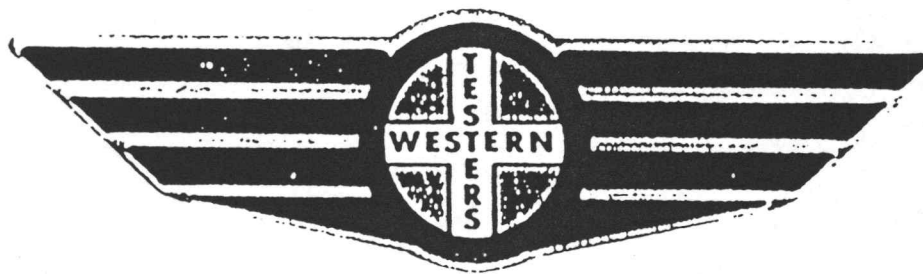


# FORMATION TEST REPORT



Home Office:

Wichita, Kansas 67201

P.O. Box 1599

Phone (316) 262-5861

COMPANY Range Oil Co. Inc.

LEASE & WELL NO. Andra #1

SEC 36

TWP. 26S RGE. 5E

TEST NO1

DATE 9-20-88

WESTERN TESTING CO. INC.  
SUBSURFACE PRESSURE SURVEY

DATE : 9-20-88 TICKET : 14033  
CUSTOMER : RANGE OIL COMPANY INC. LEASE : ANDRA  
WELL : #1 TEST: 1 GEOLOGIST : R OLSEN  
ELEVATION : 1363 KB FORMATION : BARTLESVILLE  
SECTION : 36 TOWNSHIP : 26S  
RANGE : 5E COUNTY : BUTLER STATE : KANSAS  
GAUGE SN# : 10979 RANGE : 4100 CLOCK : 12

INTERVAL FROM : 2749 TO : 2760 TOTAL DEPTH : 2760  
DEPTH OF SELECTIVE ZONE :  
PACKER DEPTH : 2744 SIZE : 6.63  
PACKER DEPTH : 2749 SIZE : 6.63  
PACKER DEPTH : SIZE :  
PACKER DEPTH : SIZE :

DRILLING CON. : RANGE RIG 1  
MUD TYPE : CHEMICAL VISCOSITY : 49  
WEIGHT : 9.9 WATER LOSS (CC) : 12.-  
CHLORIDES (PPM) : 1700  
JARS-MAKE : - SERIAL NUMBER :  
DID WELL FLOW ? : NO REVERSED OUT ? : NO

DRILL COLLAR LENGTH : 150 FT I.D. inch : 2.25  
WEIGHT PIPE LENGTH : .0 FT I.D. inch : 0.00  
DRILL PIPE LENGTH : 2579 FT I.D. inch : 3.80  
TEST TOOL LENGTH : 20 FT TOOL SIZE : 5.50  
ANCHOR LENGTH : 11 FT ANCHOR SIZE : 5.50  
SURFACE CHOKE SIZE : .75 IN BOTTOM CHOKE SIZE : .75  
MAIN HOLE SIZE : 7.875 IN TOOL JOINT SIZE : 4.5 XH

BLOW COMMENT #1 : WEAK BLOW THROUGHOUT TEST.  
BLOW COMMENT #2 :  
BLOW COMMENT #3 :  
BLOW COMMENT #4 :

RECOVERED : 90 FT OF: OIL & GAS CUT MUD  
15% OIL-85% MUD TOP SAMPLE  
40% OIL-60% MUD BOTTOM SAMPLE

CHLORIDES: 2000 PPM

Total Barrels Fluid = 0.44  
Total Fluid Prod Rate = 7.08 BFPD  
Indicated Oil Rate = 2.75 BOPD  
Indicated Wtr Rate = 0.47 BWPD  
Corrected Oil Rate = 4.89 BOPD  
Corrected Wtr Rate = 0.84 BWPD

REMARK 1 :  
REMARK 2 : RECOVERED 90 FEET OF GAS ABOVE FLUID.  
REMARK 3 :  
REMARK 4 :

SET PACKER(S) : 1:30 AM TIME STARTED OFF BOTTOM : 4:30 AM  
WELL TEMPERATURE : 108  
INITIAL HYDROSTATIC PRESSURE (A) 1444  
INITIAL FLOW PERIOD MIN: 30 (B) 20 PSI TO (C) : 25  
INITIAL CLOSED IN PERIOD MIN: 27 (D) 717  
FINAL FLOW PERIOD MIN: 60 (E) 31 PSI TO (F) : 43  
FINAL CLOSED IN PERIOD MIN: 60 (G) 724  
FINAL HYDROSTATIC PRESSURE (H) 1426

WESTERN TESTING CO. INC.  
WICHITA-KANSAS

Pressure Transient Report  
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COMPANY : RANGE OIL COMPANY INC.  
RIG : BUTLER-KANSAS  
FIELD : ANDRA  
WELL : #1  
DATE : 9-20-88  
GAUGE NO : 10979

OPERATIONAL COMMENTS

RECOVERED 90 FEET OF GAS ABOVE FLUID.

COMPANY : RANGE OIL COMPANY INC.  
 WELL : #1  
 GAUGE # : 10979  
 DATE : 20/ 9/88

FIELD : ANDRA  
 JOB # : 14033  
 DEPTH : 2760  
 TEST :

| DATA No.        | REAL TIME HR:MN:SS | ELAPSE TIME DELTA HOURS | PRESSURE PSIG | TEMP DEG F | DELTA P Pi-P(i-1) |
|-----------------|--------------------|-------------------------|---------------|------------|-------------------|
| INITIAL FLOW    |                    |                         |               |            |                   |
| 2               | 1:30: 0            | 0.000                   | 20.000        | 108.00     | 0.000             |
| 3               | 1:34:59            | 0.083                   | 20.000        | 108.00     | 0.000             |
| 4               | 1:40: 0            | 0.167                   | 20.000        | 108.00     | 0.000             |
| 5               | 1:45: 0            | 0.250                   | 20.000        | 108.00     | 0.000             |
| 6               | 1:49:59            | 0.333                   | 21.000        | 108.00     | 1.000             |
| 7               | 1:55: 0            | 0.417                   | 23.000        | 108.00     | 2.000             |
| 8               | 2: 0: 0            | 0.500                   | 25.000        | 108.00     | 2.000             |
| INITIAL SHUT-IN |                    |                         |               |            |                   |
| 9               | 2: 3: 0            | 0.550                   | 167.000       | 108.00     | 142.000           |
| 10              | 2: 6: 0            | 0.600                   | 353.000       | 108.00     | 186.000           |
| 11              | 2: 9: 0            | 0.650                   | 524.000       | 108.00     | 171.000           |
| 12              | 2:12: 0            | 0.700                   | 614.000       | 108.00     | 90.000            |
| 13              | 2:15: 0            | 0.750                   | 657.000       | 108.00     | 43.000            |
| 14              | 2:18: 0            | 0.800                   | 680.000       | 108.00     | 23.000            |
| 15              | 2:21: 0            | 0.850                   | 701.000       | 108.00     | 21.000            |
| 16              | 2:24: 0            | 0.900                   | 711.000       | 108.00     | 10.000            |
| 17              | 2:27: 0            | 0.950                   | 717.000       | 108.00     | 6.000             |
| FINAL FLOW      |                    |                         |               |            |                   |
| 18              | 2:28: 0            | 0.967                   | 31.000        | 108.00     | -686.000          |
| 19              | 2:31:59            | 1.033                   | 31.000        | 108.00     | 0.000             |
| 20              | 2:37: 0            | 1.117                   | 31.000        | 108.00     | 0.000             |
| 21              | 2:42: 0            | 1.200                   | 31.000        | 108.00     | 0.000             |
| 22              | 2:46:59            | 1.283                   | 33.000        | 108.00     | 2.000             |
| 23              | 2:52: 0            | 1.367                   | 35.000        | 108.00     | 2.000             |
| 24              | 2:57: 0            | 1.450                   | 37.000        | 108.00     | 2.000             |
| 25              | 3: 1:59            | 1.533                   | 39.000        | 108.00     | 2.000             |
| 26              | 3: 7: 0            | 1.617                   | 40.000        | 108.00     | 1.000             |
| 27              | 3:12: 0            | 1.700                   | 41.000        | 108.00     | 1.000             |
| 28              | 3:16:59            | 1.783                   | 42.000        | 108.00     | 1.000             |
| 29              | 3:22: 0            | 1.867                   | 43.000        | 108.00     | 1.000             |
| 30              | 3:27: 0            | 1.950                   | 43.000        | 108.00     | 0.000             |
| FINAL SHUT-IN   |                    |                         |               |            |                   |
| 31              | 3:30: 0            | 2.000                   | 56.000        | 108.00     | 13.000            |
| 32              | 3:33: 0            | 2.050                   | 106.000       | 108.00     | 50.000            |
| 33              | 3:36: 0            | 2.100                   | 251.000       | 108.00     | 145.000           |
| 34              | 3:39: 0            | 2.150                   | 403.000       | 108.00     | 152.000           |
| 35              | 3:42: 0            | 2.200                   | 500.000       | 108.00     | 97.000            |
| 36              | 3:45: 0            | 2.250                   | 562.000       | 108.00     | 62.000            |
| 37              | 3:48: 0            | 2.300                   | 603.000       | 108.00     | 41.000            |
| 38              | 3:51: 0            | 2.350                   | 628.000       | 108.00     | 25.000            |
| 39              | 3:54: 0            | 2.400                   | 647.000       | 108.00     | 19.000            |
| 40              | 3:57: 0            | 2.450                   | 661.000       | 108.00     | 14.000            |
| 41              | 4: 0: 0            | 2.500                   | 670.000       | 108.00     | 9.000             |
| 42              | 4: 3: 0            | 2.550                   | 681.000       | 108.00     | 11.000            |
| 43              | 4: 6: 0            | 2.600                   | 688.000       | 108.00     | 7.000             |
| 44              | 4: 9: 0            | 2.650                   | 696.000       | 108.00     | 8.000             |
| 45              | 4:12: 0            | 2.700                   | 702.000       | 108.00     | 6.000             |
| 46              | 4:15: 0            | 2.750                   | 708.000       | 108.00     | 6.000             |
| 47              | 4:18: 0            | 2.800                   | 714.000       | 108.00     | 6.000             |
| 48              | 4:21: 0            | 2.850                   | 718.000       | 108.00     | 4.000             |

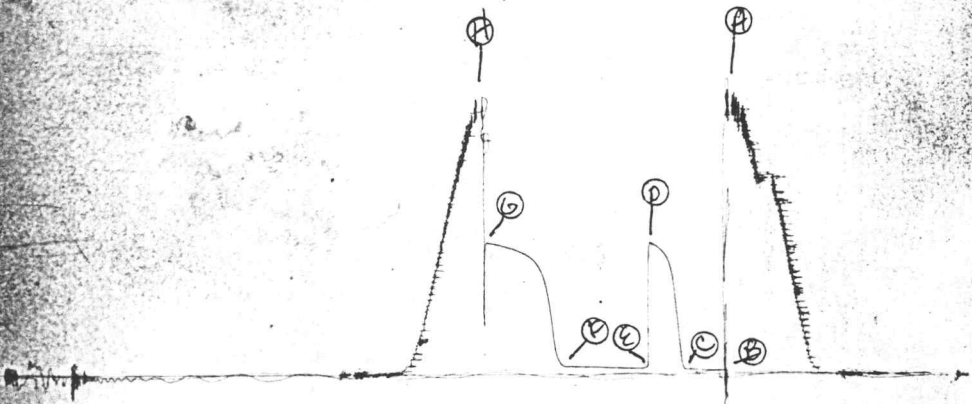
COMPANY : RANGE OIL COMPANY INC.  
WELL : #1  
GAUGE # : 10979  
DATE : 20/ 9/88

FIELD : ANDRA  
JOB # : 14033  
DEPTH : 2760  
TEST :

| DATA<br>No. | REAL TIME<br>HR:MN:SS | ELAPSE TIME<br>DELTA HOURS | PRESSURE<br>PSIG | TEMP<br>DEG F | DELTA P<br>Pi-P(i-1) |
|-------------|-----------------------|----------------------------|------------------|---------------|----------------------|
| 49          | 4:24: 0               | 2.900                      | 721.000          | 108.00        | 3.000                |
| 50          | 4:27: 0               | 2.950                      | 724.000          | 108.00        | 3.000                |

WESTERN TESTING CO. INC.

TKT # 14033  
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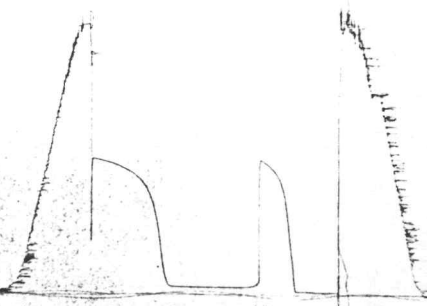
JK # 14033

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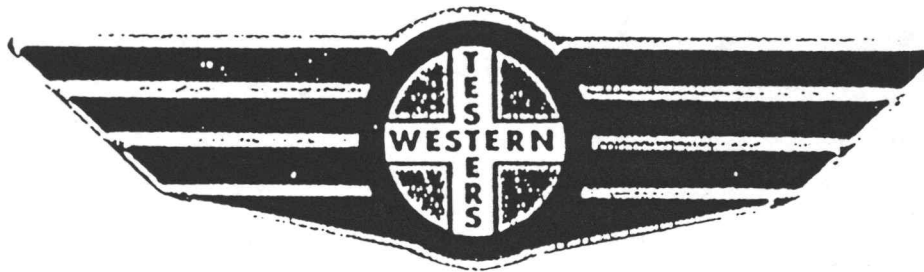
14033

DST #

13265



# FORMATION TEST REPORT



Home Office:

Wichita, Kansas 67201

P.O. Box 1599

Phone (316) 262-5861

WESTERN TESTING CO. INC.  
SUBSURFACE PRESSURE SURVEY

DATE : 9-20-88  
CUSTOMER : RANGE OIL COMPANY INC.  
WELL : #1 TEST: 2  
ELEVATION : 1363 KB  
SECTION : 36  
RANGE : 5E COUNTY : BUTLER  
GAUGE SN# : 10979 RANGE : 4100  
TICKET : 14034  
LEASE : ANDRA  
GEOLOGIST : R OLSEN  
FORMATION : BARTLESVILLE  
TOWNSHIP : 26S  
STATE : KANSAS  
CLOCK : 12

INTERVAL FROM : 2761 TO : 2772 TOTAL DEPTH : 2772  
DEPTH OF SELECTIVE ZONE :  
PACKER DEPTH : 2756 SIZE : 6.63  
PACKER DEPTH : 2761 SIZE : 6.63  
PACKER DEPTH : SIZE :  
PACKER DEPTH : SIZE :

DRILLING CON. : RANGE RIG 1  
MUD TYPE : CHEMICAL VISCOSITY : 50  
WEIGHT : 10.0 WATER LOSS (CC) : 10.4  
CHLORIDES (PPM) : 1800  
JARS-MAKE : - SERIAL NUMBER :  
DID WELL FLOW ? : NO REVERSED OUT ? : NO

DRILL COLLAR LENGTH : 150 FT I.D. inch : 2.25  
WEIGHT PIPE LENGTH : 0 FT I.D. inch : 0.00  
DRILL PIPE LENGTH : 2591 FT I.D. inch : 3.80  
TEST TOOL LENGTH : 20 FT TOOL SIZE : 5.50  
ANCHOR LENGTH : 11 FT ANCHOR SIZE : 5.50  
SURFACE CHOKE SIZE : .75 IN BOTTOM CHOKE SIZE : .75  
MAIN HOLE SIZE : 7.875 IN TOOL JOINT SIZE : 4.5 XH

BLOW COMMENT #1 : FAIR BLOW DIMINISHING SLIGHTLY AT END OF TEST.  
BLOW COMMENT #2 :  
BLOW COMMENT #3 :  
BLOW COMMENT #4 :

RECOVERED : 30 FT OF: MUDDY GASSY OIL  
90% OIL-10% MUD  
RECOVERED : 60 FT OF: HEAVY OIL & GAS CUT MUD  
40% OIL-60% MUD  
RECOVERED : 60 FT OF: SLIGHTLY OIL CUT MUDDY SALT WATER  
(LESS THAN 2% OIL)  
1.8 RES. @ 78 DEG.F.  
CHLORIDES: 46000 PPM

Total Barrels Fluid = 0.74  
Total Fluid Prod Rate = 11.80 BFPD  
Indicated Oil Rate = 4.17 BOPD  
Indicated Wtr Rate = 0.63 BWPD  
Corrected Oil Rate = 11.90 BOPD  
Corrected Wtr Rate = 1.80 BWPD

REMARK 1 :  
REMARK 2 : RECOVERED 450 FEET OF GAS ABOVE FLUID.  
REMARK 3 :  
REMARK 4 :

SET PACKER(S) : 12:30 PM                      TIME STARTED OFF BOTTOM : 3:30 PM  
WELL TEMPERATURE : 108  
INITIAL HYDROSTATIC PRESSURE                      (A) 1493  
INITIAL FLOW PERIOD                      MIN: 30                      (B) 25                      PSI TO (C) : 38  
INITIAL CLOSED IN PERIOD                      MIN: 27                      (D) 712  
FINAL FLOW PERIOD                      MIN: 60                      (E) 56                      PSI TO (F) : 81  
FINAL CLOSED IN PERIOD                      MIN: 60                      (G) 726  
FINAL HYDROSTATIC PRESSURE                      (H) 1459

WESTERN TESTING CO. INC.  
WICHITA-KANSAS

Pressure Transient Report  
-----

COMPANY : RANGE OIL COMPANY INC.  
RIG : BUTLER-KANSAS  
FIELD : ANDRA  
WELL : #1  
DATE : 9-20-88  
GAUGE NO : 10979

OPERATIONAL COMMENTS

RECOVERED 450 FEET OF GAS ABOVE FLUID.

COMPANY : RANGE OIL COMPANY INC.  
 WELL : #1  
 GAUGE # : 10979  
 DATE : 20/ 9/88

FIELD : ANDRA  
 JOB # : 14034  
 DEPTH : 2772  
 TEST :

| DATA No.        | REAL TIME HR:MN:SS | ELAPSE TIME DELTA HOURS | PRESSURE PSIG | TEMP DEG F | DELTA P Pi-P(i-1) |
|-----------------|--------------------|-------------------------|---------------|------------|-------------------|
| INITIAL FLOW    |                    |                         |               |            |                   |
| 2               | 12:30: 0           | 0.000                   | 25.000        | 108.00     | 0.000             |
| 3               | 12:34:59           | 0.083                   | 26.000        | 108.00     | 1.000             |
| 4               | 12:40: 0           | 0.167                   | 28.000        | 108.00     | 2.000             |
| 5               | 12:45: 0           | 0.250                   | 31.000        | 108.00     | 3.000             |
| 6               | 12:49:59           | 0.333                   | 35.000        | 108.00     | 4.000             |
| 7               | 12:55: 0           | 0.417                   | 38.000        | 108.00     | 3.000             |
| 8               | 13: 0: 0           | 0.500                   | 38.000        | 108.00     | 0.000             |
| INITIAL SHUT-IN |                    |                         |               |            |                   |
| 9               | 13: 3: 0           | 0.550                   | 121.000       | 108.00     | 83.000            |
| 10              | 13: 6: 0           | 0.600                   | 311.000       | 108.00     | 190.000           |
| 11              | 13: 9: 0           | 0.650                   | 504.000       | 108.00     | 193.000           |
| 12              | 13:12: 0           | 0.700                   | 603.000       | 108.00     | 99.000            |
| 13              | 13:15: 0           | 0.750                   | 653.000       | 108.00     | 50.000            |
| 14              | 13:18: 0           | 0.800                   | 677.000       | 108.00     | 24.000            |
| 15              | 13:21: 0           | 0.850                   | 694.000       | 108.00     | 17.000            |
| 16              | 13:24: 0           | 0.900                   | 705.000       | 108.00     | 11.000            |
| 17              | 13:27: 0           | 0.950                   | 712.000       | 108.00     | 7.000             |
| FINAL FLOW      |                    |                         |               |            |                   |
| 18              | 13:28: 0           | 0.967                   | 56.000        | 108.00     | -656.000          |
| 19              | 13:31:59           | 1.033                   | 56.000        | 108.00     | 0.000             |
| 20              | 13:37: 0           | 1.117                   | 56.000        | 108.00     | 0.000             |
| 21              | 13:42: 0           | 1.200                   | 58.000        | 108.00     | 2.000             |
| 22              | 13:46:59           | 1.283                   | 60.000        | 108.00     | 2.000             |
| 23              | 13:52: 0           | 1.367                   | 62.000        | 108.00     | 2.000             |
| 24              | 13:57: 0           | 1.450                   | 65.000        | 108.00     | 3.000             |
| 25              | 14: 1:59           | 1.533                   | 68.000        | 108.00     | 3.000             |
| 26              | 14: 7: 0           | 1.617                   | 72.000        | 108.00     | 4.000             |
| 27              | 14:12: 0           | 1.700                   | 76.000        | 108.00     | 4.000             |
| 28              | 14:16:59           | 1.783                   | 78.000        | 108.00     | 2.000             |
| 29              | 14:22: 0           | 1.867                   | 80.000        | 108.00     | 2.000             |
| 30              | 14:27: 0           | 1.950                   | 81.000        | 108.00     | 1.000             |
| FINAL SHUT-IN   |                    |                         |               |            |                   |
| 31              | 14:30: 0           | 2.000                   | 121.000       | 108.00     | 40.000            |
| 32              | 14:33: 0           | 2.050                   | 219.000       | 108.00     | 98.000            |
| 33              | 14:36: 0           | 2.100                   | 357.000       | 108.00     | 138.000           |
| 34              | 14:39: 0           | 2.150                   | 472.000       | 108.00     | 115.000           |
| 35              | 14:42: 0           | 2.200                   | 556.000       | 108.00     | 84.000            |
| 36              | 14:45: 0           | 2.250                   | 601.000       | 108.00     | 45.000            |
| 37              | 14:48: 0           | 2.300                   | 630.000       | 108.00     | 29.000            |
| 38              | 14:51: 0           | 2.350                   | 652.000       | 108.00     | 22.000            |
| 39              | 14:54: 0           | 2.400                   | 667.000       | 108.00     | 15.000            |
| 40              | 14:57: 0           | 2.450                   | 676.000       | 108.00     | 9.000             |
| 41              | 15: 0: 0           | 2.500                   | 685.000       | 108.00     | 9.000             |
| 42              | 15: 3: 0           | 2.550                   | 692.000       | 108.00     | 7.000             |
| 43              | 15: 6: 0           | 2.600                   | 700.000       | 108.00     | 8.000             |
| 44              | 15: 9: 0           | 2.650                   | 705.000       | 108.00     | 5.000             |
| 45              | 15:12: 0           | 2.700                   | 709.000       | 108.00     | 4.000             |
| 46              | 15:15: 0           | 2.750                   | 715.000       | 108.00     | 6.000             |
| 47              | 15:18: 0           | 2.800                   | 718.000       | 108.00     | 3.000             |
| 48              | 15:21: 0           | 2.850                   | 721.000       | 108.00     | 3.000             |

COMPANY : RANGE OIL COMPANY INC.  
WELL : #1  
GAUGE # : 10979  
DATE : 20/ 9/88

FIELD : ANDRA  
JOB # : 14034  
DEPTH : 2772  
TEST :

| DATA<br>No. | REAL TIME<br>HR:MN:SS | ELAPSE TIME<br>DELTA HOURS | PRESSURE<br>PSIG | TEMP<br>DEG F | DELTA P<br>Pi-P(i-1) |
|-------------|-----------------------|----------------------------|------------------|---------------|----------------------|
| 49          | 15:24: 0              | 2.900                      | 724.000          | 108.00        | 3.000                |
| 50          | 15:27: 0              | 2.950                      | 726.000          | 108.00        | 2.000                |

WESTERN TESTING CO. INC.

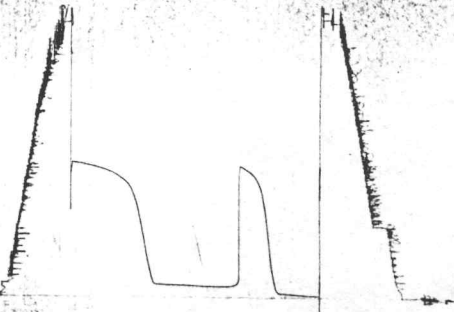
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10979

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