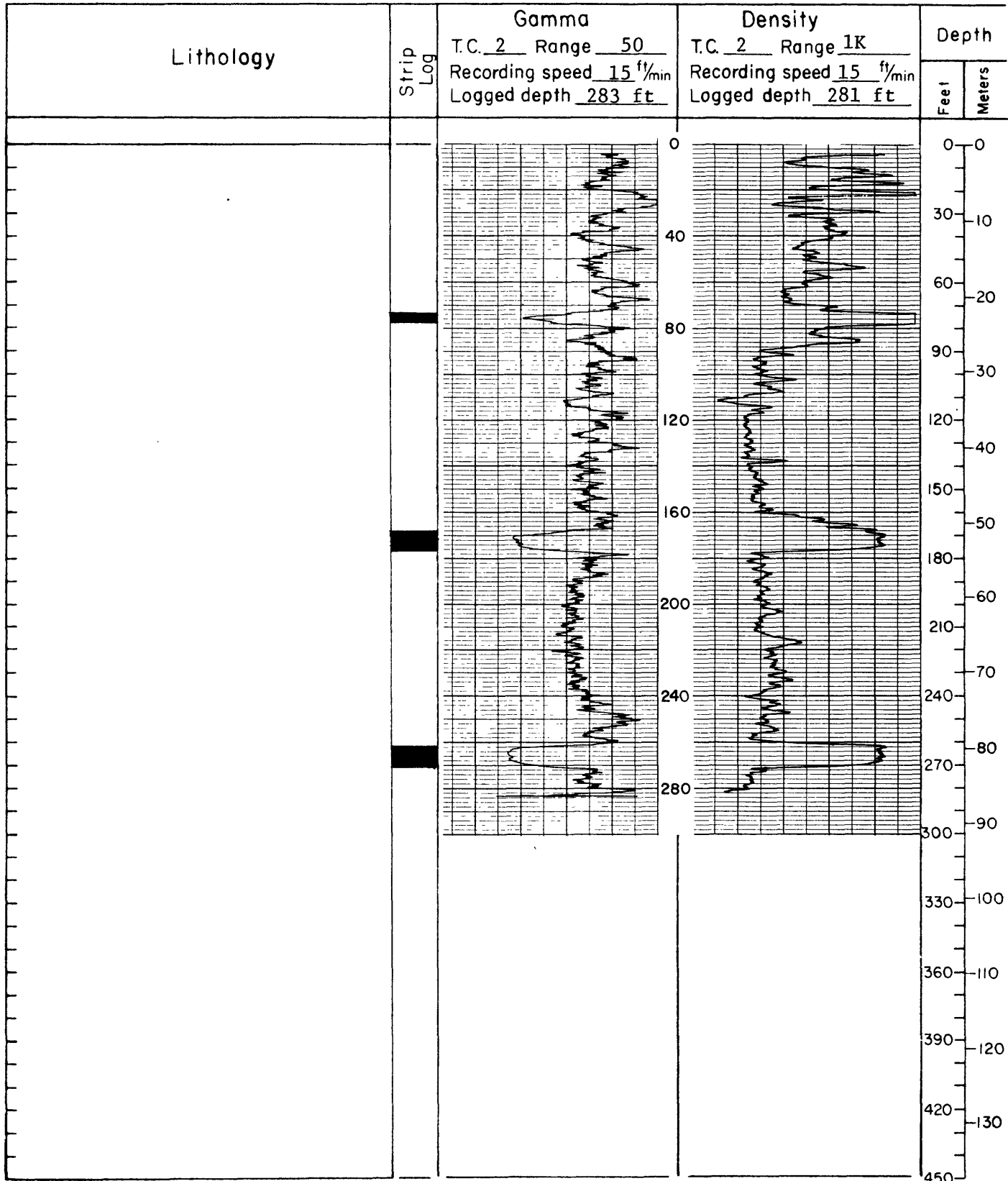
US - 77299



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Hole no: US-77300 Map: Hedstrom Lake Date: 11/4/77 State: Montana County: McCone
 Elev.: 2715 ft Location: T. 17 N., R. 44 E., Sec. 24, Tract ADDA Drilled depth: 283 ft
 Measured: 2140 ft ^{FNL} ~~FSL~~, 80 ft ^{FEL} ~~RWL~~ Hole size: 4 3/4 in. Air Water Cored: Yes No

Remarks: _____
 Recorded by: J. PINCHOCK Geologist: ^{Yes} ~~No~~ Recorded by: J. JENSEN



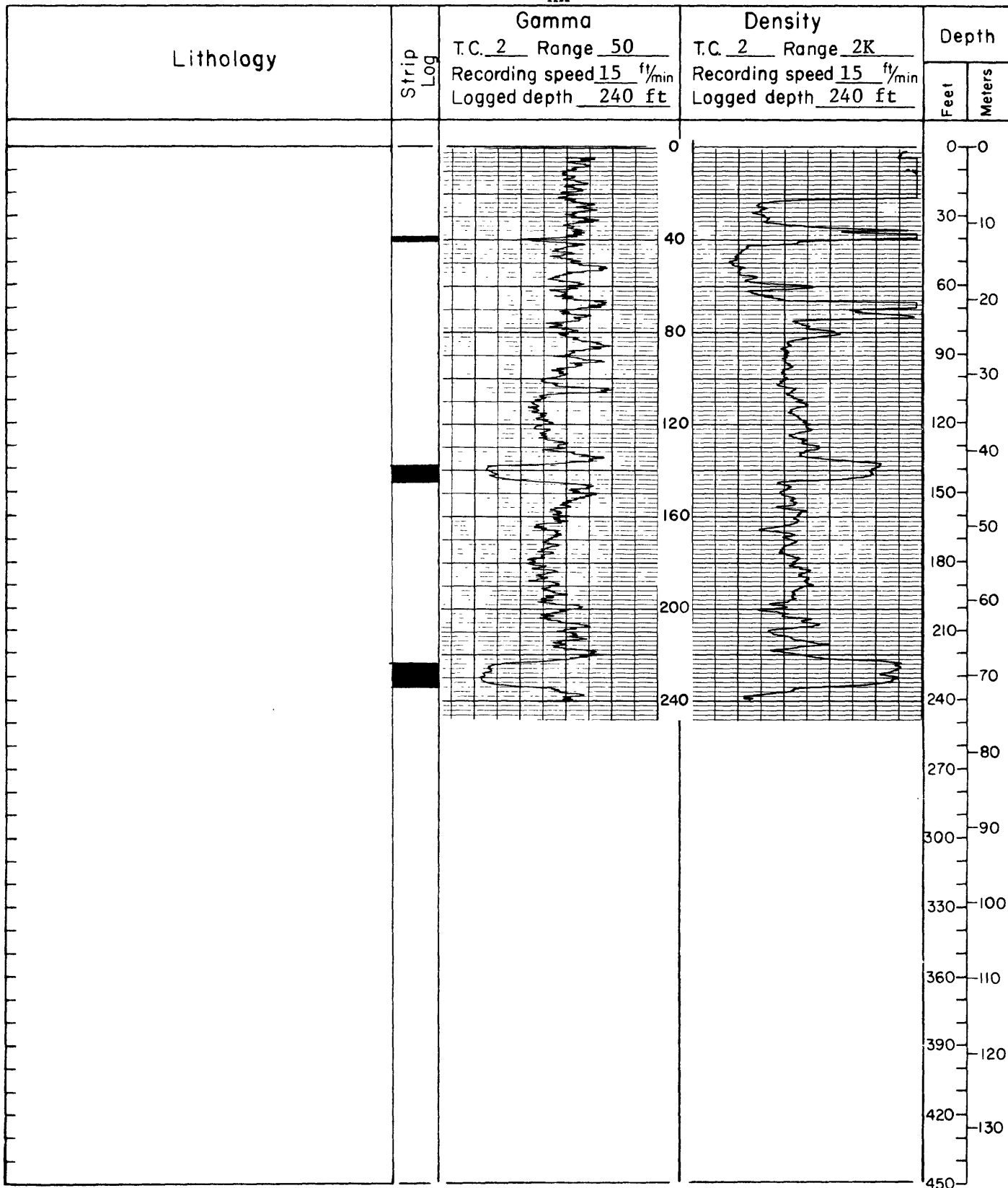
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Hole no: US-77301 Map: Berry School Date: 1/5/77 State: Montana County: McCone
 Elev.: 2800 ft Location: T. 16 N. 2, R. 46 E. 1, Sec. 18, Tract BGCC Drilled depth: 240 ft
 Measured: 1125 ft ~~FNL~~ ^{FNL}, 10 ft ~~FWL~~ ^{FWL} Hole size: 4 3/4 in. Air Water Cored: Yes No

Remarks: _____

Recorded by: J. PINCHOCK

Geologist ^{Yes} ~~No~~ Recorded by: J. JENSEN

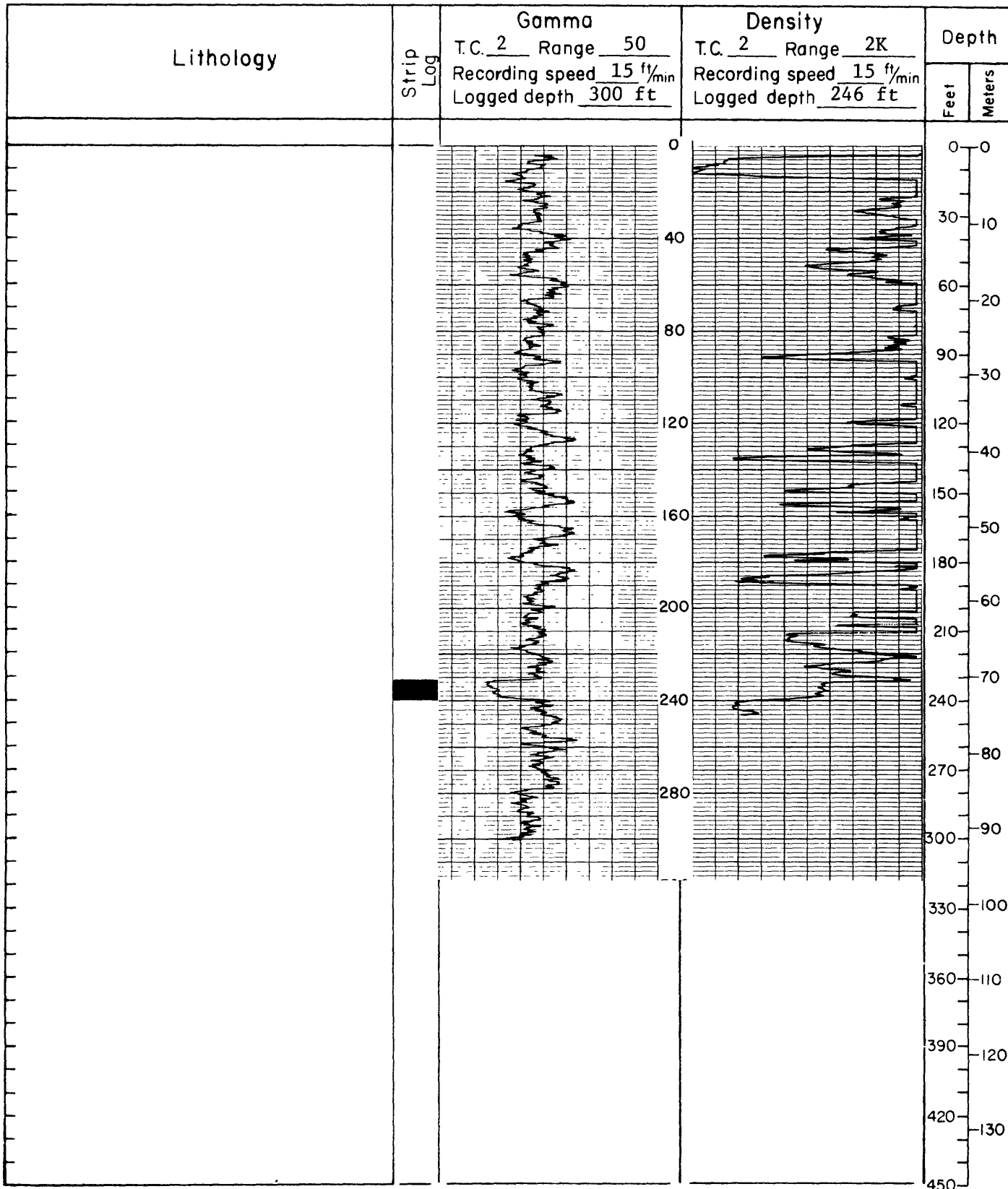


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Hole no: US-77302 Map: BLM-NE 30 Date: 11/5/77 State: Montana County: McCone
 Elev.: 2857 ft Location: T. 18 N. 8, R. 45 E. W, Sec. 22, Tract BAAA Drilled depth: 300 ft
 Measured: 100 ft ~~FNL~~ ~~FSK~~, 2600 ft ~~FWL~~ Hole size: 4 3/4 in Air Water Cored: Yes No

Remarks: _____

Recorded by: J. PINCHOCK Geologist ^{Yes} ~~No~~ Recorded by: J. JENSEN



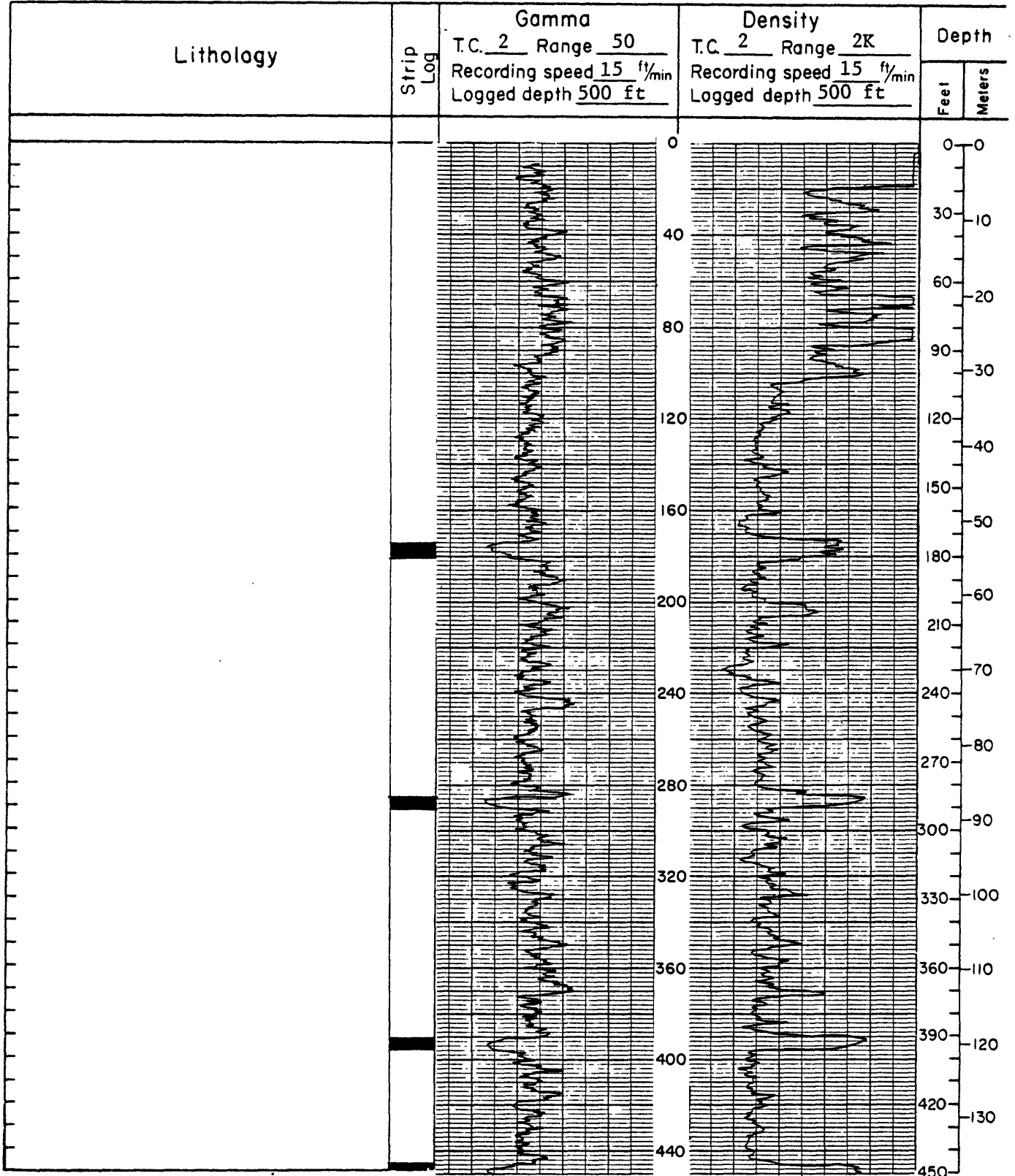
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Hole no: US-77303 Map: BLM-NE 38 Date: 11/5/77 State: Montana County: McCone
 Elev.: 2766 ft Location: T. 17 N., R. 46 E., Sec. 18, Tract BBBA Drilled depth: 500 ft
 Measured: 120 ~~FNL~~ 350 ~~RSL~~ ~~FWL~~ ~~REK~~ Hole size 4 3/4 in. Air Water Cored: Yes No

Remarks: _____

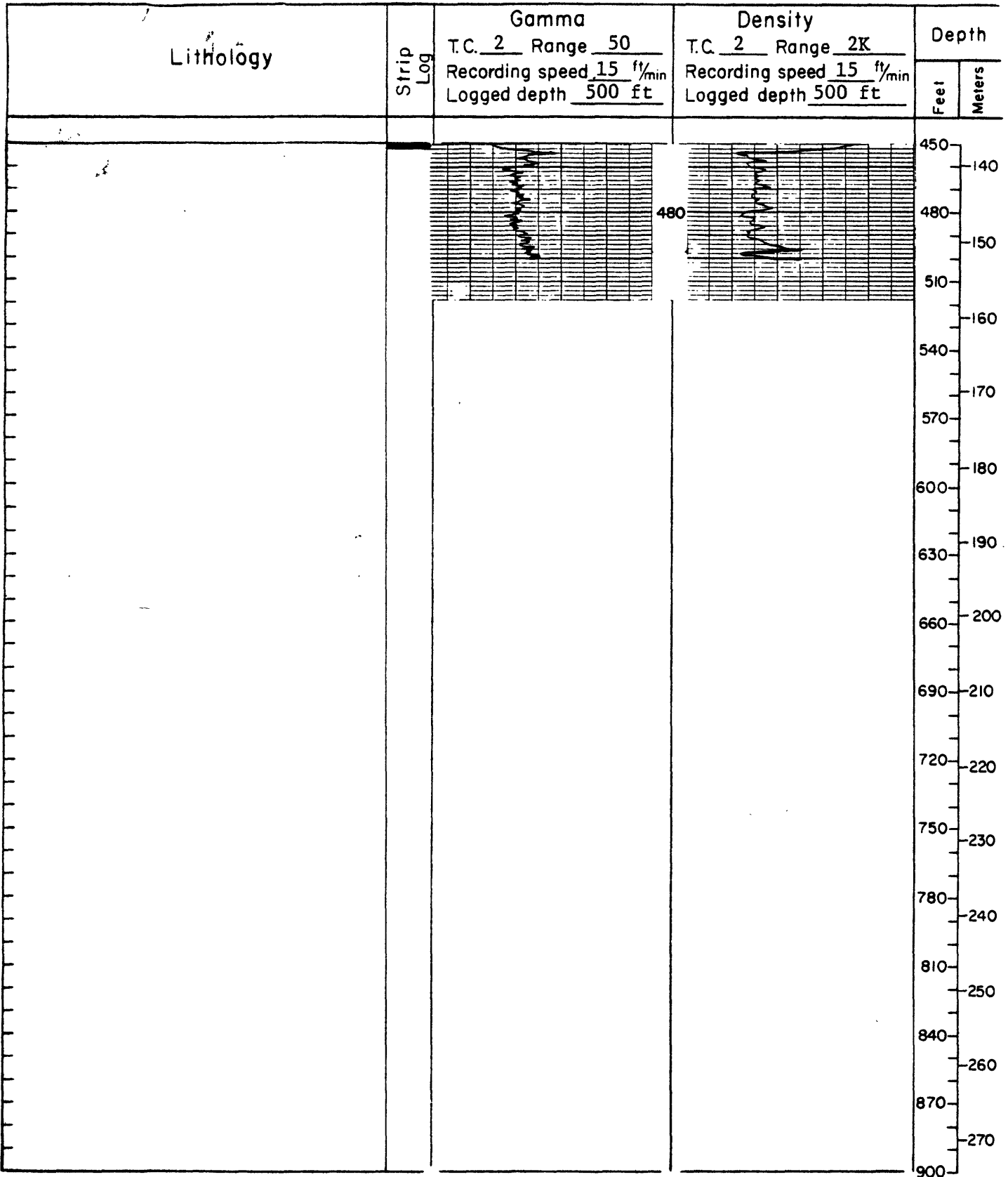
Recorded by: J. PINCHOCK

Geologist ^{Yes} ~~No~~ Recorded by: J. JENSEN



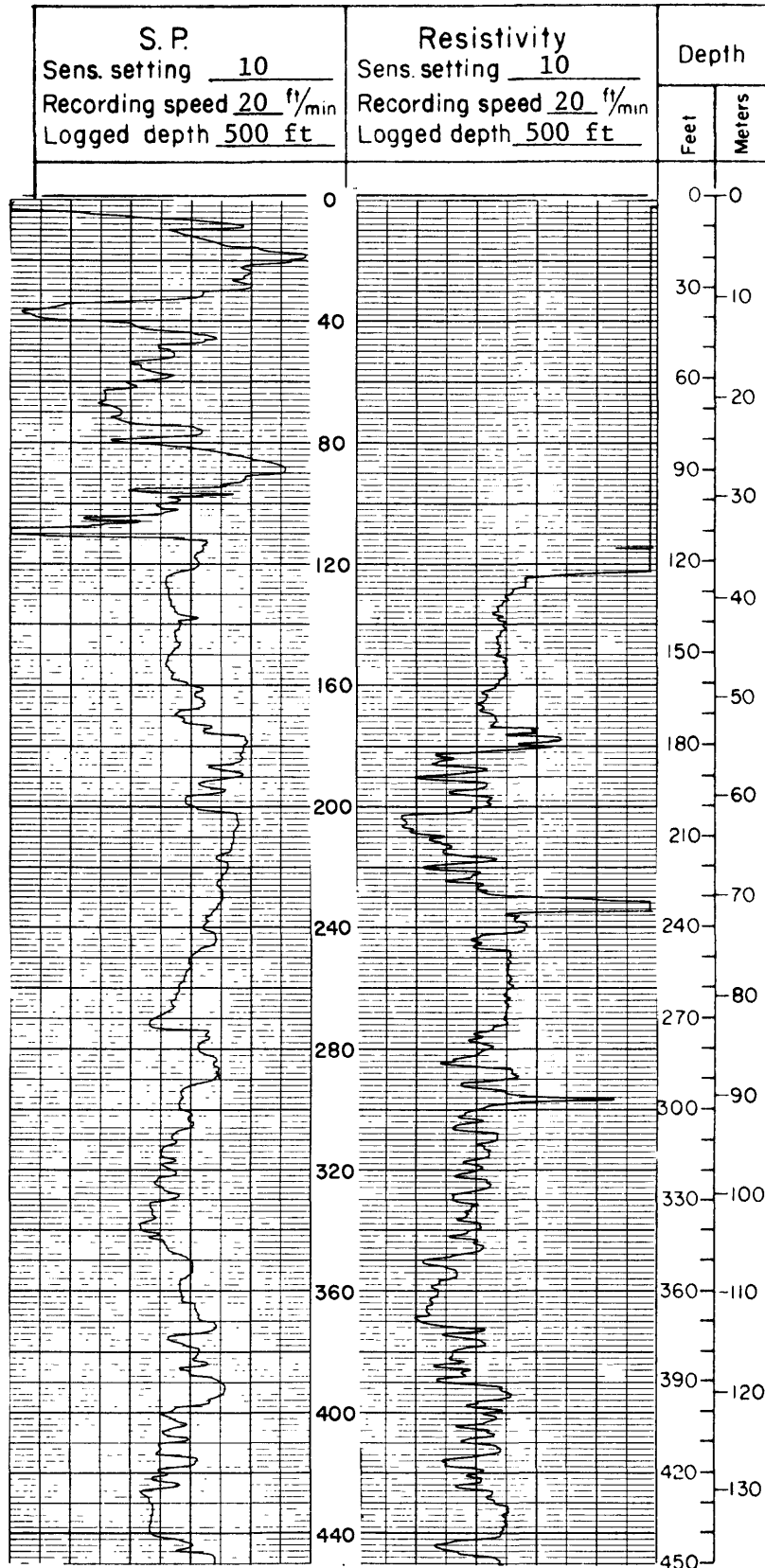
Hole number (continued)

US- 77303



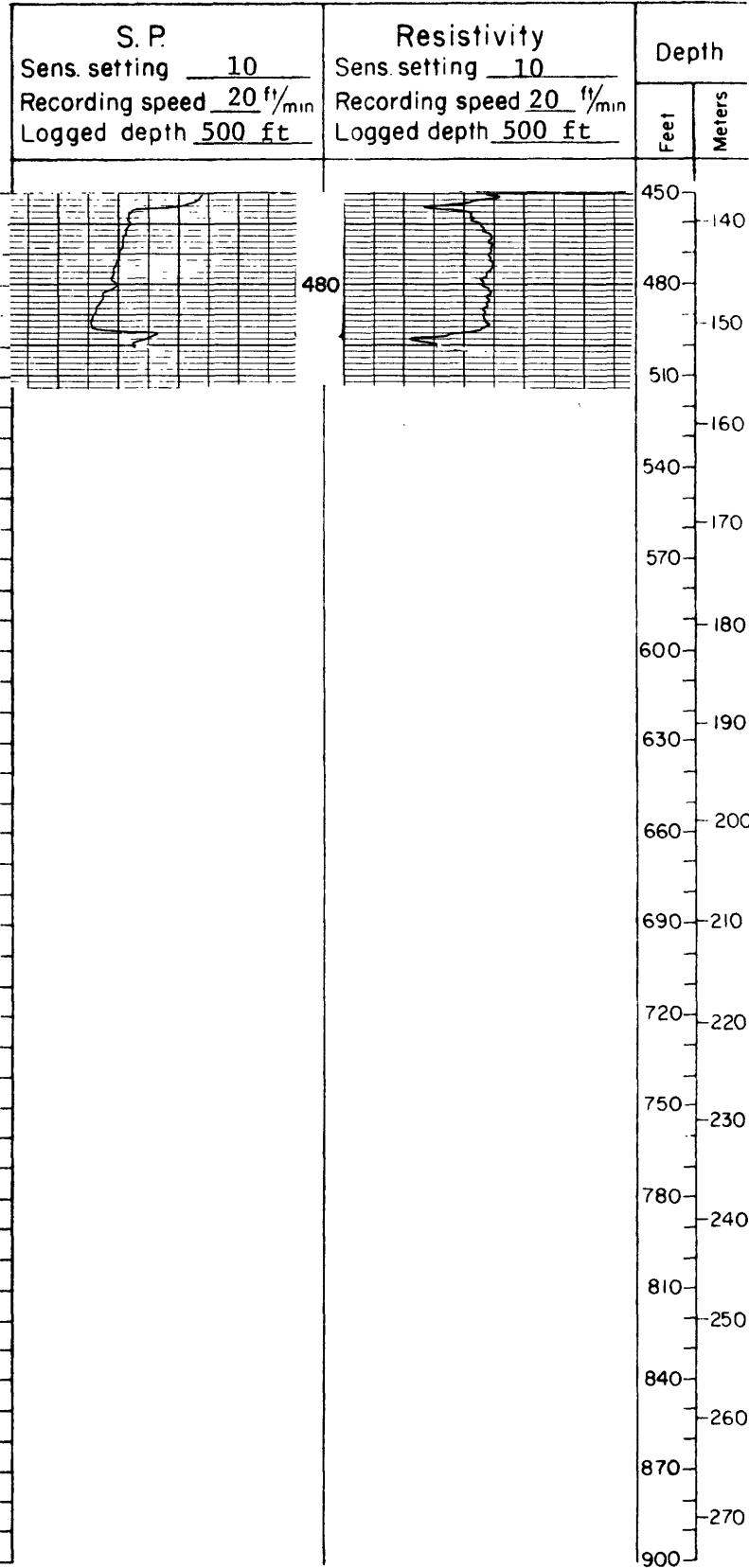
Hole number (continued)

US- 77303



Hole number (continued)

US - 77303



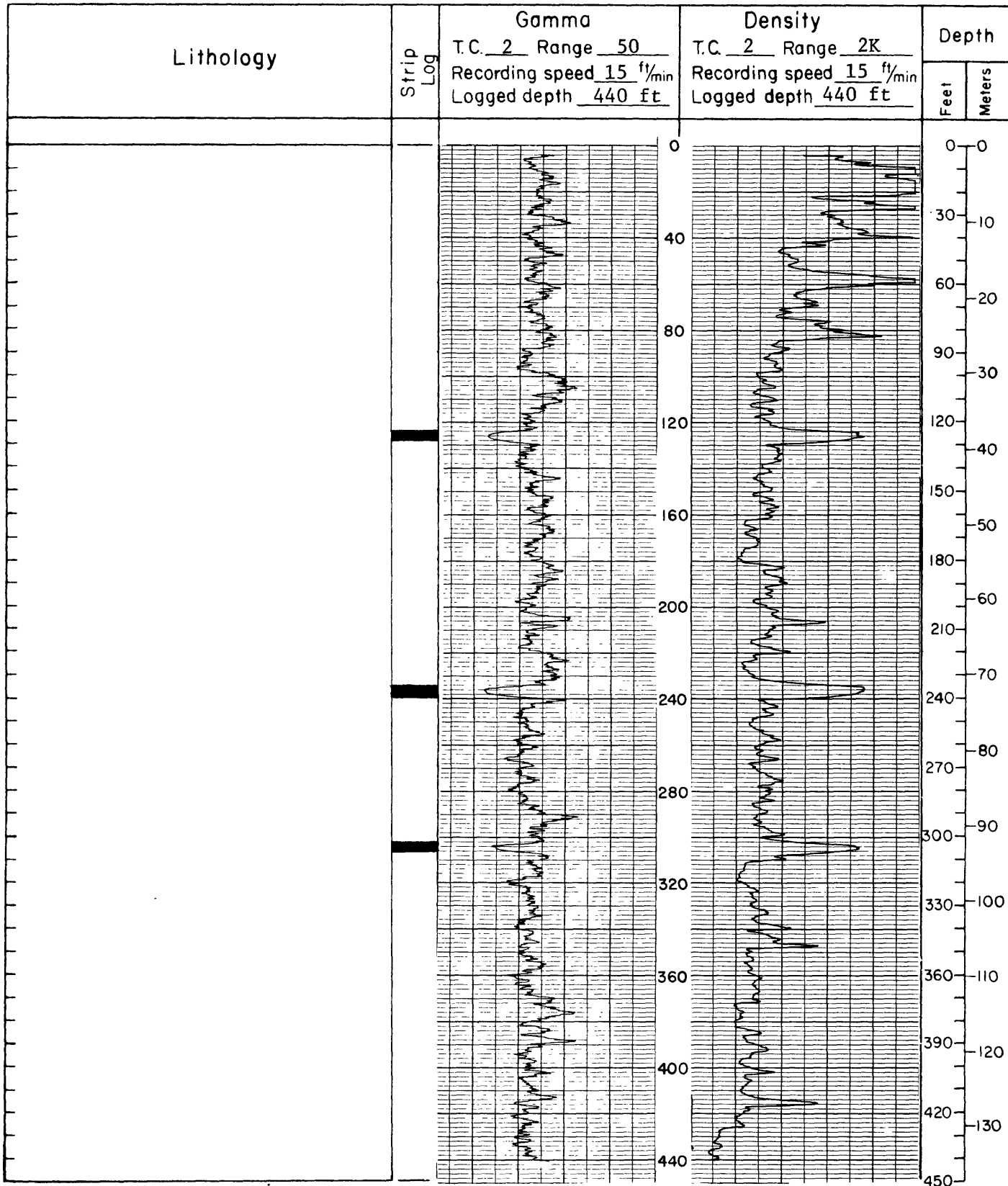
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Hole no: US-77304 Map: BLM-NE 30 Date: 11/6/77 State: Montana County: McCone
 Elev.: 2741 ft Location: T. 18 N. S. 8, R. 46 E., Sec. 22, Tract AAAA Drilled depth: 440 ft
 Measured: 100 ft FNL 50 ft FEL 50 ft Hole size: 4 3/4 in. Air Water Cored: Yes No

Remarks: _____

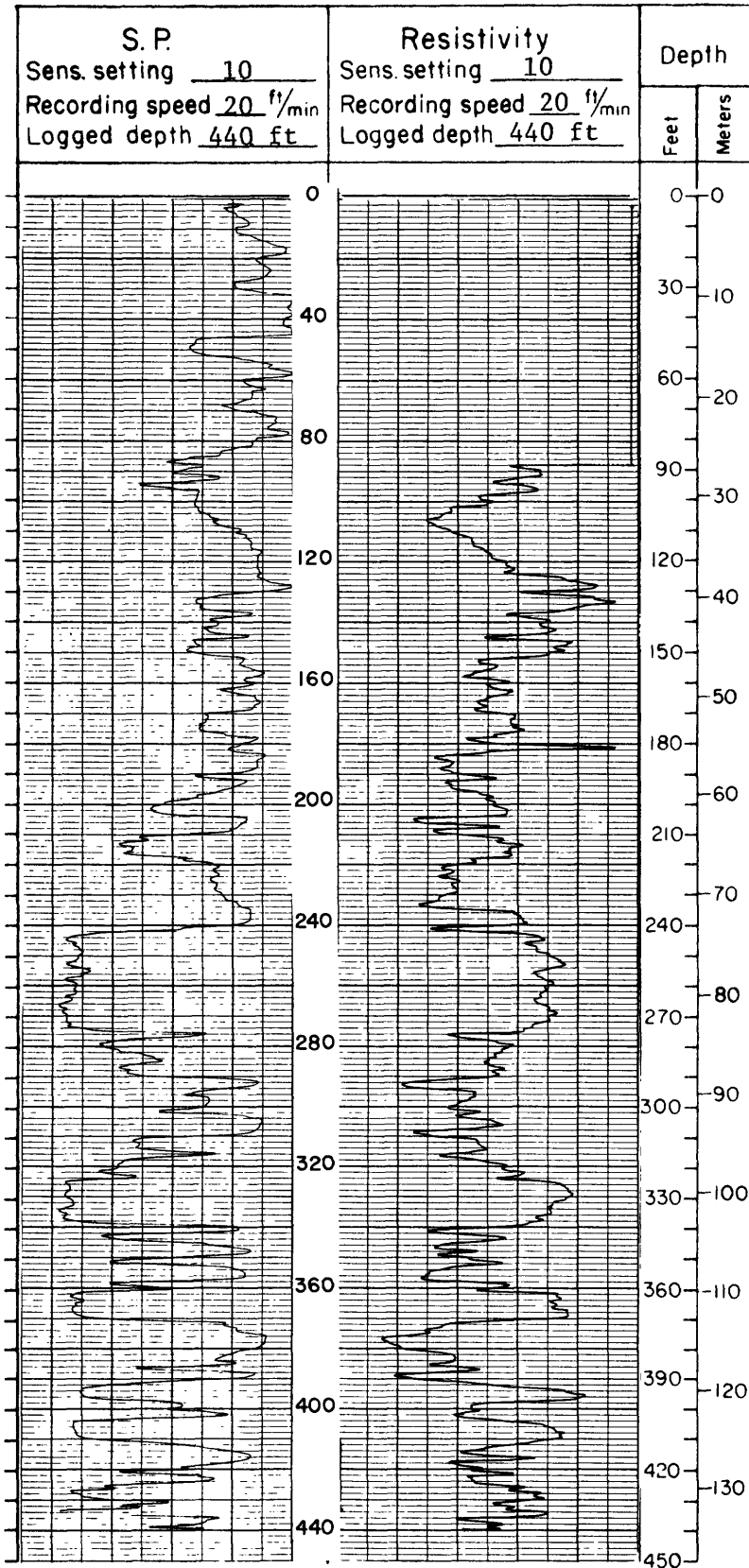
Recorded by: J. PINCHOCK

Geologist ^{Yes} ~~No~~ Recorded by: J. JENSEN



Hole number (continued)

US- 77304

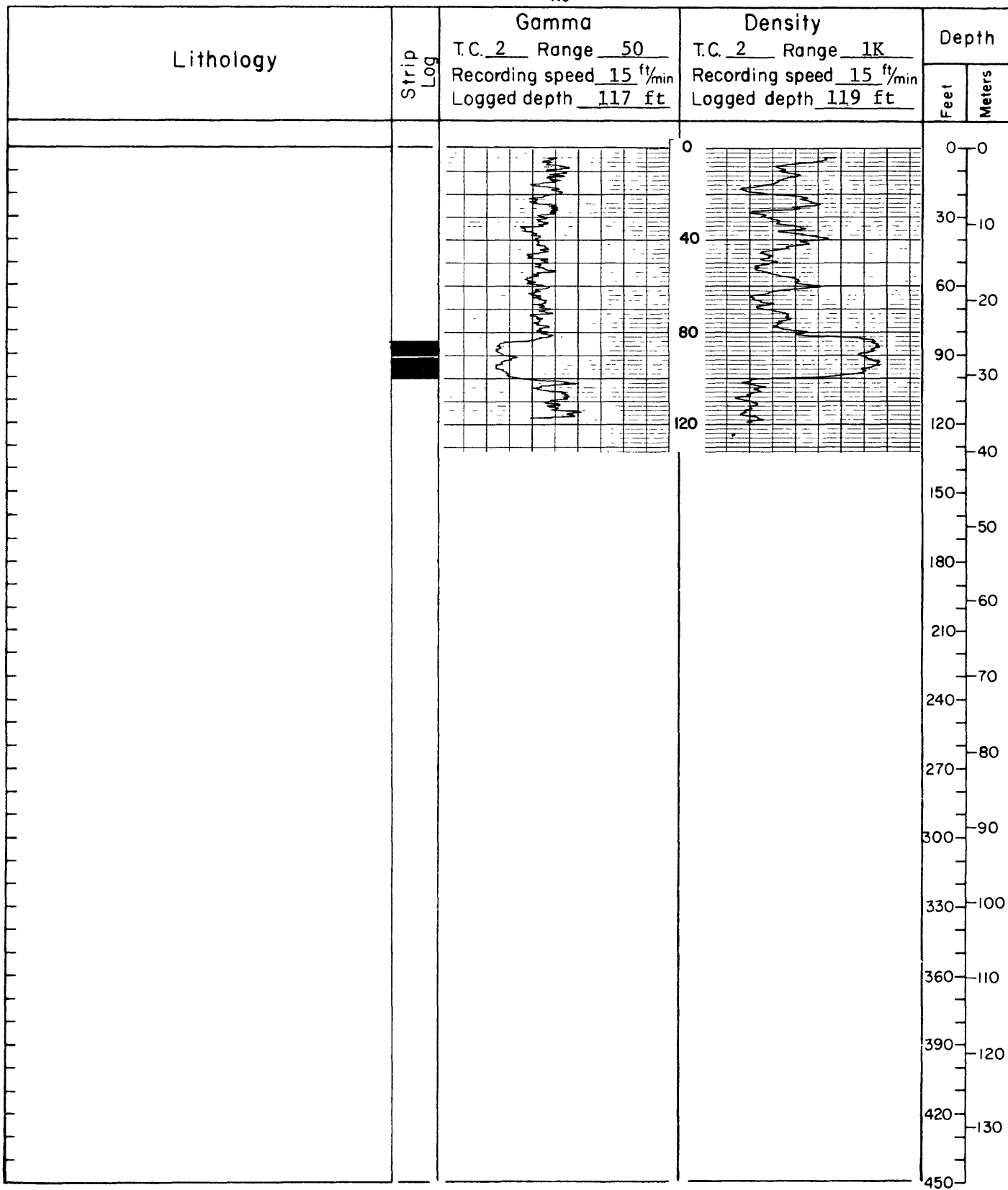


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Hole no: US-77305 Map: BLM-NE 30 Date: 11/6/77 State: Montana County: McCone
 Elev.: 2410 ft Location: T. 19 N., R. 48 E., Sec. 2, Tract AAAD Drilled depth: 120 ft
 Measured: 500 ft ^{FNL} _{PSL}, 100 ft ^{FEL} _{XWX} Hole size: 4 3/4 in. Air Water Cored: Yes No

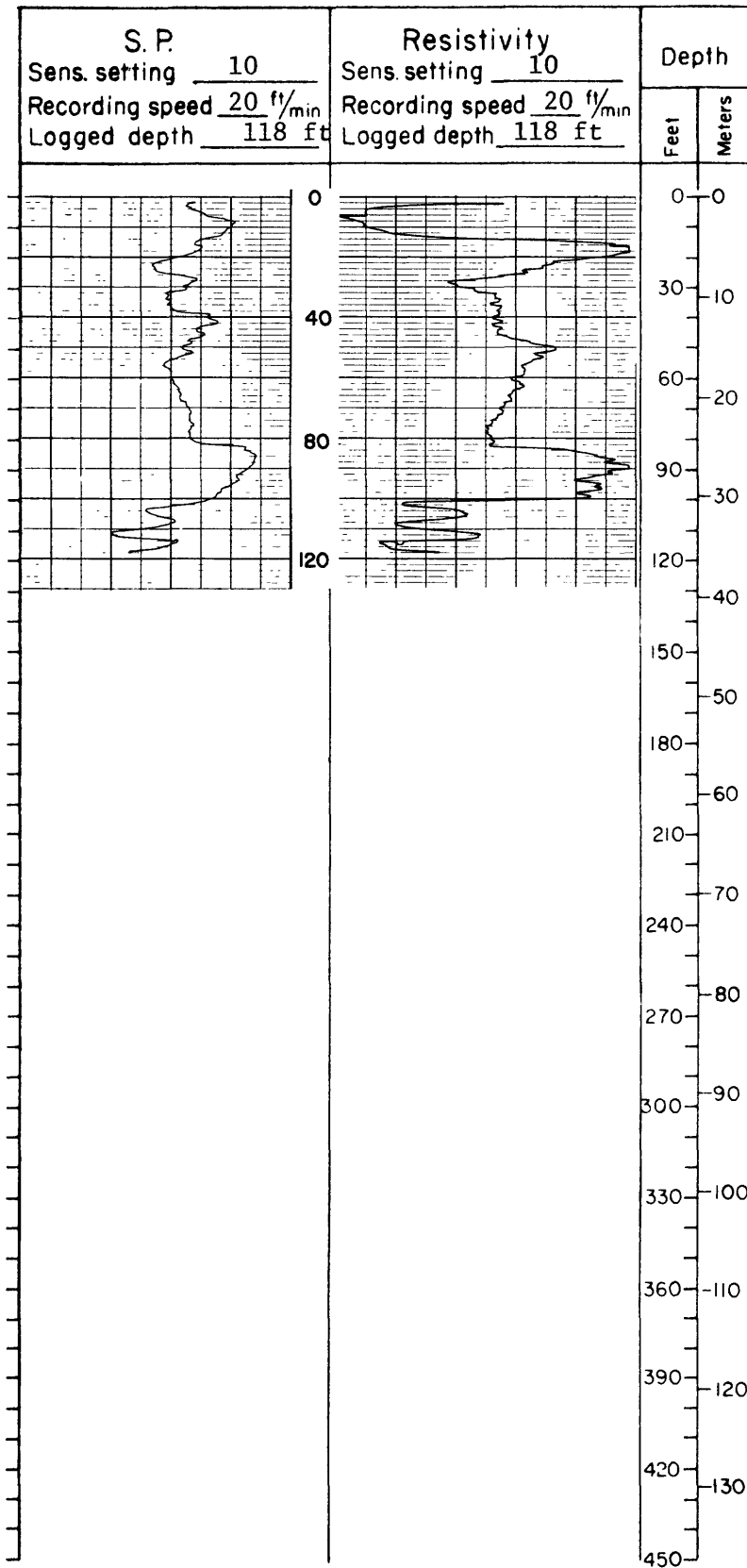
Remarks: _____

Recorded by: J. PINCHOCK Geologist ^{Yes} _{No} Recorded by: J. JENSEN



Hole number (continued)

US - 77305

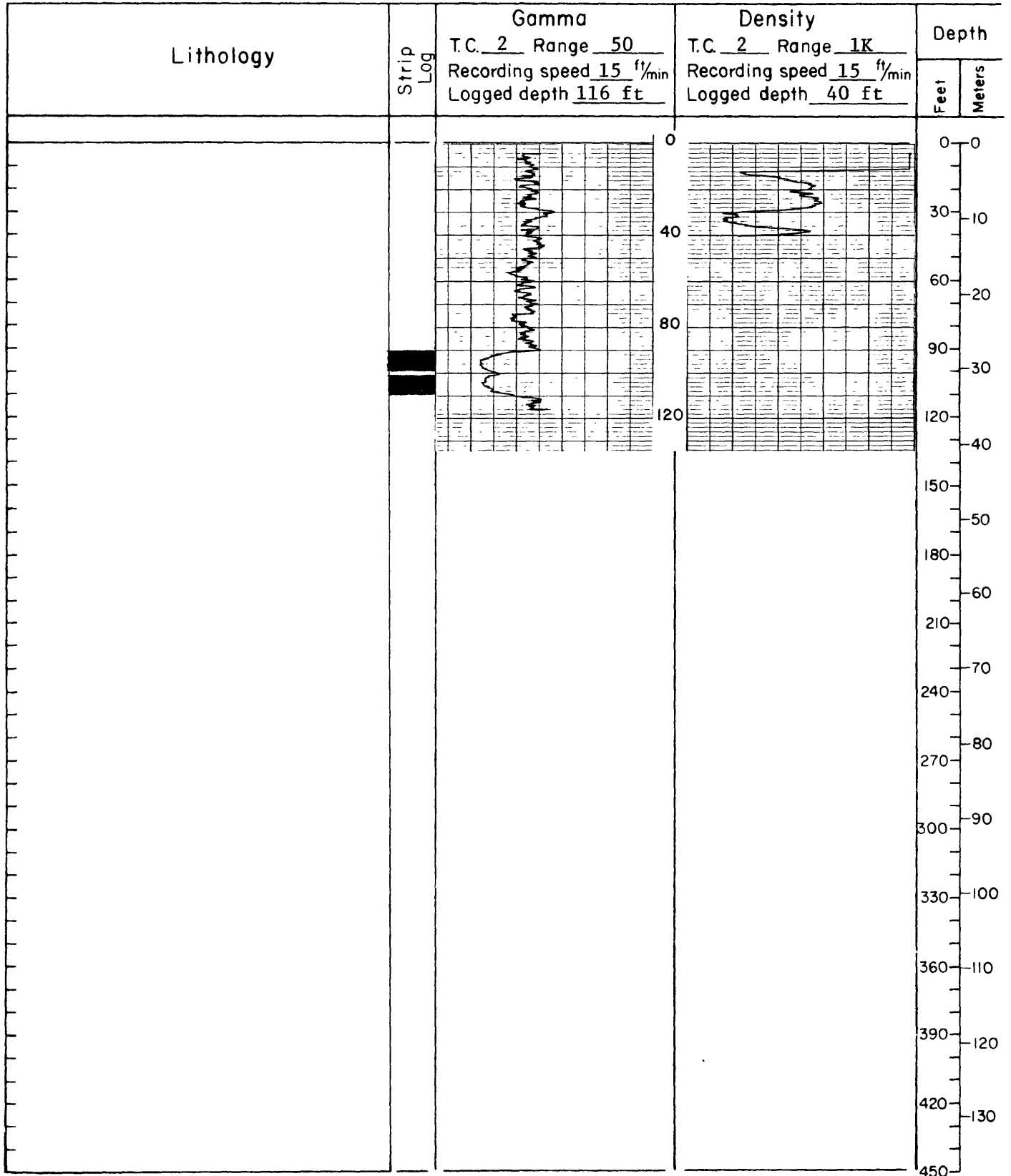


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Hole no: US-77306 Map: BLM-NE 30 Date: 11/7/77 State: Montana County: McCone
 Elev.: 2397 ft Location: T. 20 ^{N.} _{S.}, R. 49 ^{E.} _{W.}, Sec. 30, Tract DDDC Drilled depth: 120 ft
 Measured: 125 ft ~~RXX~~ FSL, 600 ft ~~RXX~~ ^{FEL} Hole size: 4 3/4 in. Air Water Cored: Yes No

Remarks: _____

Recorded by: J. PINCHOCK Geologist ^{Yes} ~~XXX~~ Recorded by: J. JENSEN

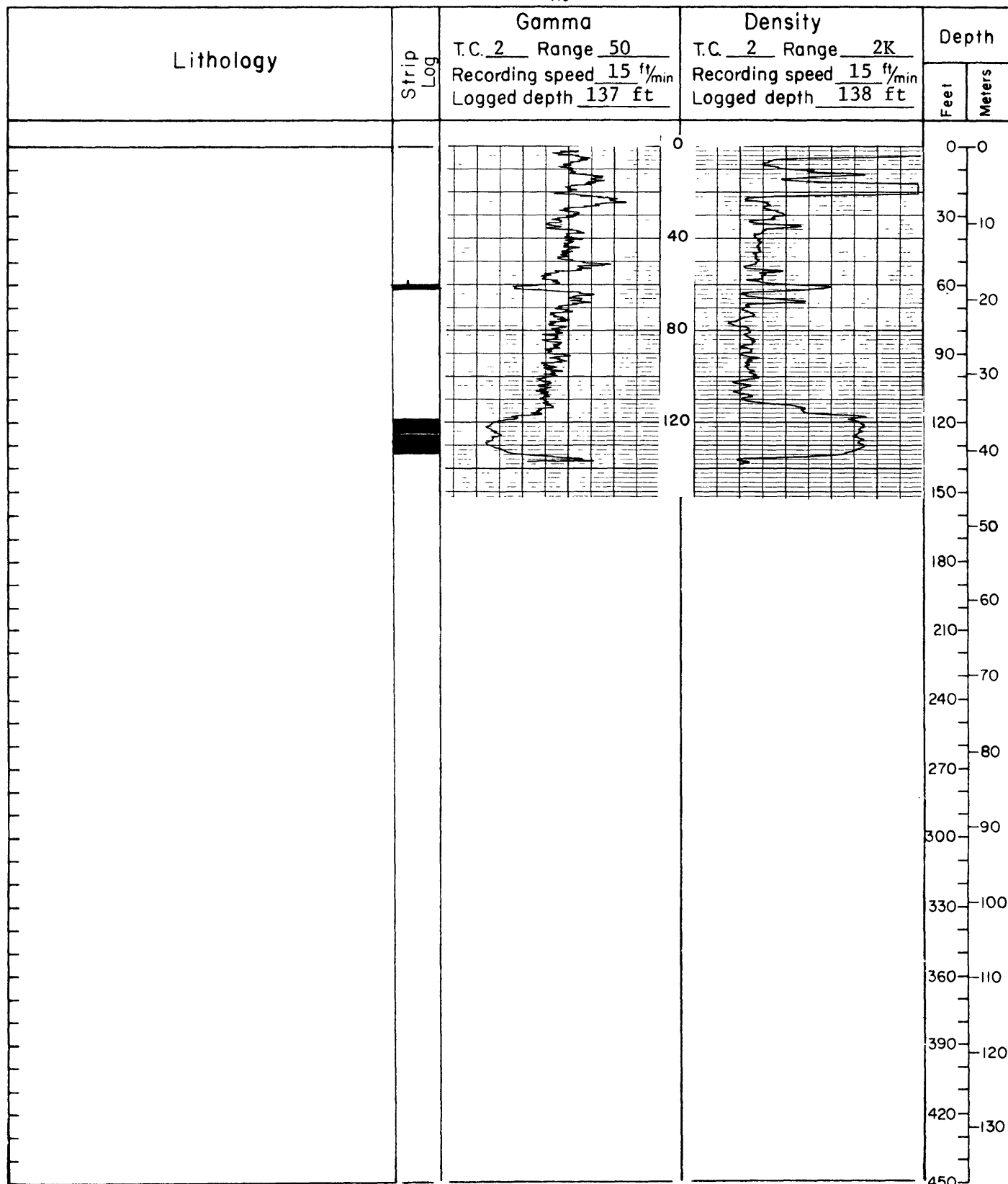


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Hole no: US-77307 Map: BLM-NE 30 Date: 1/7/77 State: Montana County: McCone
 Elev.: 2427 ft Location: T. 20 N. R. 49 E. Sec. 30, Tract AAAA Drilled depth: 140 ft
 Measured: 100 ft ~~FNL~~ 75 ft ~~FEL~~ Hole size: 4 3/4 in. Air Water Cored: Yes No

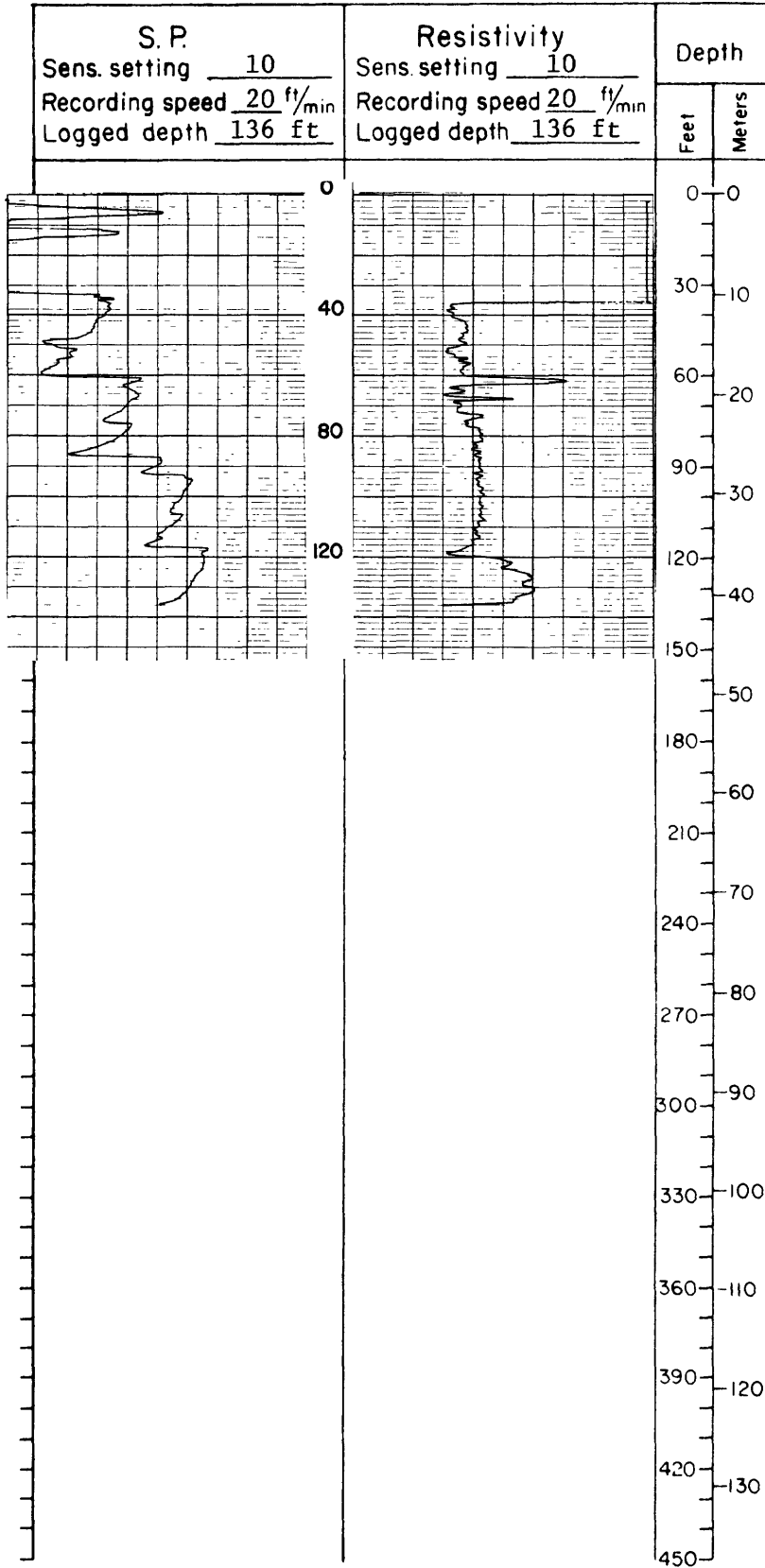
Remarks: _____

Recorded by: J. PINCHOCK Geologist ^{Yes} ~~No~~ Recorded by: J. JENSEN



Hole number (continued)

US - 77307

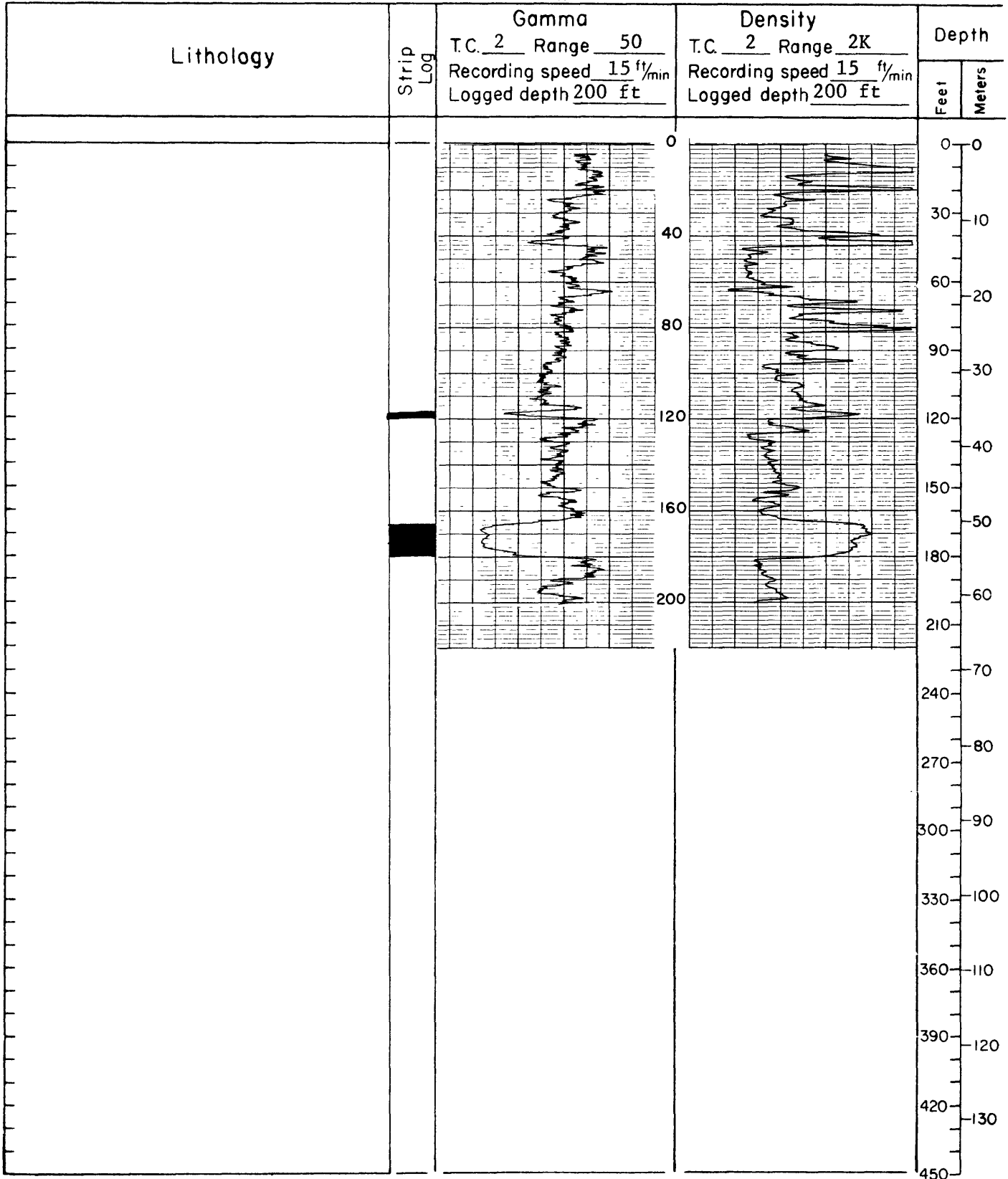


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Hole no: US-77308 Map: BLM-NE 30 Date: 11/7/77 State: Montana County: McCone
 Elev: 2502 ft Location: T. 20 ^{N.} _{S.}, R. 49 ^{E.} _{W.}, Sec. 18, Tract DDDD Drilled depth: 200 ft
 Measured: 50 ft ~~FSL~~, 50 ft ~~FEL~~ ~~XWX~~ Hole size: 4 3/4 in. Air Water Cored: Yes No

Remarks: _____

Recorded by: J. PINCHOCK Geologist ^{Yes} ~~No~~ Recorded by: J. JENSEN



Montana College of Mineral Science and Technology

Hole no: US-77309 Map: BLM-NE 30 Date: 11/7/77 State: Montana County: McCone
 Elev.: 2372 ft Location: T. 20 ^N _S, R. 49 ^E _W, Sec. 2, Tract DDDD Drilled depth: 140 ft
 Measured: 100 ft ~~FSL~~ ^{FSL}, 300 ft ~~FEL~~ ^{FEL} Hole size: 4 3/4 in. Air Water Cored: Yes No

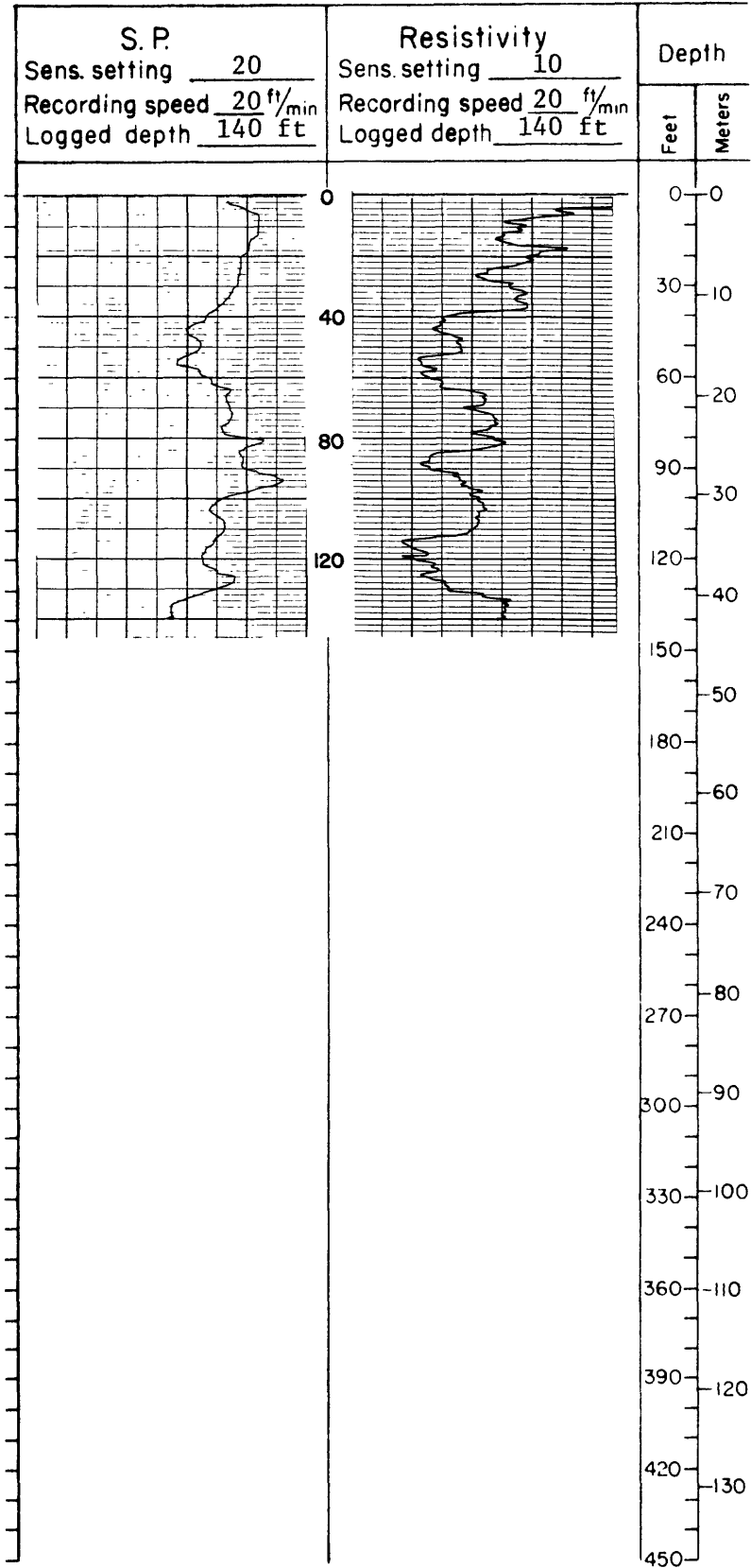
Remarks: _____

Recorded by: J. PINCHOCK Geologist ^{Yes} ~~No~~ Recorded by: J. JENSEN

| Lithology | Strip Log | Gamma | Density | Depth | |
|-----------|-----------|--|--|-------|--------|
| | | T.C. <u>2</u> Range <u>50</u> Recording speed <u>15</u> f _y /min Logged depth <u>137</u> ft | T.C. <u>2</u> Range <u>2K</u> Recording speed <u>15</u> f _y /min Logged depth <u>140</u> ft | Feet | Meters |
| | | | | 0 | 0 |
| | | | | 30 | 10 |
| | | | | 60 | 20 |
| | | | | 90 | 30 |
| | | | | 120 | 40 |
| | | | | 150 | 50 |
| | | | | 180 | 60 |
| | | | | 210 | 70 |
| | | | | 240 | 80 |
| | | | | 270 | 90 |
| | | | | 300 | 100 |
| | | | | 330 | 110 |
| | | | | 360 | 120 |
| | | | | 390 | 130 |
| | | | | 420 | 140 |
| | | | | 450 | |

Hole number (continued)

US - 77309

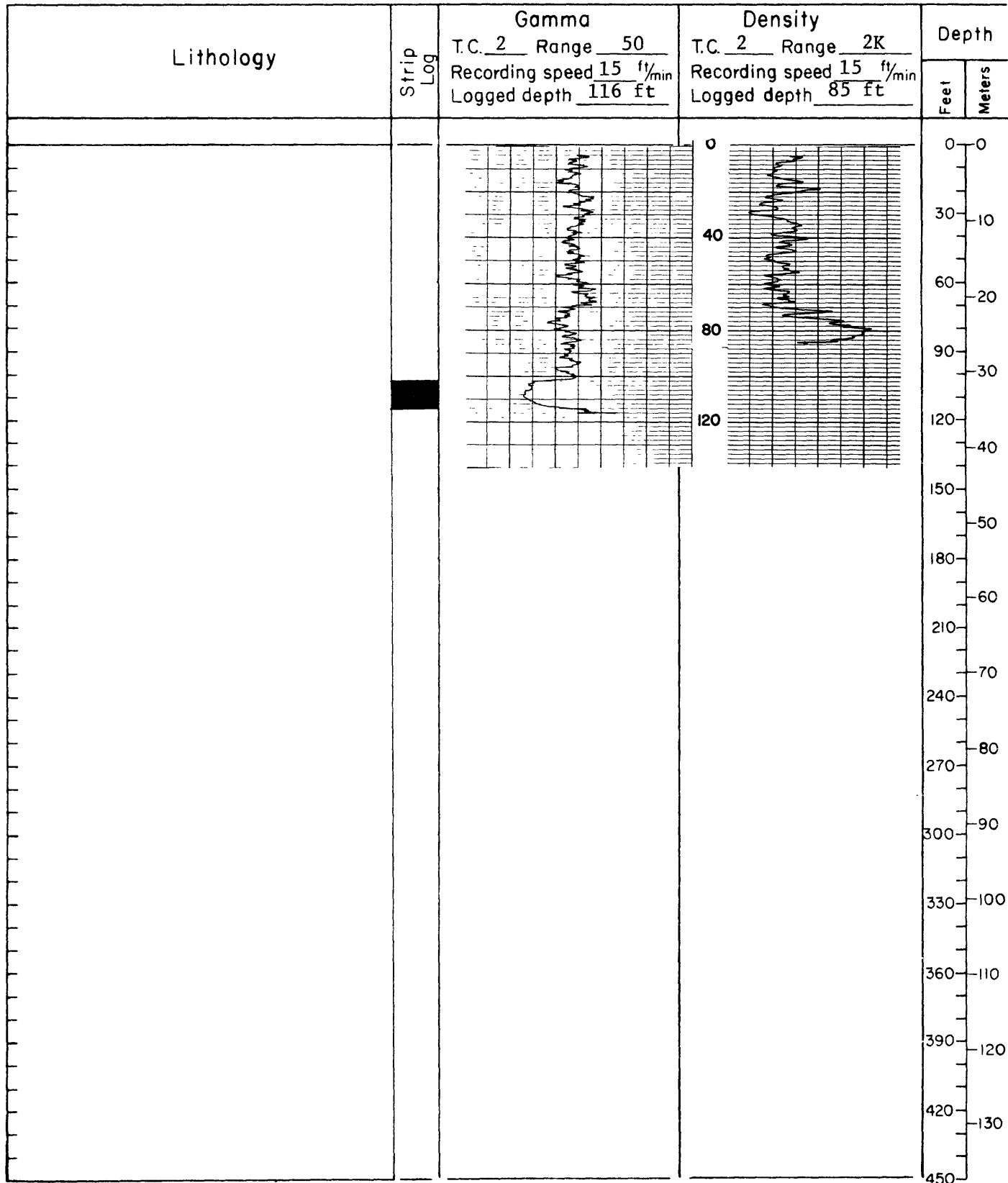


Montana College of Mineral Science and Technology

Hole no: IIS-77310 Map: BLM-NE 30 Date: 11/7/77 State: Montana County: McCone
 Elev.: 2422 ft Location: T. 20 ^N~~S~~, R. 49 ^E~~W~~, Sec. 10, Tract AADB Drilled depth: 120 ft
 Measured: 750 ft ^{FNL}~~XXX~~, 500 ft ^{FEL}~~XXX~~ Hole size: 4 3/4 in. Air Water Cored: Yes No

Remarks: _____

Recorded by: J. PINCHOCK Geologist ^{Yes}~~No~~ Recorded by: J. JENSEN

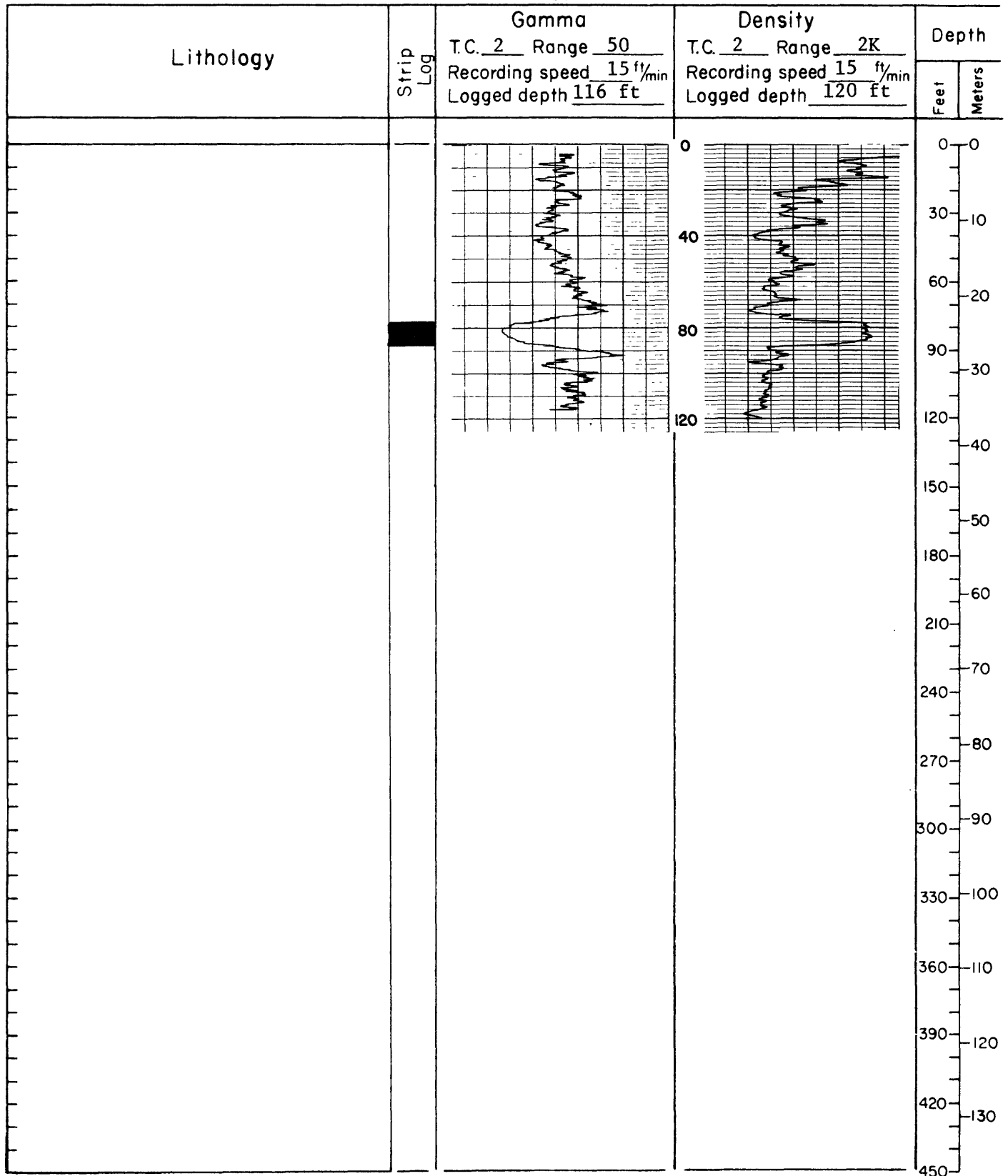


Montana College of Mineral Science and Technology

Hole no: US-77311 Map: BLM-NE 30 Date: 11/8/77 State: Montana County: McCone
 Elev.: 2404 ft Location: T. 20 ^N, R. 49 ^E, Sec. 4, Tract DADD Drilled depth: 120 ft
 Measured: 1584 ft ~~FSL~~ ^{FEL}, 120 ft ~~RWX~~ Hole size: 4 3/4 in. Air Water Cored: Yes No

Remarks: _____

Recorded by: J. PINCHOCK Geologist ^{Yes} ~~No~~ Recorded by: J. JENSEN



Montana College of Mineral Science and Technology

Hole no: US-77312 Map: BLM-NE 30 Date: 11/8/77 State: Montana County: McCone
 Elev.: 2374 ft Location: T. 21 ^{N.} _{S.}, R. 49 ^{E.} _{W.}, Sec. 34, Tract CCCC Drilled depth: 80 ft
 Measured: 300 ft ~~FSL~~, 30 ft ~~FWL~~ Hole size: 4 3/4 in. Air Water Cored: Yes No

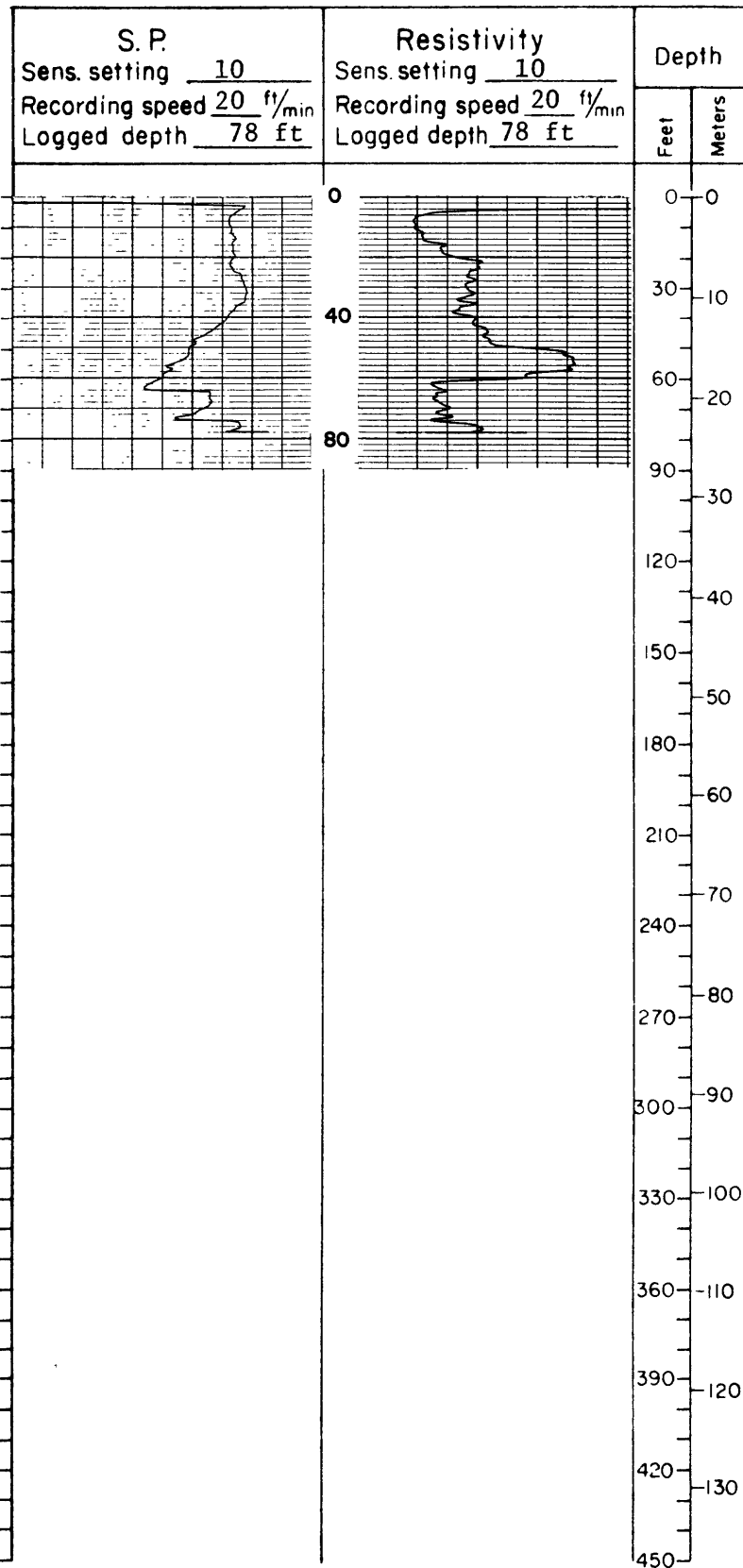
Remarks: _____

Recorded by: J. PINCHOCK Geologist ^{Yes} ~~No~~ Recorded by: J. JENSEN

| Lithology | Strip Log | Gamma | Density | Depth | |
|-----------|-----------|--|--|-------|--------|
| | | T.C. <u>2</u> Range <u>50</u> Recording speed <u>15</u> ft/min Logged depth <u>76</u> ft | T.C. <u>2</u> Range <u>2K</u> Recording speed <u>15</u> ft/min Logged depth <u>78</u> ft | Feet | Meters |
| | | | | 0 | 0 |
| | | | | 20 | 10 |
| | | | | 40 | 20 |
| | | | | 60 | 30 |
| | | | | 80 | 40 |
| | | | | 90 | 50 |
| | | | | 120 | 60 |
| | | | | 150 | 70 |
| | | | | 180 | 80 |
| | | | | 210 | 90 |
| | | | | 240 | 100 |
| | | | | 270 | 110 |
| | | | | 300 | 120 |
| | | | | 330 | 130 |
| | | | | 360 | 140 |
| | | | | 390 | 150 |
| | | | | 420 | 160 |
| | | | | 450 | 170 |

Hole number (continued)

US- 77312

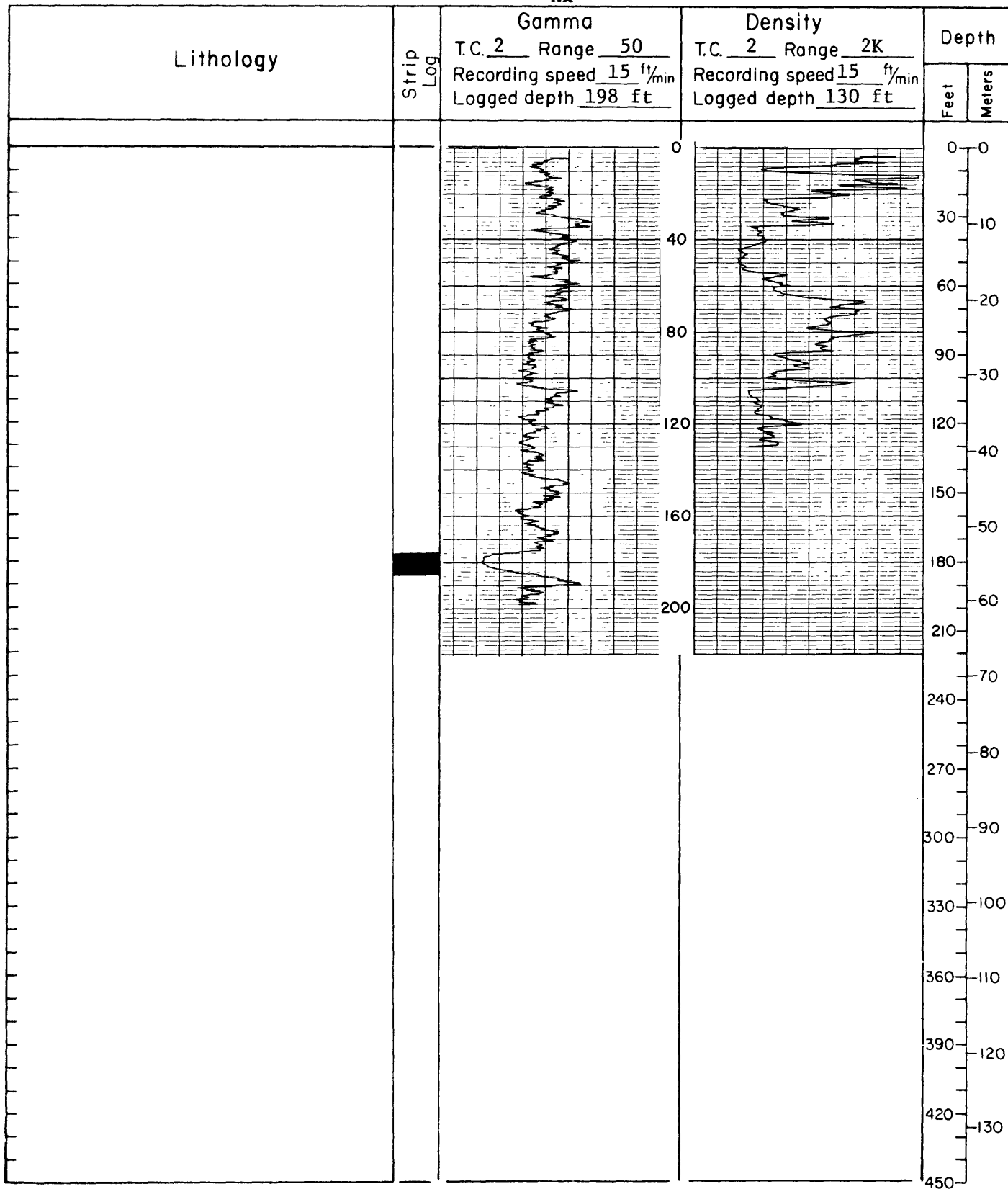


Montana College of Mineral Science and Technology

Hole no: US-77313 Map: BLM-NE 30 Date: 11/8/77 State: Montana County: McCone
 Elev.: 2499 ft Location: T. 21 ^N/₈, R. 49 ^E/_W, Sec. 22, Tract CCCC Drilled depth: 200 ft
 Measured: 50 ft ^{FNK}/_{FSL}, 50 ft ^{REK}/_{FWL} Hole size: 4 3/4 in. Air Water Cored: Yes No

Remarks: _____

Recorded by: J. PINCHOCK Geologist ^{Yes}/_{No} Recorded by: J. JENSEN

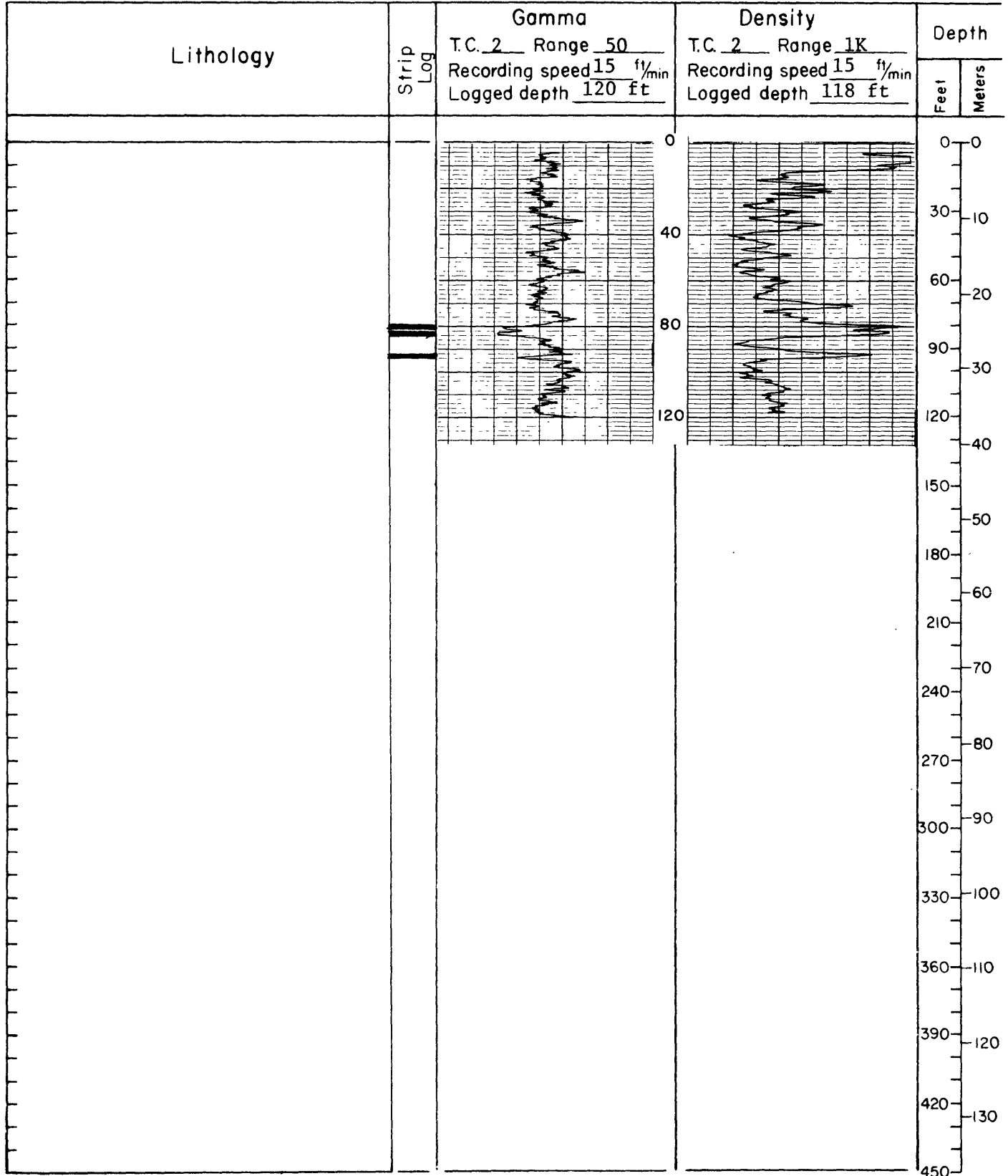


Montana College of Mineral Science and Technology

Hole no: US-77314 Map: BLM-NE 30 Date: 11/8/77 State: Montana County: McCone
 Elev.: 2424 ft Location: T. 20 N. 6, R. 49 E. W, Sec. 32, Tract CCCC Drilled depth: 120 ft
 Measured: 200 ft ~~RMK~~ FSL, 15 ft ~~KKK~~ FWL Hole size: 4 3/4 in. Air Water Cored: Yes No

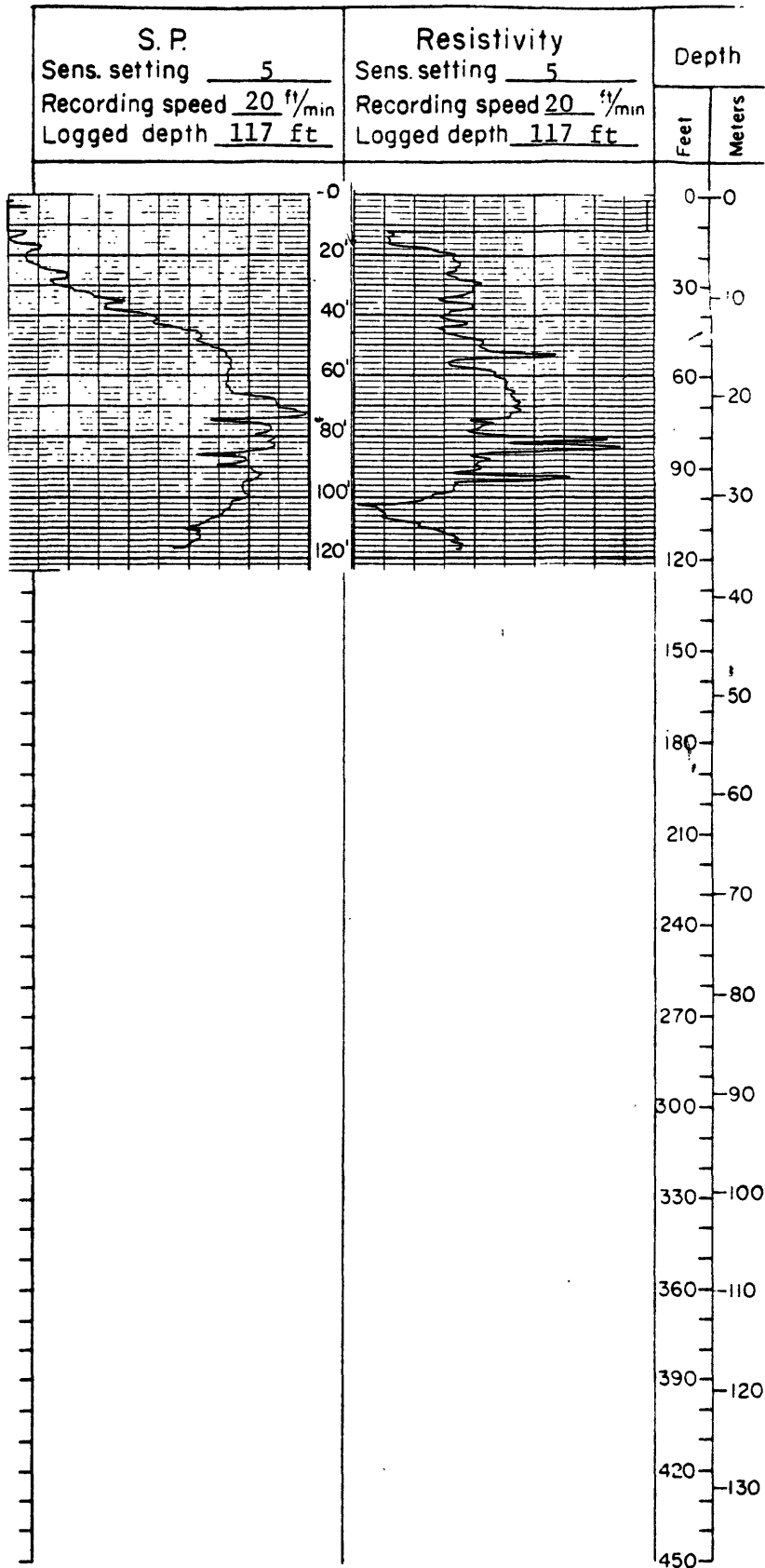
Remarks: _____

Recorded by: J. PINCHOCK Geologist ^{Yes} ~~No~~ Recorded by: J. JENSEN



Hole number (continued)

US - 77314



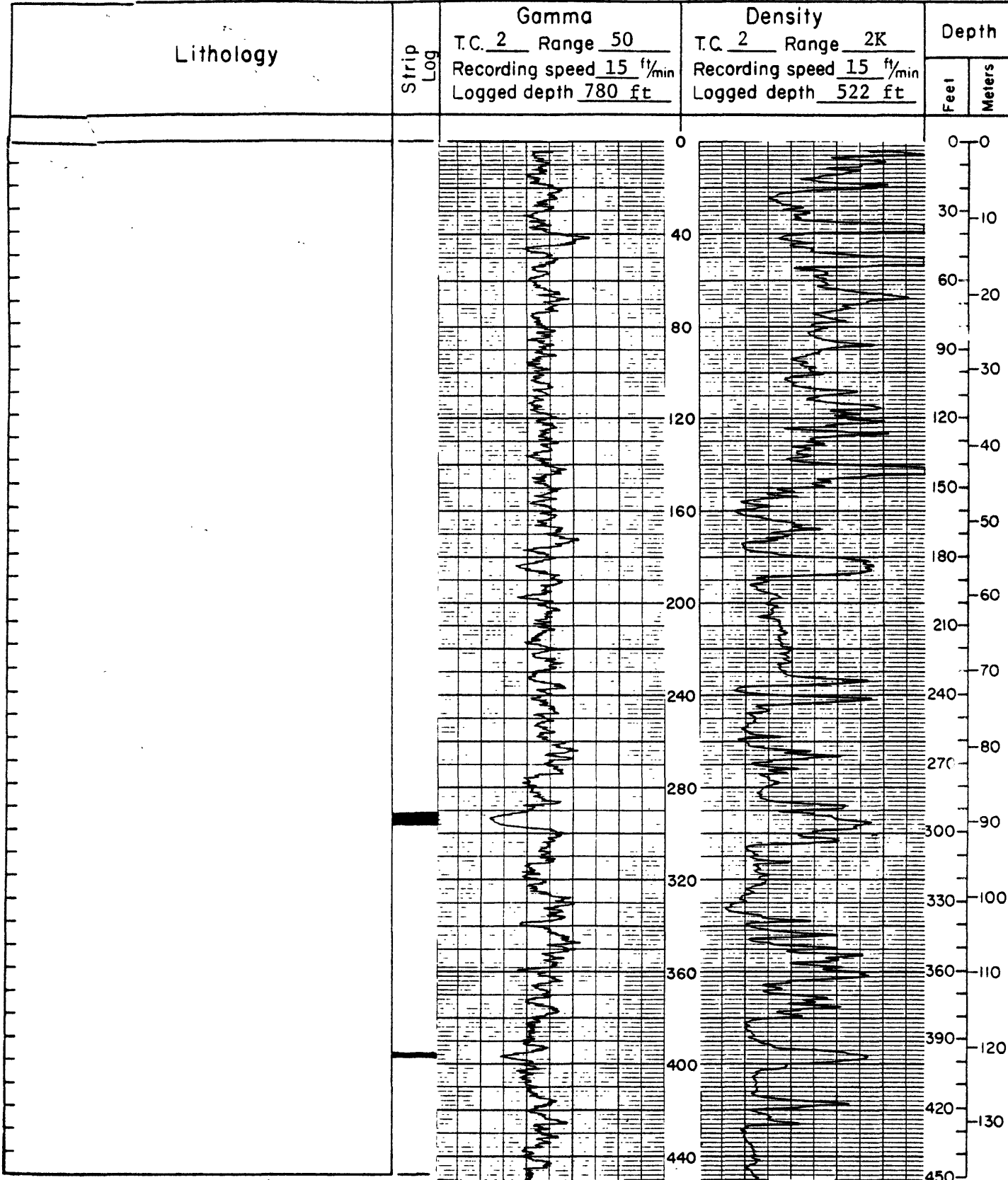
Montana College of Mineral Science and Technology

Hole no: US-77315 Map: BLM-NE 31 Date: 11/9/77 State: Montana County: Dawson
 Elev.: 2984 ft Location: T. 19 N. 3 R. 51 E. W, Sec. 14, Tract BAAA Drilled depth: 780 ft
 Measured: 50 ft ^{FNL} ~~FSK~~, 2520 ft ^{FWL} ~~FWL~~ Hole size: 4 3/4 in. Air Water Cored: Yes No

Remarks: _____

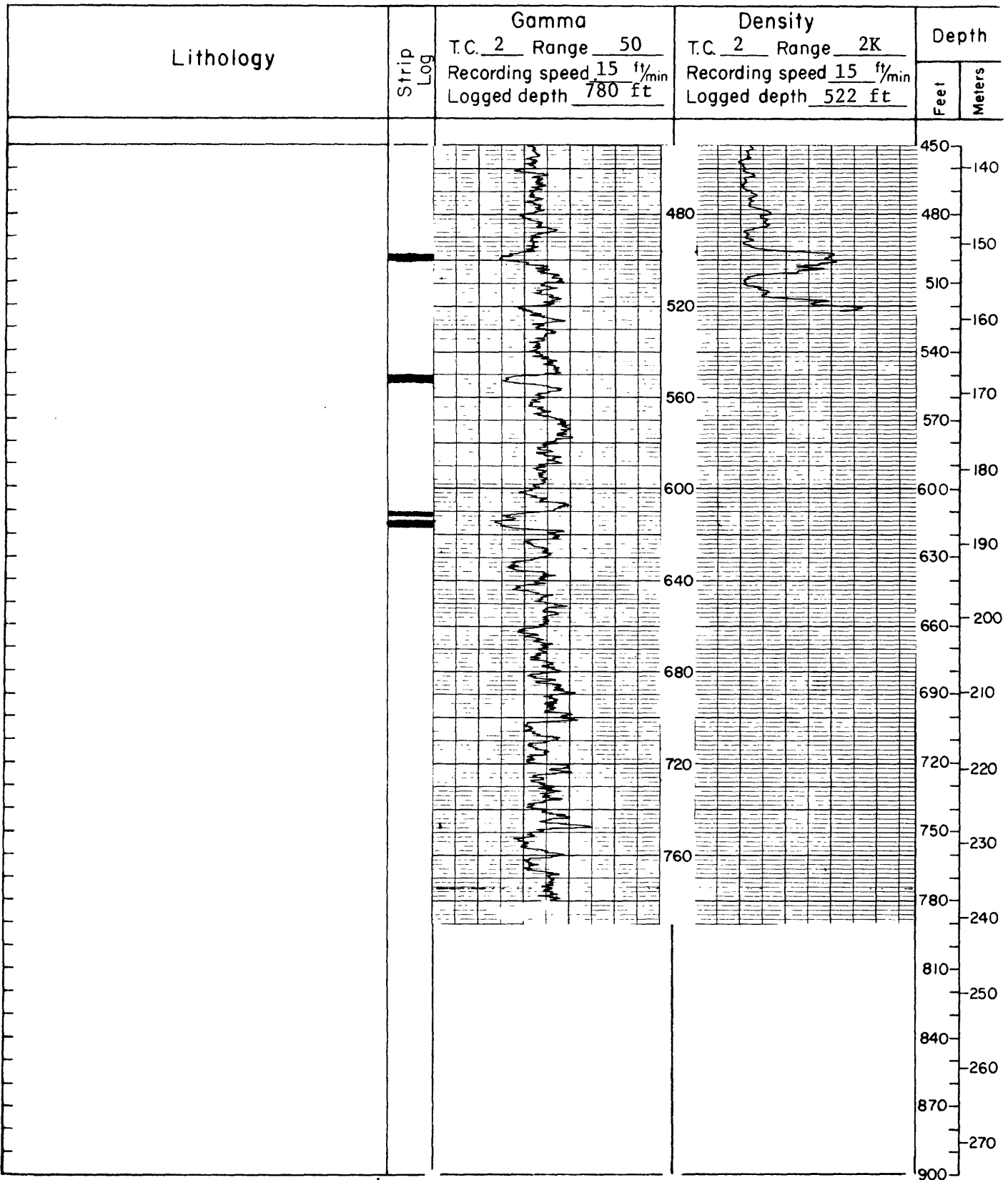
Recorded by: J. PINCHOCK

Geologist ^{Yes} ~~No~~ Recorded by: J. JENSEN



Hole number (continued)

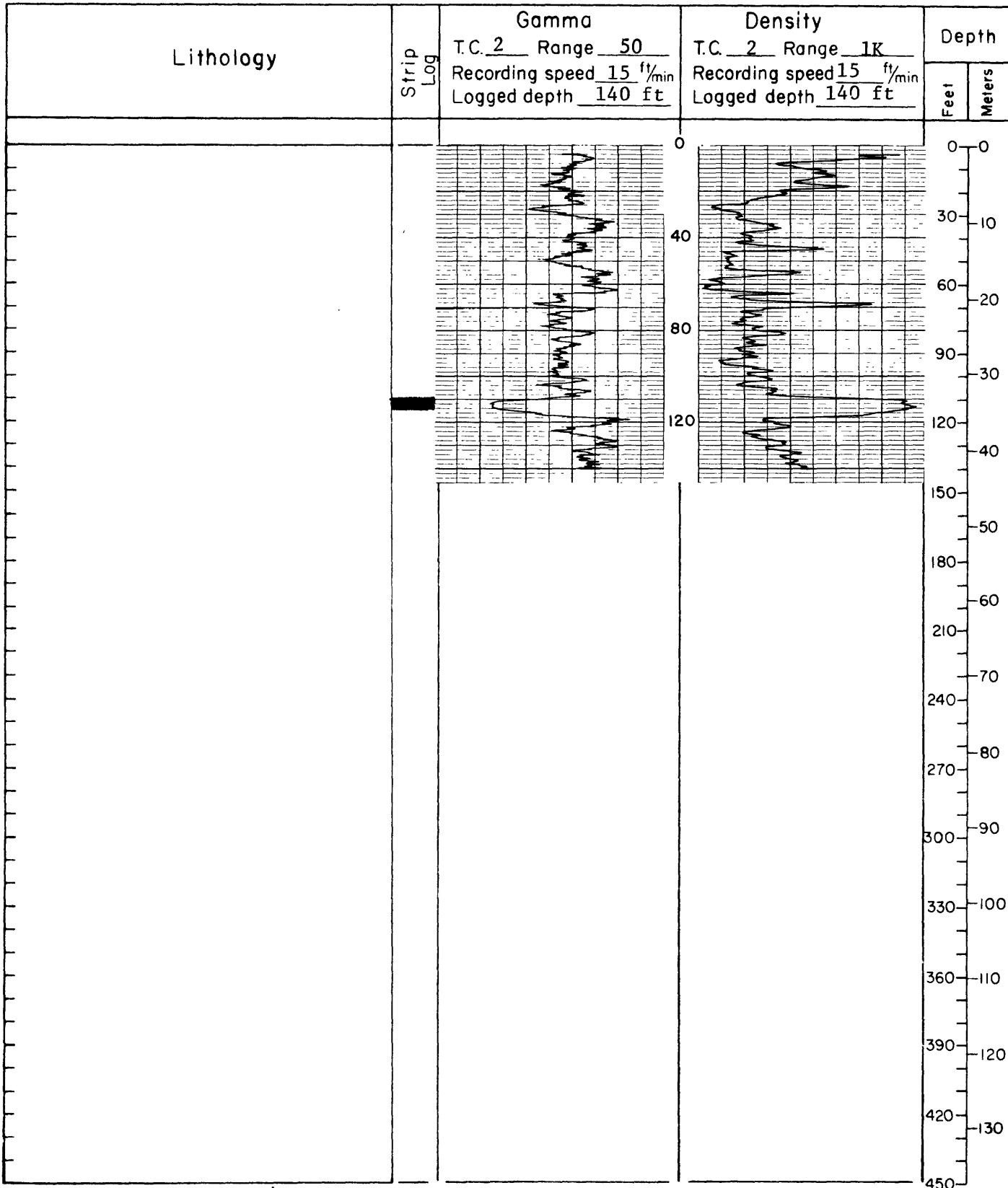
US - 77315



Montana College of Mineral Science and Technology

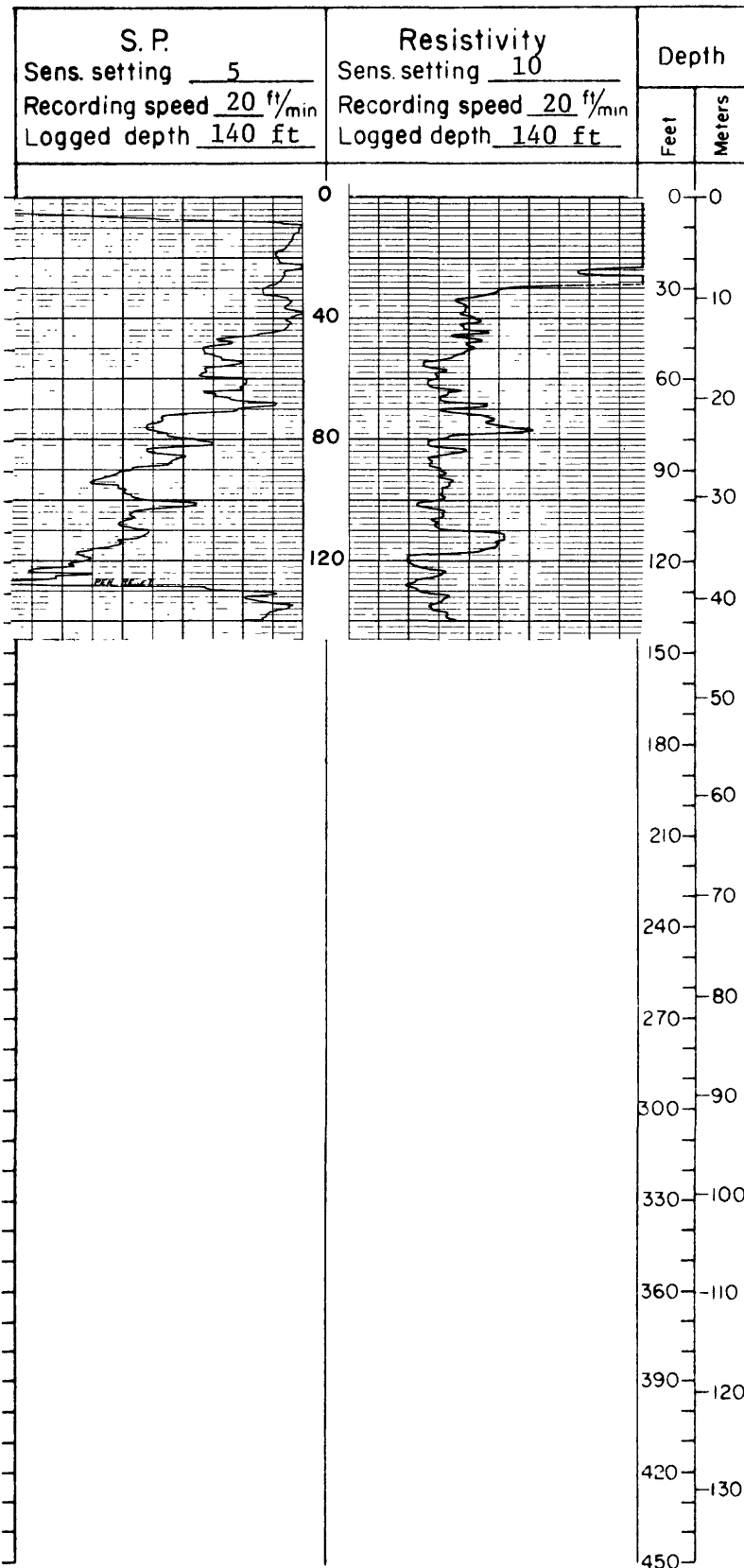
Hole no: US-77316 Map: BLM-NE 31 Date: 11/16/77 State: Montana County: Dawson
 Elev.: 2421 ft Location: T. 22 N. 5, R. 50 W., Sec. 26, Tract CCCC Drilled depth: 140 ft
 Measured: 50 ft ~~RMK~~ FSL, 10 ft ~~RMK~~ FWL Hole size: 4 3/4 in. Air Water Cored: Yes No

Remarks: _____
 Recorded by: J. PINCHOCK Geologist ^{Yes} ~~NG~~ Recorded by: J. JENSEN



Hole number (continued)

US- 77316

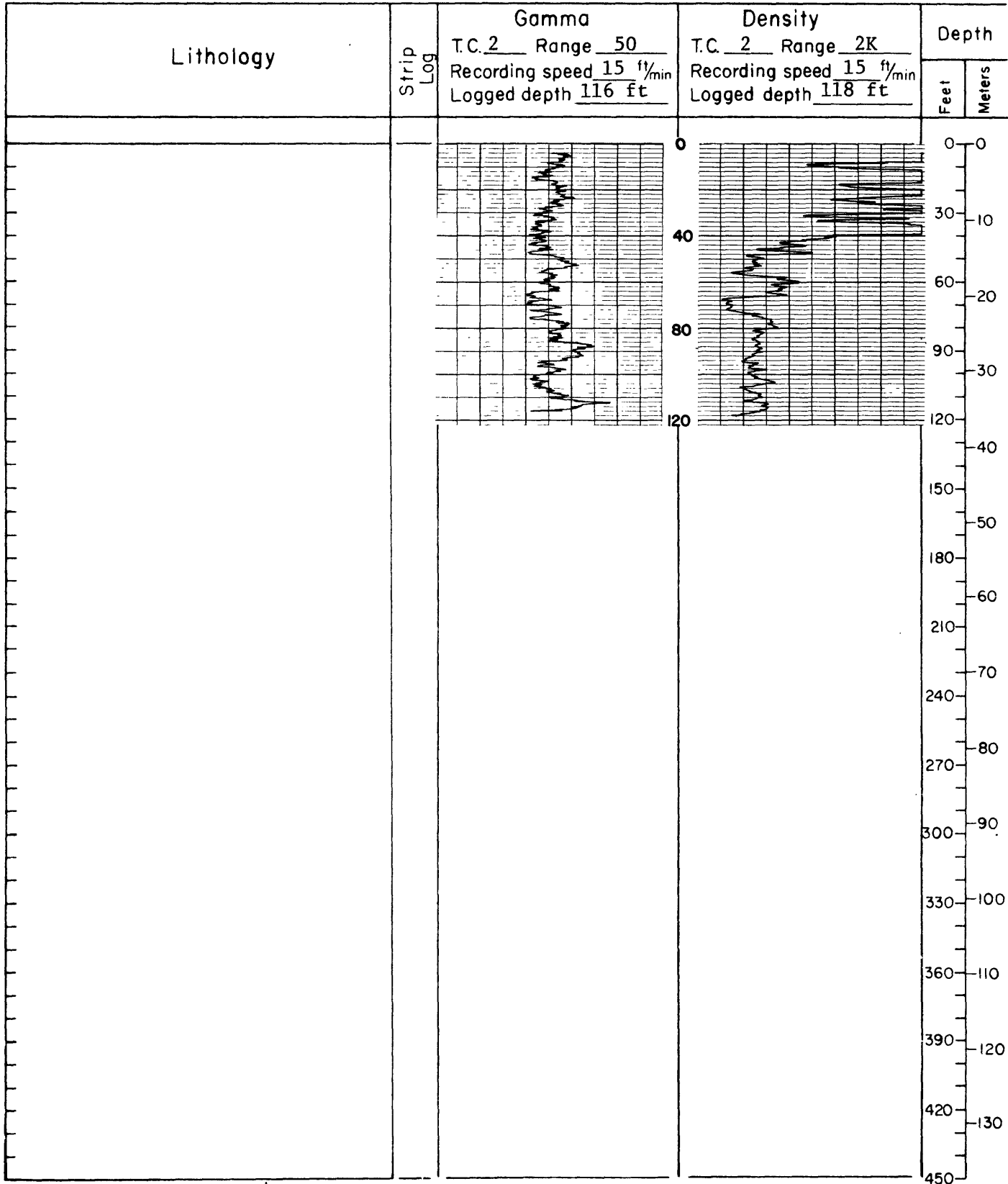


Montana College of Mineral Science and Technology

Hole no: US-77317 Map: BLM-NE 31 Date: 11/17/77 State: Montana County: McCone
 Elev.: 2384 ft Location: T. 21 ^{N.}_{S.}, R. 49 ^{E.}_{W.} Sec. 24, Tract BBBB Drilled depth: 120 ft
 Measured: 15 ft ^{FNL}_{FSL}, 50 ft ^{FWL}_{FWL} Hole size: 4 3/4 in. Air Water Cored: Yes No

Remarks: _____

Recorded by: J. PINCHOCK Geologist ^{Yes}_{No} Recorded by: J. JENSEN



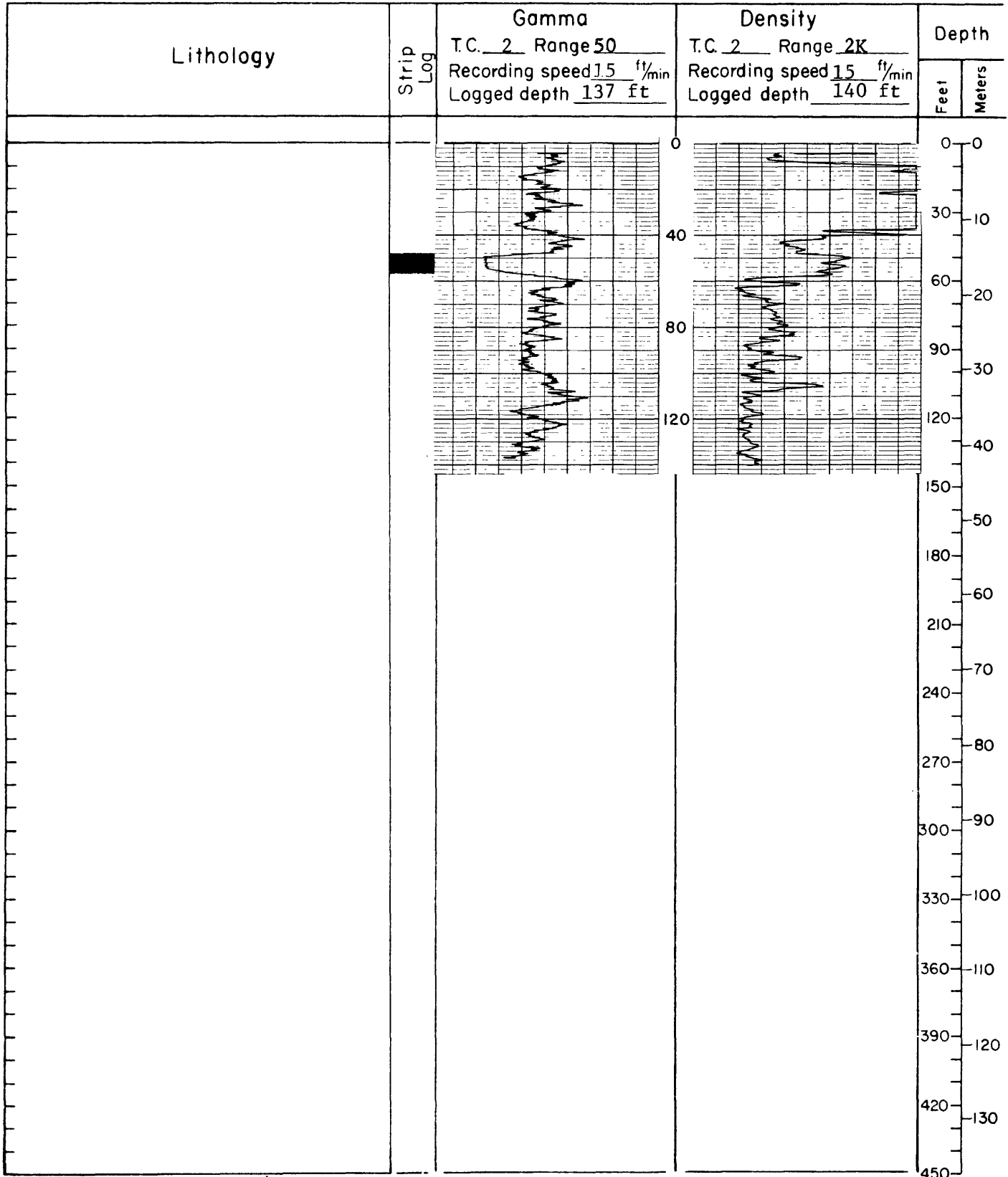
Montana College of Mineral Science and Technology

Hole no: US-77318 Map: BLM-NE 31 Date: 11/17/77 State: Montana County: McCone
 Elev.: 2414 ft Location: T. 21 N. 8, R. 49 E. W, Sec. 26, Tract AAAA Drilled depth: 140 ft
 Measured: 50 ft ~~FNL~~ ~~RXX~~ 15 ft ~~FEL~~ ~~RXX~~ Hole size: 4 3/4 in. Air Water Cored: Yes No

Remarks: _____

Recorded by: J. PINCHOCK

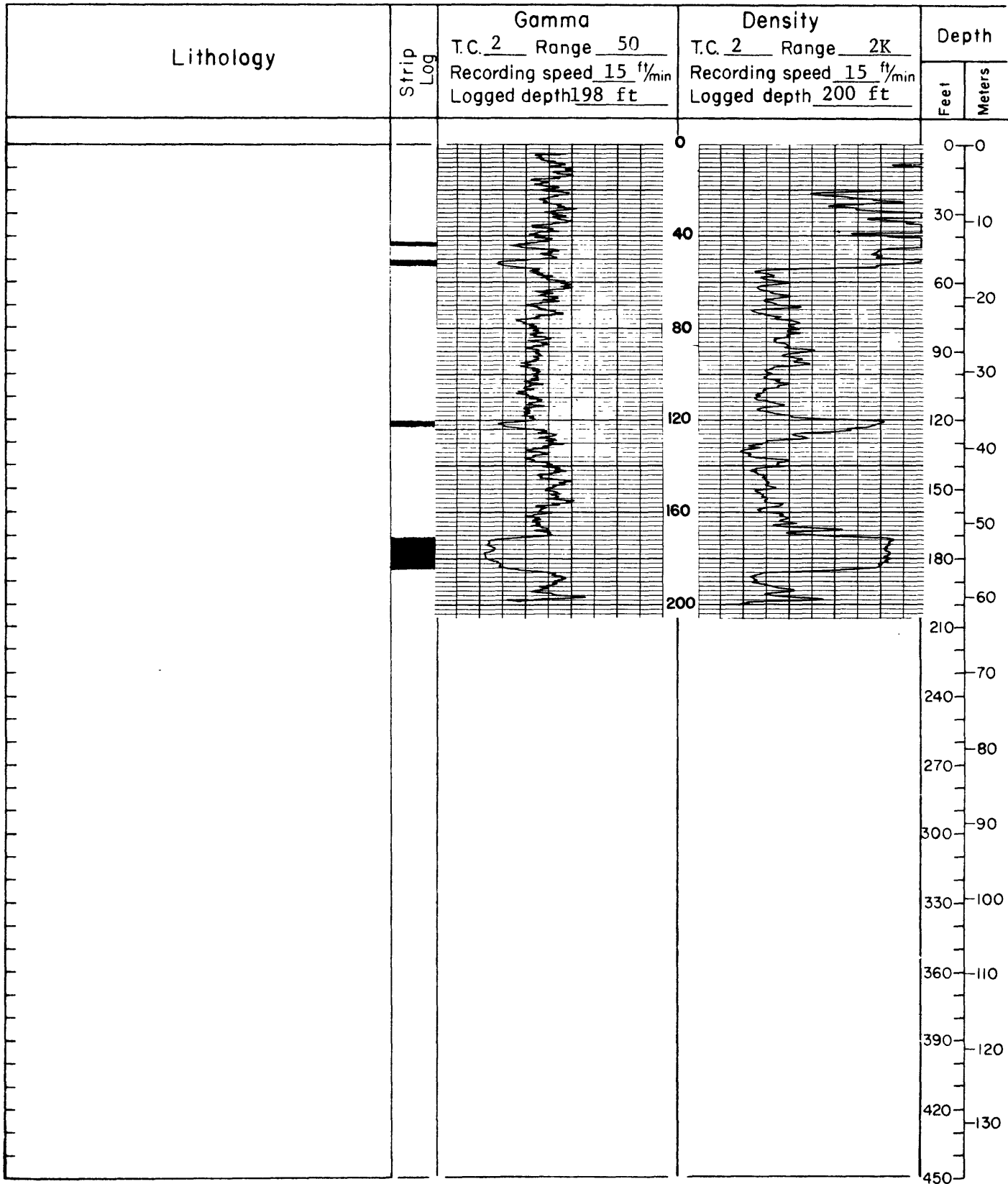
Geologist ^{Yes} ~~XXX~~ Recorded by: J. JENSEN



F57

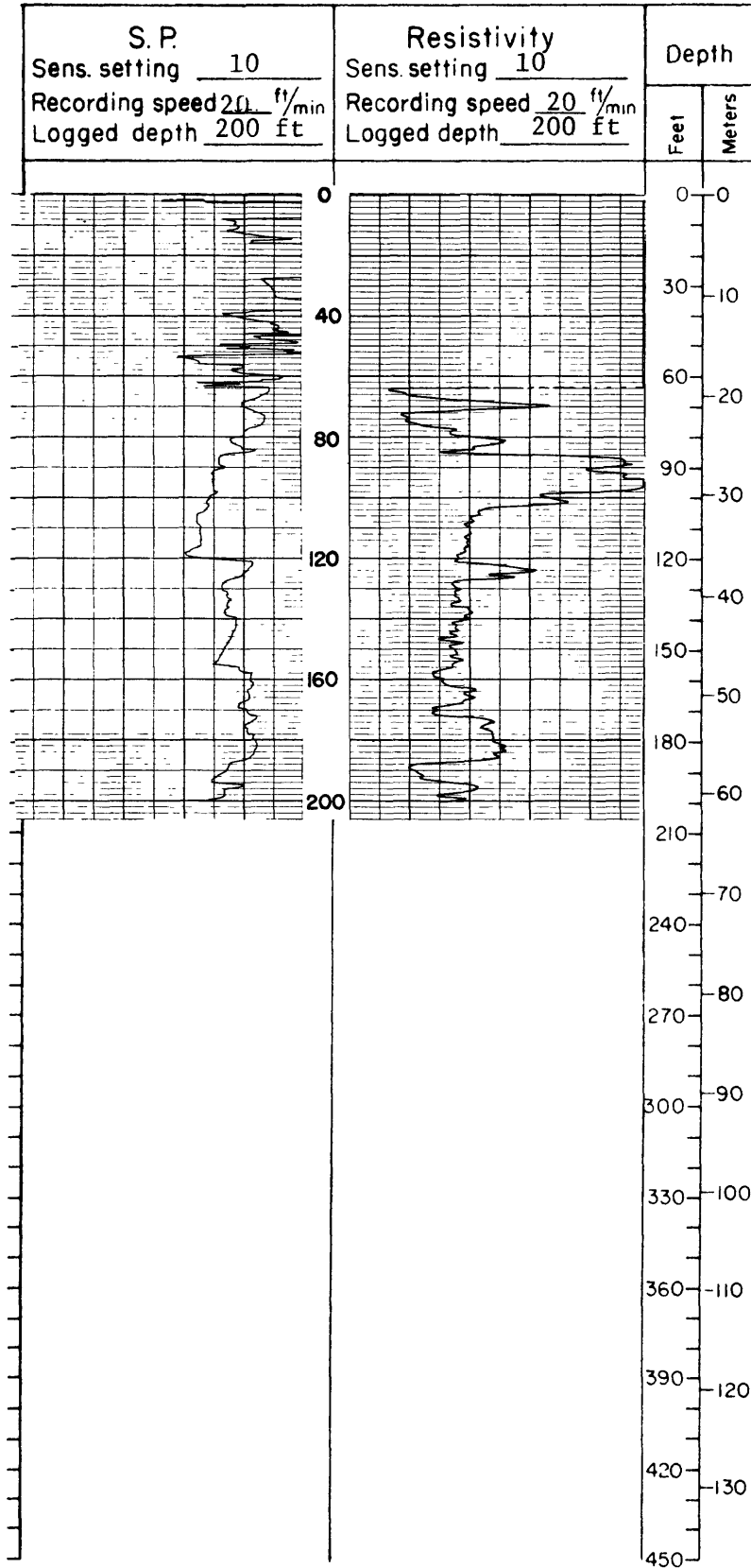
Montana College of Mineral Science and Technology

Hole no: US-77319 Map: BLM-NE 30 Date: 11/17/77 State: Montana County: McCone
 Elev.: 2494 ft Location: T. 20 N. 8 S., R. 49 E. W., Sec. 14, Tract BD Drilled depth: 200 ft
 Measured: 2000 ft ^{FNL} ~~FSL~~, 2000 ft ^{FWL} ~~FWL~~ Hole size: 4 3/4 in. Air Water Cored: Yes No
 Remarks: Poor control on measured footages; those shown are only estimates.
 Recorded by: J. PINCHOCK Geologist ^{IES} ~~NS~~ Recorded by: J. JENSEN



Hole number (continued)

US - 77319



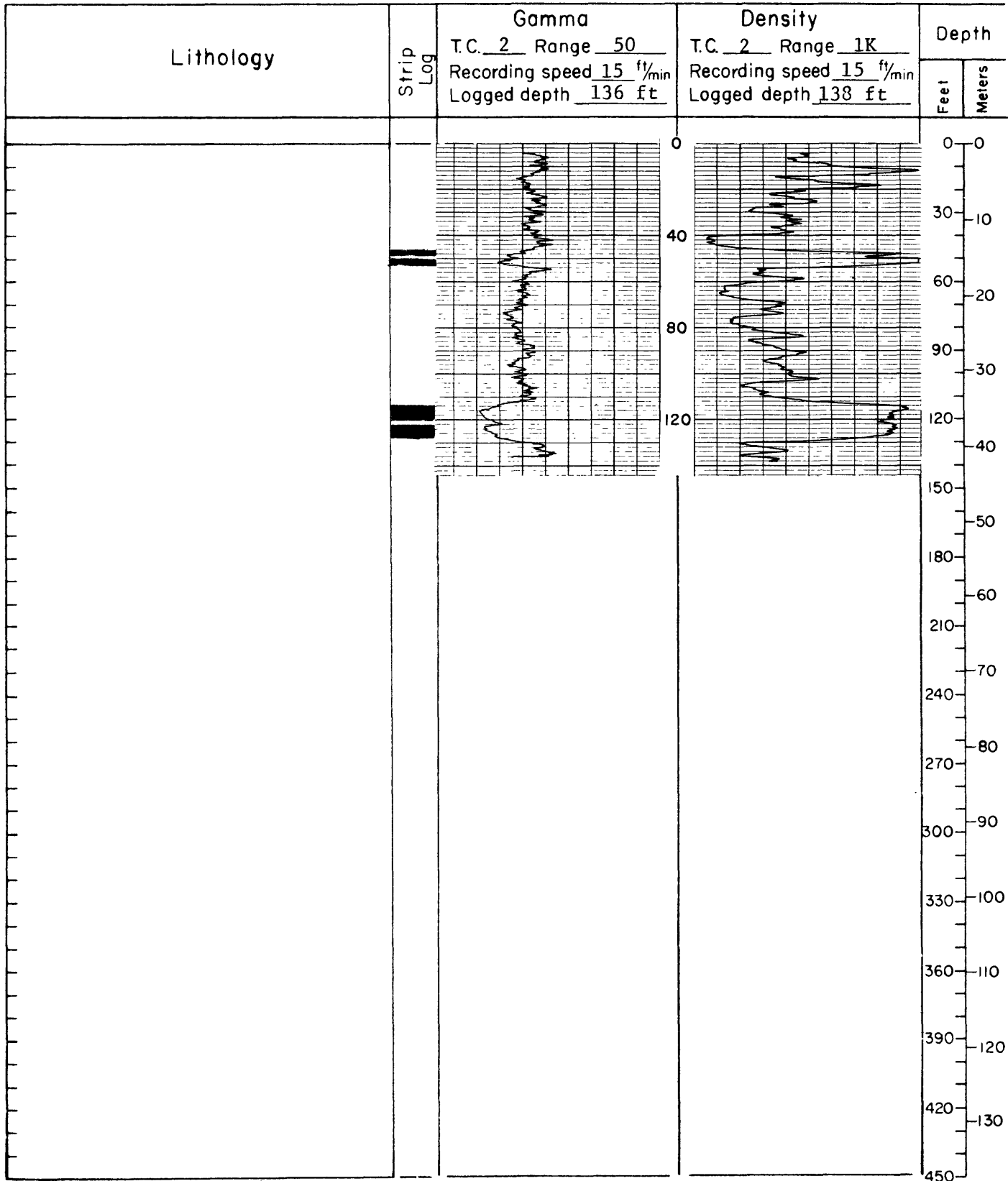
Montana College of Mineral Science and Technology

Hole no: IIS-77320 Map: BLM-NE 30 Date 11/18/77 State: Montana County: McCone
 Elev.: 2414 ft Location: T. 20 N. 36, R. 49 E. W, Sec. 22, Tract DCDD Drilled depth: 140 ft
 Measured: 20 ft ~~FSL~~ 1500 ft ~~FEL~~ ~~FSL~~ Hole size: 4 3/4 in. Air Water Cored: Yes No

Remarks: _____

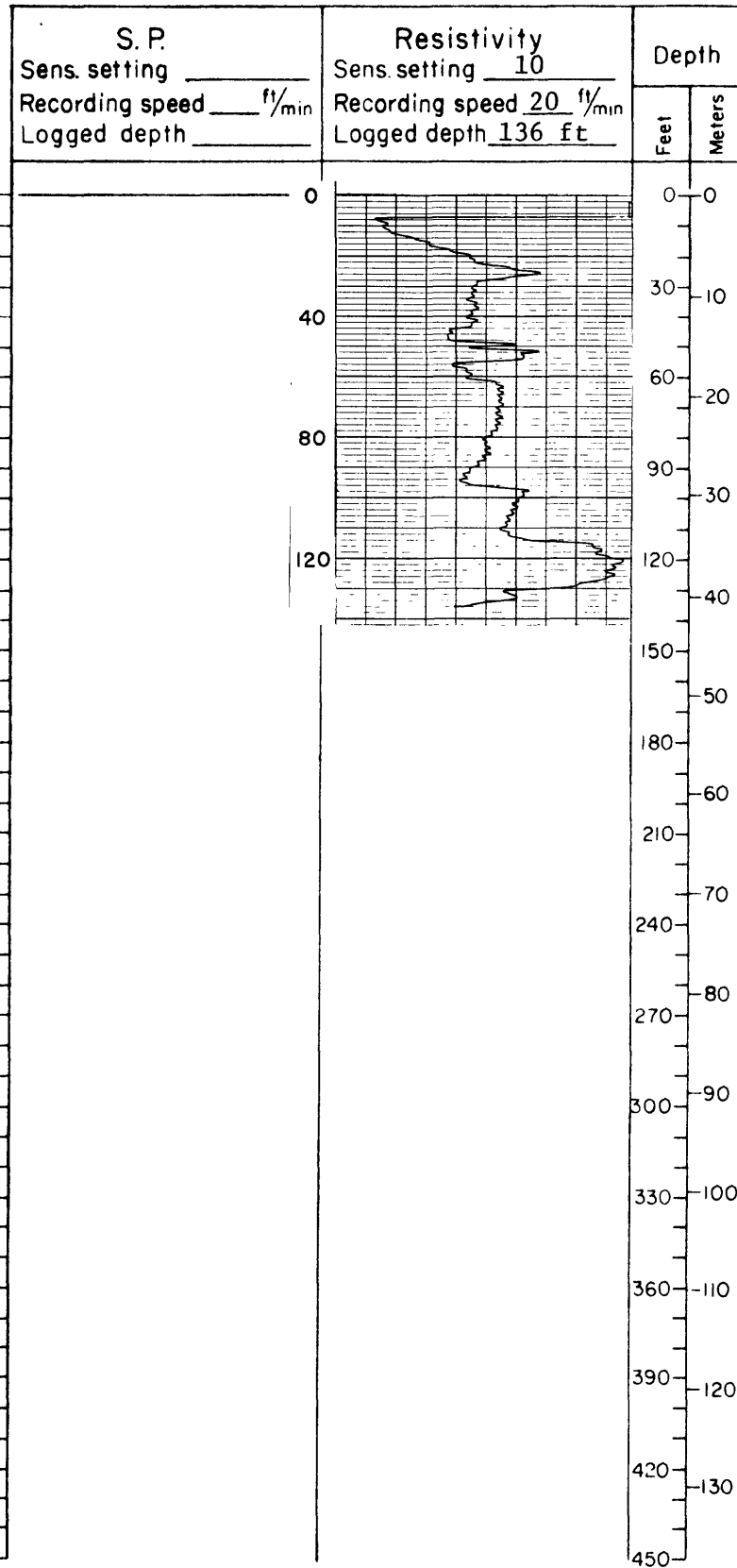
Recorded by: J. PINCHOCK

Geologist ^{Yes} ~~No~~ Recorded by: J. JENSEN



Hole number (continued)

US-77320

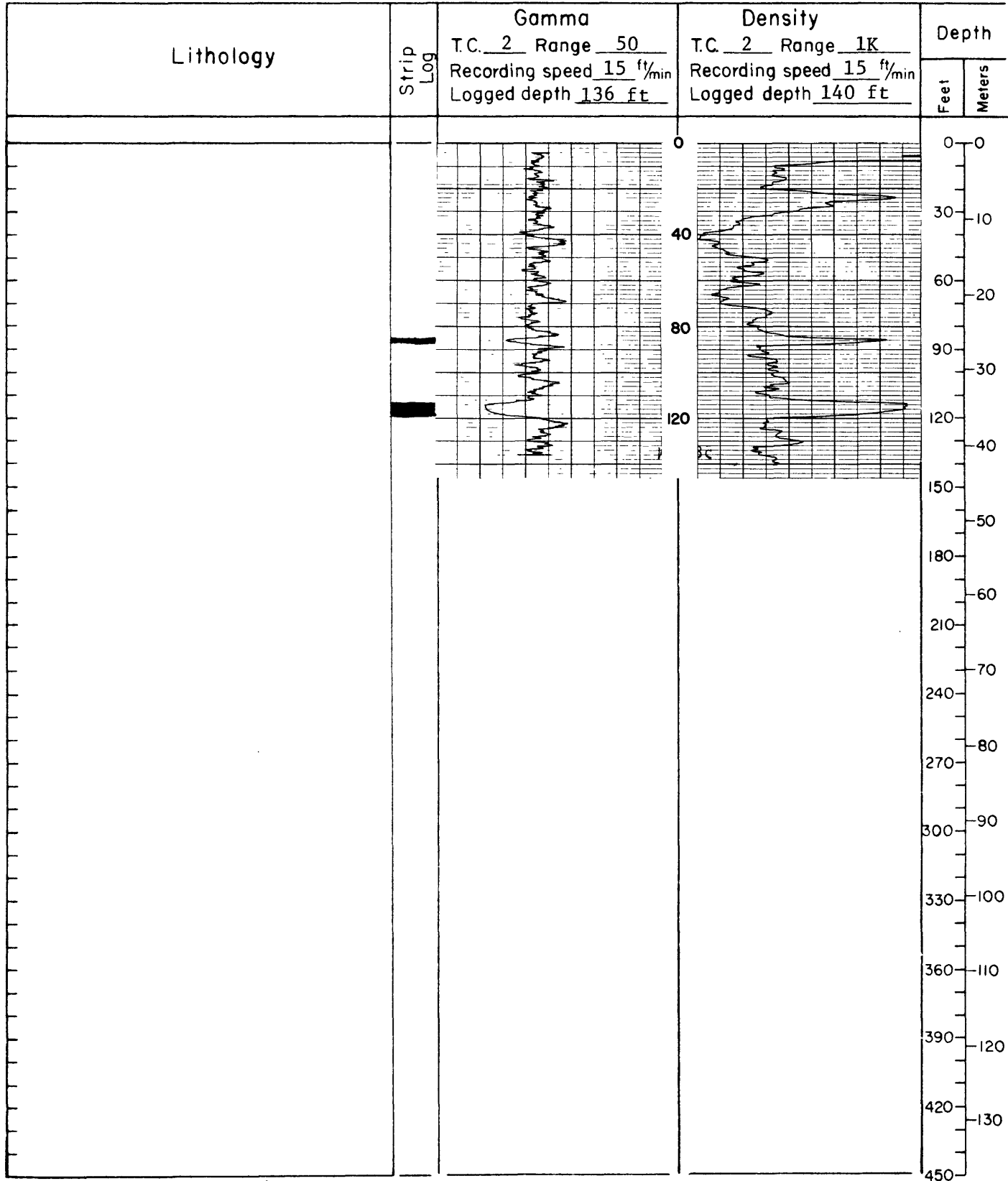


Montana College of Mineral Science and Technology

Hole no: US-77321 Map: BLM-NE 31 Date: 11/18/77 State: Montana County: Dawson
 Elev.: 2414 ft Location: T. 22 N, R. 51 W, Sec. 8, Tract AAAA Drilled depth: 140 ft
 Measured: 50 ft ^{FNL} ~~53.30~~ 50 ft ^{FEL} ~~FWK~~ Hole size: 4 3/4 in. Air Water Cored: Yes No

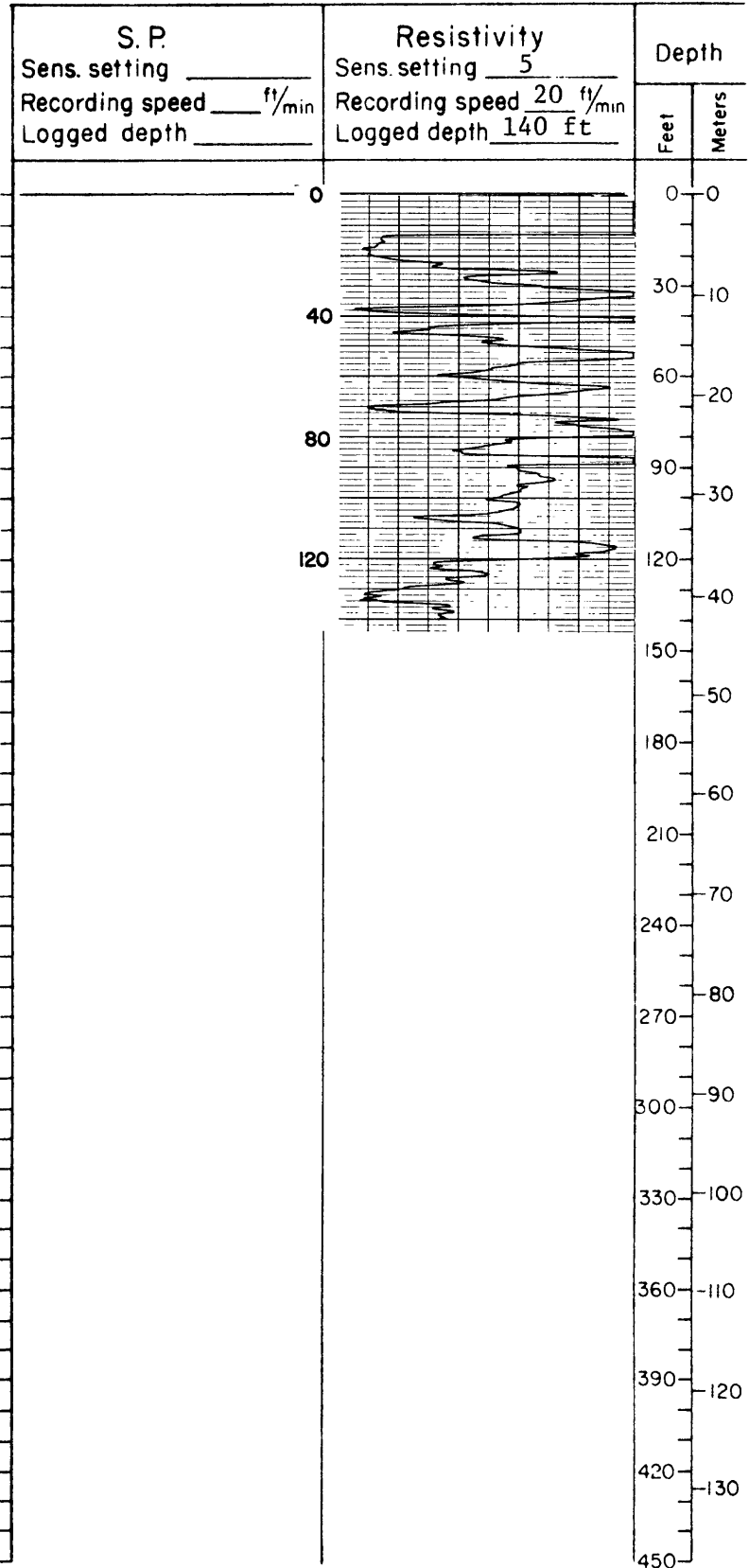
Remarks: _____

Recorded by: J. PINCHOCK Geologist ^{Yes} ~~No~~ Recorded by: J. JENSEN



Hole number (continued)

US- 77321

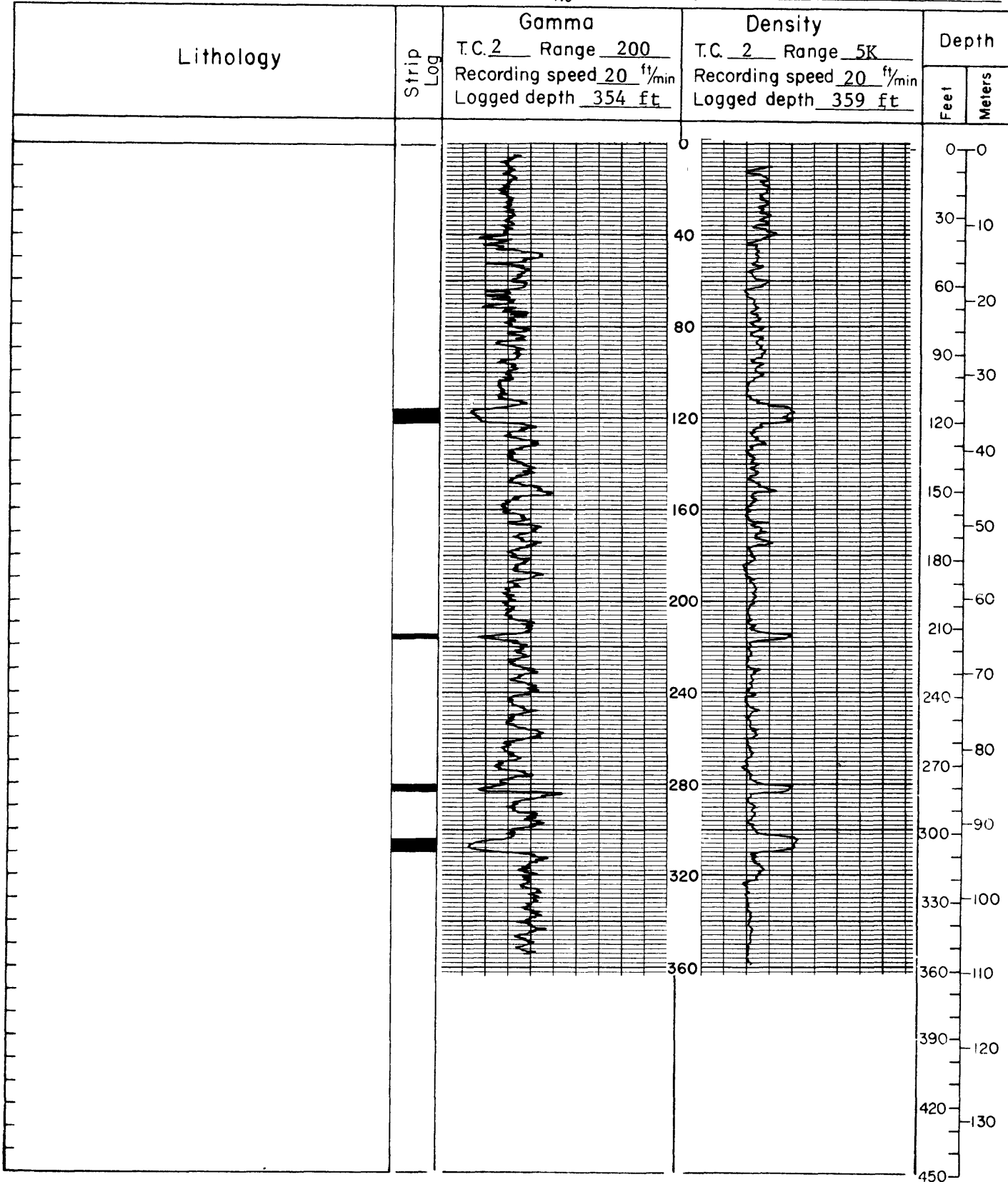


Montana College of Mineral Science and Technology

Hole no: US-77322 Map: Fairview SW Date: 12/16/77 State: Montana County: Richland
 Elev.: 2251 ft Location: T. 23 ^{N.} _{S.}, R. 58 ^{E.} _{W.}, Sec. 2, Tract CDDC Drilled depth: 360 ft
 Measured: 100 ft ~~FSL~~, 2050 ft ~~FWL~~ Hole size: 4 3/4 in. Air Water Cored: Yes No

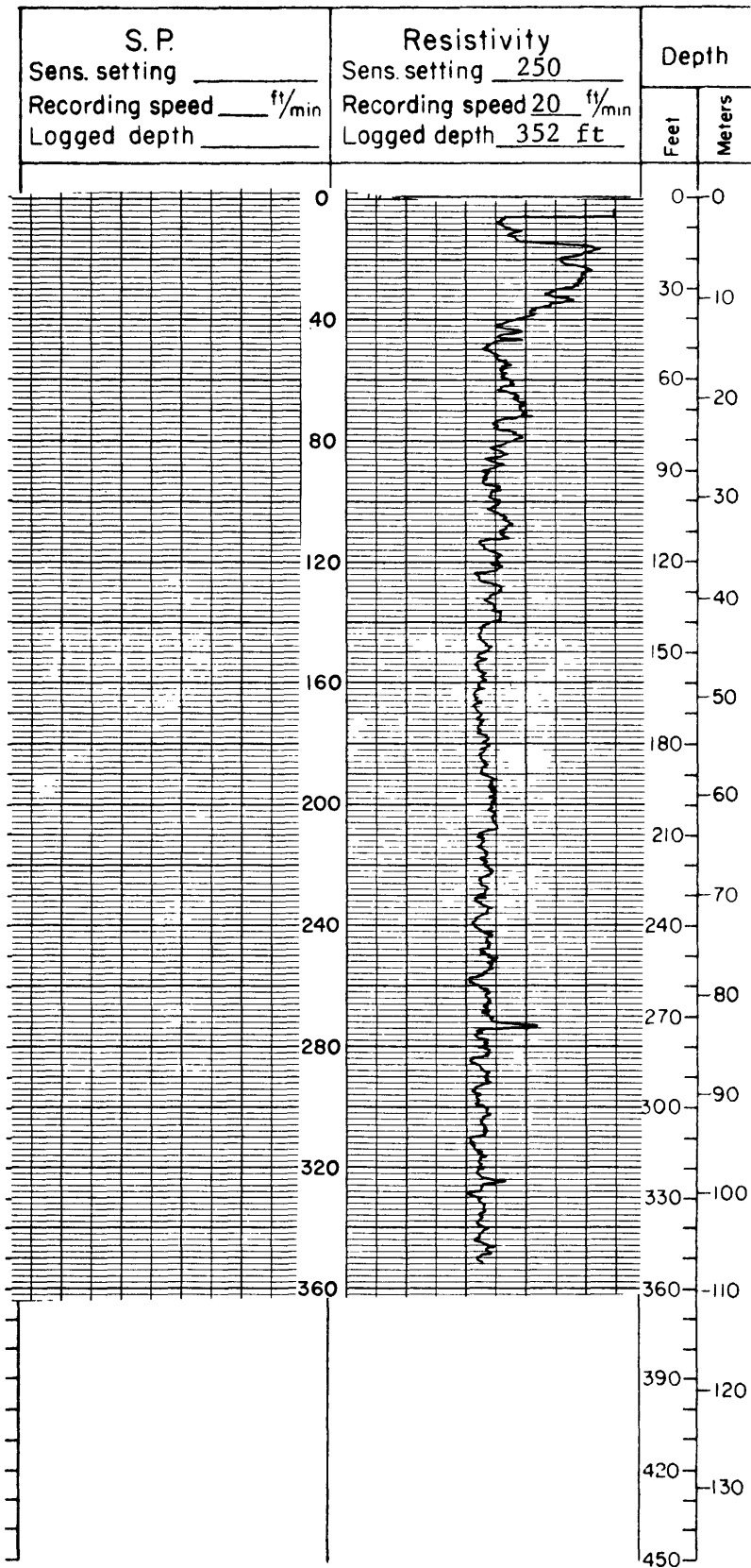
Remarks: _____

Recorded by: _____ Geologist ^{Yes} _{No} Recorded by: _____



Hole number (continued)

US-77322



Montana College of Mineral Science and Technology

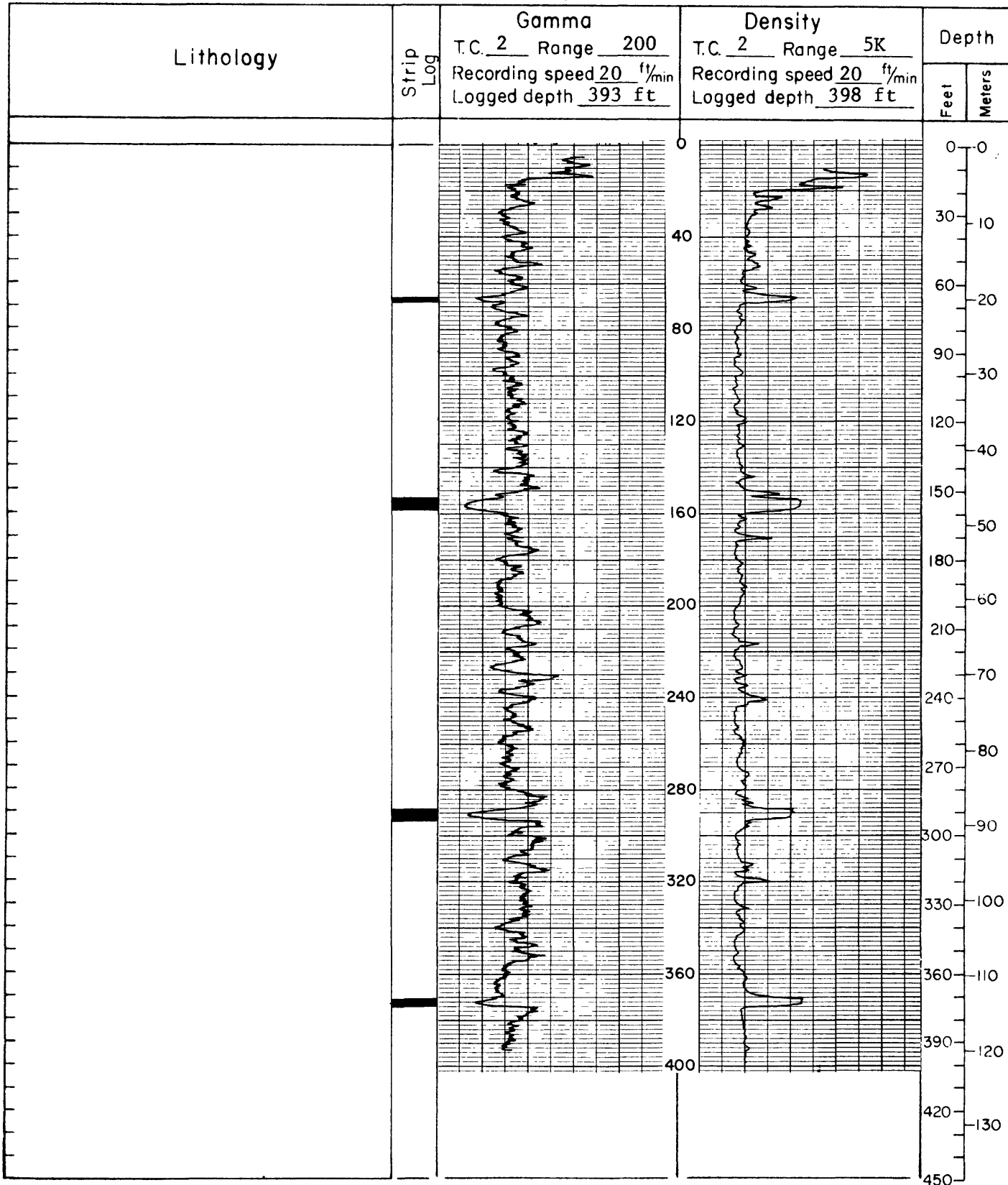
Hole no: US-77323 Map: Girard Date: 12/17/77 State: Montana County: Richland
 Elev.: 2375 ft Location: T. 24 N., R. 57 E., Sec. 34, Tract BABA Drilled depth: 400 ft
 Measured: 80 ft ~~PNL~~ 1950 ft ~~FWL~~ Hole size: 4 3/4 in. Air Water Cored: Yes No

Remarks: _____

Recorded by: L. SAUER

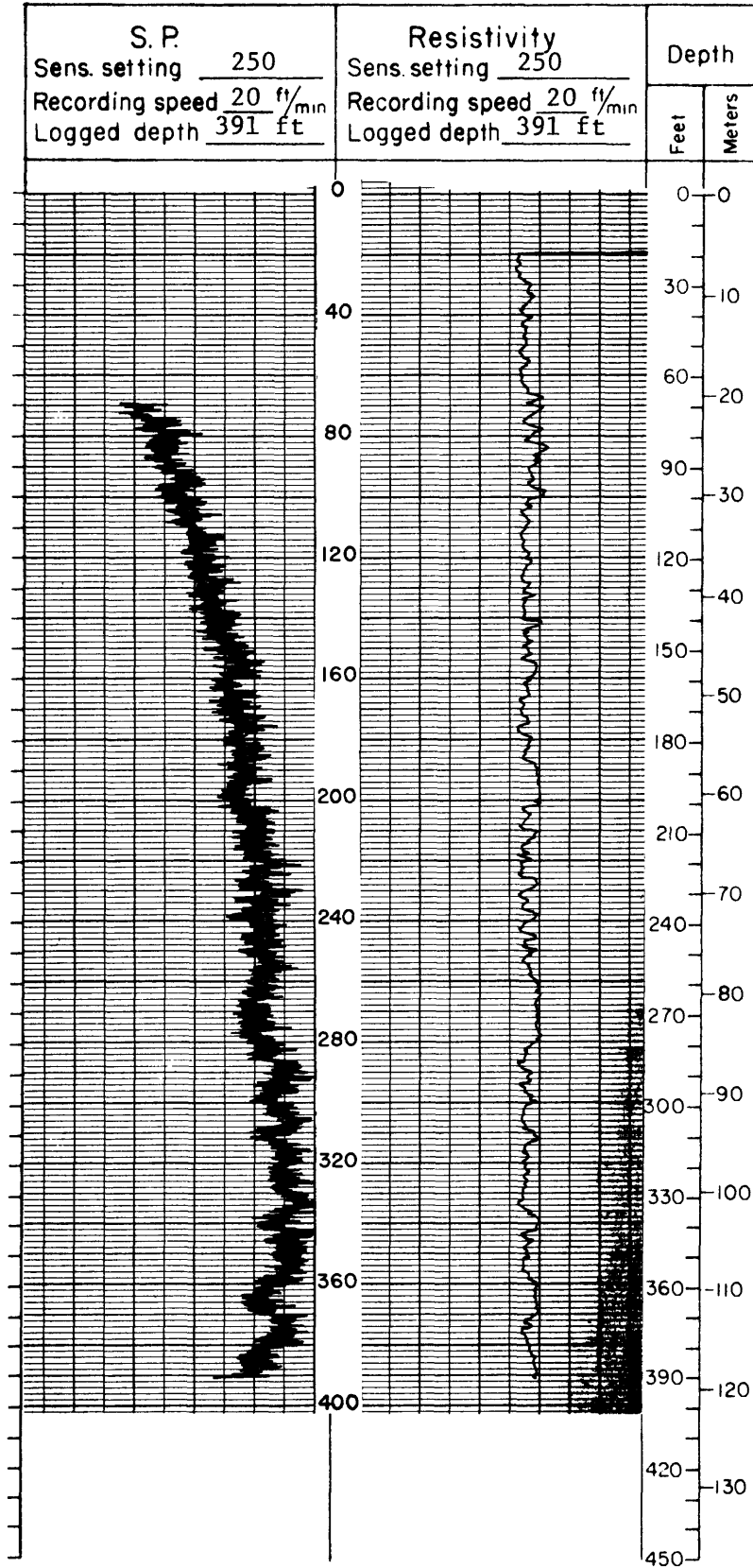
Geologist ~~xxx~~ No

Recorded by: L. SAUER



Hole number (continued)

US - 77323



Montana College of Mineral Science and Technology

Hole no: US-77324 Map: Fairview SW Date: 12/18/77 State: Montana County: Richland

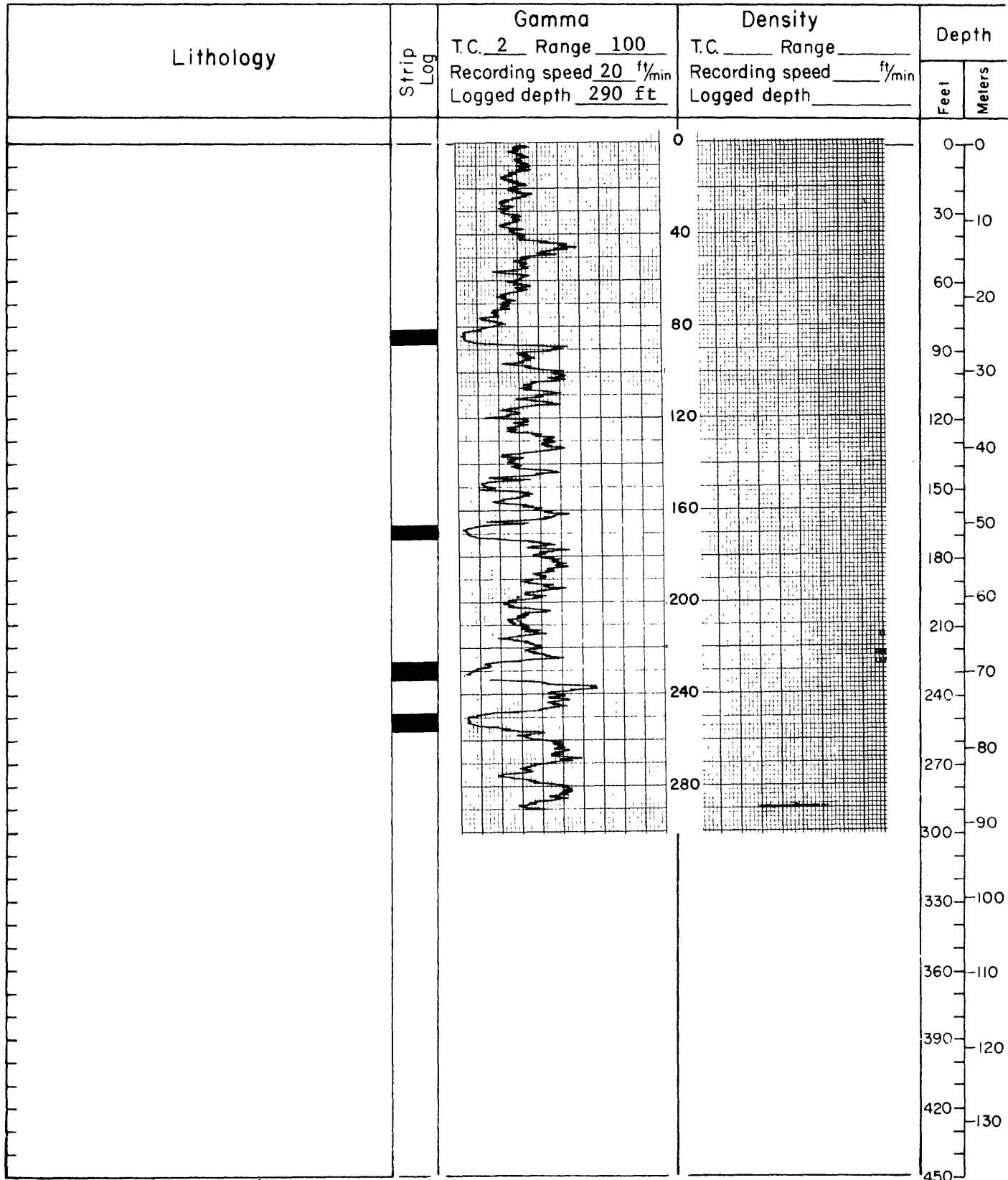
Elev.: 2051 ft Location: T. 24 N, R. 59 E, Sec. 10, Tract CCAC Drilled depth: 300 ft

Measured: 950 ft ~~RXX~~ FSL, 920 ft ~~RXX~~ FWL Hole size: 4 3/4 in. Air Water Cored: Yes No

Remarks: _____

Recorded by: K. WILLIAMS

Geologist ~~XXX~~ No _____ Recorded by: L. SAUER

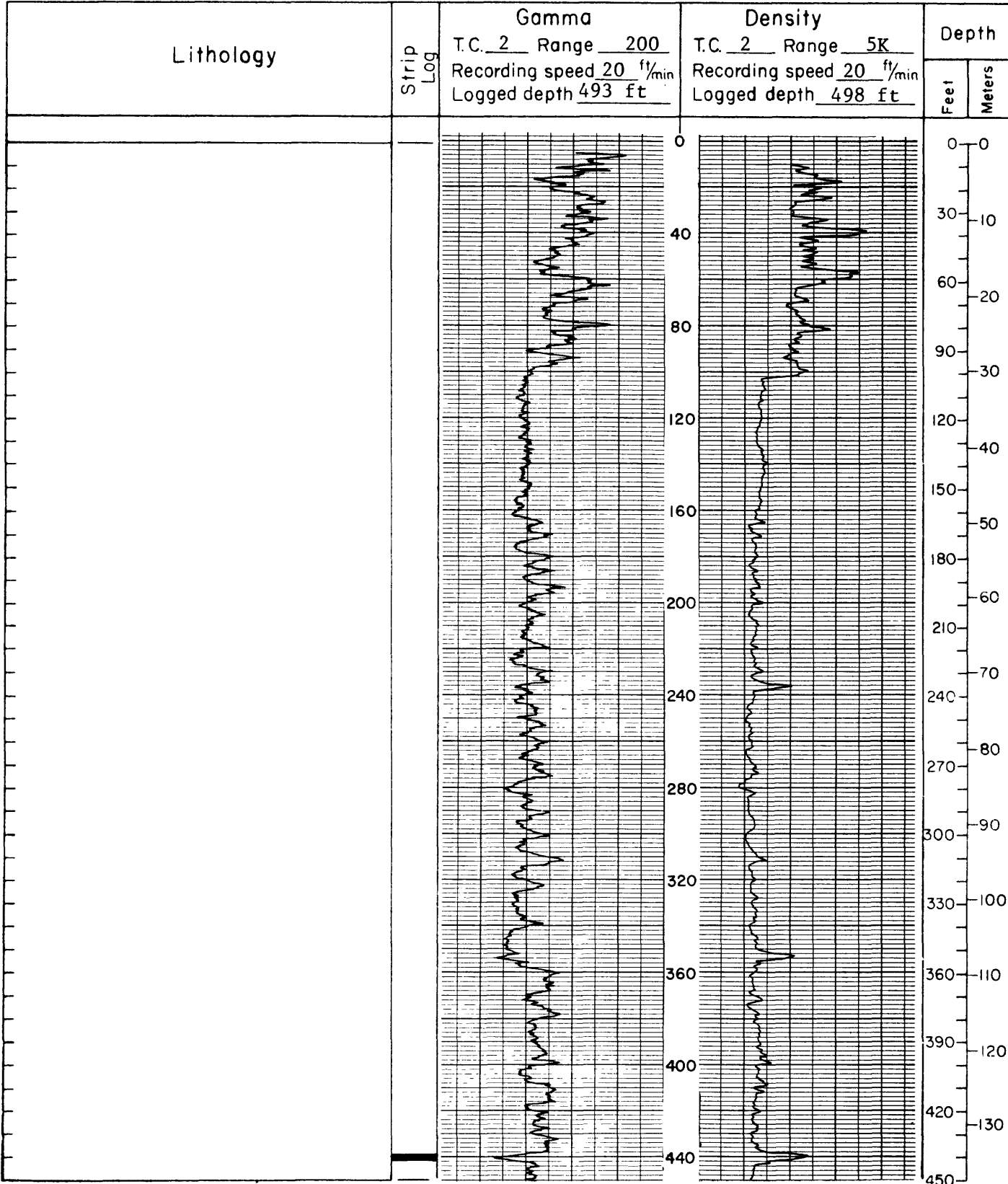


Montana College of Mineral Science and Technology

Hole no US-77325 Map: BLM-NE 23 Date 12/16/77 State: Montana County: Richland
 Elev.: 2654 ft Location: T. 24 ^{N.} ~~X~~, R. 55 ^{E.} ~~X~~, Sec. 34, Tract DCCC Drilled depth: 500 ft
 Measured: 270 ft ~~X~~ ^{FSL}, 2560 ft ~~X~~ ^{FEL} ~~X~~ ^{WX} Hole size: 4 3/4 in. Air Water Cored: Yes No

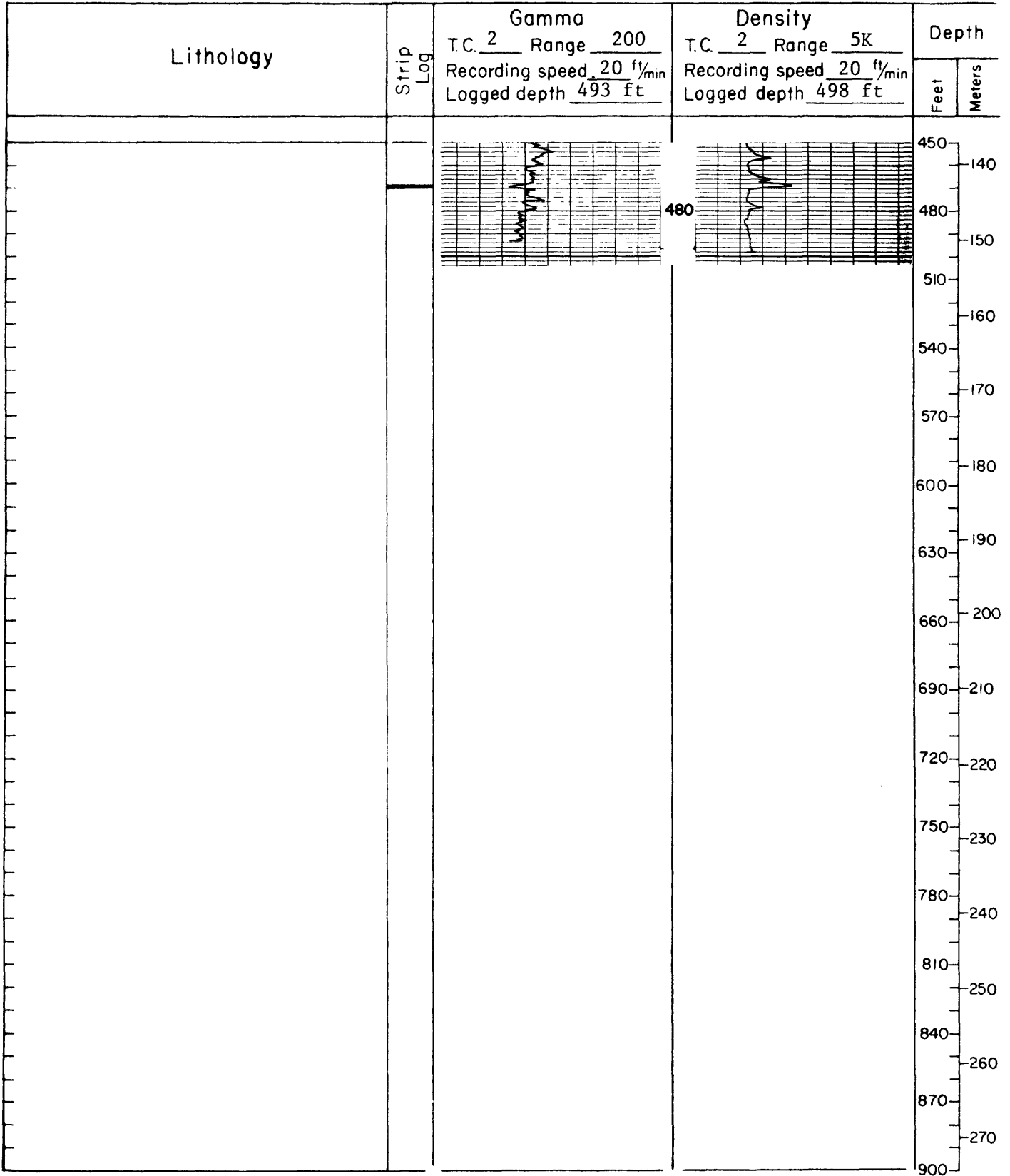
Remarks: _____

Recorded by: K. WILLIAMS Geologist ^{Yes} No Recorded by: L. SAUER



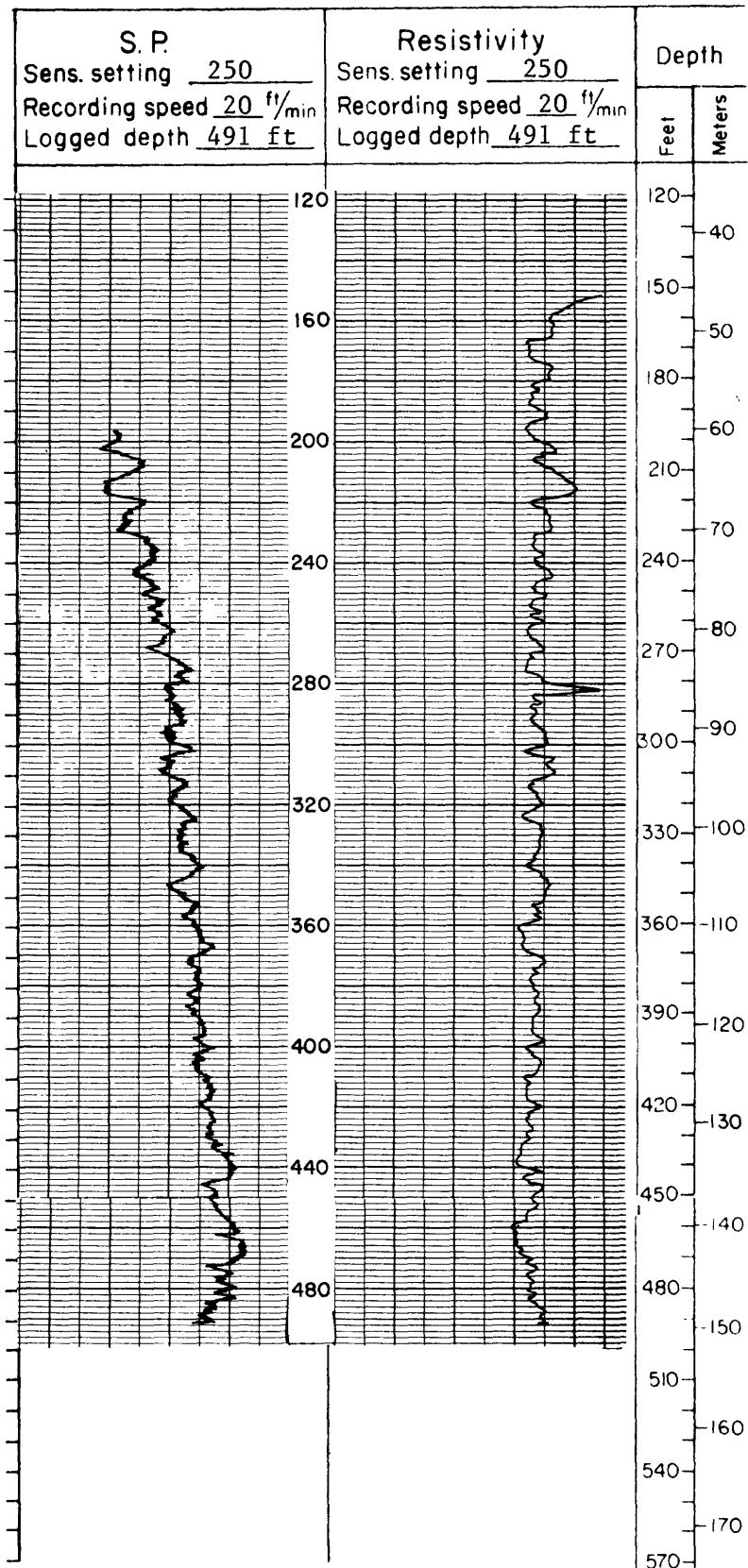
Hole number (continued)

US- 77325



Hole number (continued)

US - 77325



References

- Kistner, F. B., 1977, Preliminary report of coal drill-hole data in the southern Powder River Basin, Converse County, Wyoming: U.S. Geol. Survey Open-File Report 77-774, 25 p., 1 fig.
- U. S. Geological Survey and Montana Bureau of Mines and Geology, 1973, Preliminary report of coal drill-hole data and chemical analyses of coal beds in Sheridan and Campbell Counties, Wyoming; and Big Horn County, Montana: U.S. Geological Survey open-file report, 57 p.
- _____ 1974, Preliminary report of coal drill-hole data and chemical analyses of coal beds in Campbell County, Wyoming: U.S. Geol. Survey Open-File Report 74-97, 241 p., 1 fig., 3 tables.
- _____ 1976a, Preliminary report of coal drillhole data and chemical analyses of coal beds in Campbell and Sheridan Counties, Wyoming; Custer, Prairie, and Garfield Counties, Montana; and Mercer County, North Dakota: U.S. Geol. Survey Open-File Report 76-319, 377 p., 4 figs., 3 tables.
- _____ 1976b, Preliminary report of coal drill-hole data and chemical analyses of coal beds in Campbell, Converse, and Sheridan Counties, Wyoming; and Big Horn, Richland, and Dawson Counties, Montana: U.S. Geol. Survey Open-File Report 76-450, 382 p., 4 figs.
- _____ 1977a, Preliminary report of 1976 drilling of coals in Campbell, and Sheridan Counties, Wyoming; and Big Horn, Dawson, McCone, Richland, Roosevelt, Rosebud, Sheridan and Wibaux Counties, Montana: U.S. Geological Survey Open-File Report 77-283, 403 P., 6 figs.

U. S. Geological Survey and Montana Bureau of Mines and Geology, 1977b, Geophysical logs for Big Horn, Fallon, and Powder River Counties, Montana, chapter A of Preliminary report of 1977 coal drilling in eastern Montana and northeastern Wyoming: U.S. Geol. Survey Open-File Report 77-721-A, 77 p.

_____ 1977c, Geophysical logs for Big Horn County, Montana, chapter B of Preliminary report of 1977 coal drilling in eastern Montana and northeastern Wyoming: U.S. Geol. Survey Open-File Report 77-721-B, 126 p.

_____ 1978a, Geophysical logs for Powder River and Dawson Counties, Montana, chapter C of Preliminary report of 1977 coal drilling in eastern Montana and northeastern Wyoming: U.S. Geol. Survey Open-File Report 77-721-C, 79 p.

_____ 1978b, Geophysical logs for Dawson, Garfield, McCone, and Prairie Counties, Montana, chapter D of Preliminary report of 1977 coal drilling in eastern Montana and northeastern Wyoming: U.S. Geol. Survey Open-File Report 77-721-D, 101 p.

_____ 1978c, Geophysical logs for Campbell and Converse Counties, Wyoming, chapter E of Preliminary report of 1977 coal drilling in eastern Montana and northeastern Wyoming: U.S. Geol. Survey Open-File Report 77-721-E, 202 p.

U. S. Geological Survey and North Dakota Geological Survey, 1976, Preliminary report on 1975 drilling of lignites in western North Dakota: Adams, Bowman, Dunn, Hettinger, McLean, Mercer, Oliver, Slope, and Williams Counties: U.S. Geol. Survey Open-File Report 76-869, 144 p., 5 figs.

U. S. Geological Survey and North Dakota Geological Survey, 1977, Preliminary report on 1976 lignite drilling in western North Dakota: Adams, Billings, Dunn, Hettinger, McKenzie, Mercer, Morton, Oliver, Slope, and Stark Counties; U.S. Geol. Survey Open-File Report 77-857, 336 p., 5 figs.