

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

SUBMIT IN DUPLICATE\*

(See other in-  
structions on  
reverse side)Form approved.  
Budget Bureau No. 42-R355.5.

## WELL COMPLETION OR RECOMPLETION REPORT AND LOG \*

|                                                                                                                                                                                                                        |  |                                                                      |                                              |                                             |                                    |                                                                        |                                |                                                          |  |                                                |  |                                                                                                                                 |  |                     |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------|----------------------------------------------|---------------------------------------------|------------------------------------|------------------------------------------------------------------------|--------------------------------|----------------------------------------------------------|--|------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------|--|---------------------|--|
| 1a. TYPE OF WELL:                                                                                                                                                                                                      |  | OIL WELL <input type="checkbox"/>                                    | GAS WELL <input checked="" type="checkbox"/> | DRY <input type="checkbox"/>                | Other <input type="checkbox"/>     |                                                                        |                                |                                                          |  |                                                |  |                                                                                                                                 |  |                     |  |
| b. TYPE OF COMPLETION:                                                                                                                                                                                                 |  | NEW WELL <input checked="" type="checkbox"/>                         | WORK OVER <input type="checkbox"/>           | DEEP-EN <input type="checkbox"/>            | PLUG BACK <input type="checkbox"/> | DIFF. RESVR. <input type="checkbox"/>                                  | Other <input type="checkbox"/> |                                                          |  |                                                |  |                                                                                                                                 |  |                     |  |
| 2. NAME OF OPERATOR<br>Energy Reserves Group, Inc.                                                                                                                                                                     |  |                                                                      |                                              |                                             |                                    | 3. ADDRESS OF OPERATOR<br>P.O. Box 3280 - Casper, Wyoming 82602        |                                |                                                          |  |                                                |  |                                                                                                                                 |  |                     |  |
| 4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)<br>At surface 790' FNL & 2,480' FEL (NW/NE)<br>At top prod. interval reported below 1,278' - 1,304' K.B.<br>At total depth |  |                                                                      |                                              |                                             |                                    | 5. LEASE DESIGNATION AND SERIAL NO.<br>I-149-Ind 8474                  |                                |                                                          |  |                                                |  |                                                                                                                                 |  |                     |  |
| 6. IF INDIAN, ALLOTTEE OR TRIBE NAME<br>NAV 8474-Allotted                                                                                                                                                              |  |                                                                      |                                              |                                             |                                    | 7. UNIT AGREEMENT NAME<br>Gallegos Canyon Unit                         |                                |                                                          |  |                                                |  |                                                                                                                                 |  |                     |  |
| 8. FARM OR LEASE NAME                                                                                                                                                                                                  |  |                                                                      |                                              |                                             |                                    | 9. WELL NO.<br>312                                                     |                                |                                                          |  |                                                |  |                                                                                                                                 |  |                     |  |
| 10. FIELD AND POOL, OR WILDCAT<br>West Kutz Pictured Cliffs                                                                                                                                                            |  |                                                                      |                                              |                                             |                                    | 11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA<br>Sec. 16-T28N-R12W |                                |                                                          |  |                                                |  |                                                                                                                                 |  |                     |  |
| 12. COUNTY OR PARISH<br>San Juan                                                                                                                                                                                       |  |                                                                      |                                              |                                             |                                    | 13. STATE<br>New Mexico                                                |                                |                                                          |  |                                                |  |                                                                                                                                 |  |                     |  |
| 15. DATE SPUDDED<br>3-06-81                                                                                                                                                                                            |  | 16. DATE T.D. REACHED<br>3-08-81                                     |                                              | 17. DATE COMPL. (Ready to prod.)<br>5-05-81 |                                    | 18. ELEVATIONS (DF, REB, RT, GR, ETC.)*<br>G.L. 5,427'; K.B. 5,429'    |                                | 19. ELEV. CASINGHEAD<br>-----                            |  |                                                |  |                                                                                                                                 |  |                     |  |
| 20. TOTAL DEPTH, MD & TVD<br>1,420' K.B.                                                                                                                                                                               |  | 21. PLUG, BACK T.D., MD & TVD<br>1,371' K.B.                         |                                              | 22. IF MULTIPLE COMPL., HOW MANY*<br>2      |                                    | 23. INTERVALS DRILLED BY<br>ROTARY TOOLS<br>0-1,420'                   |                                | CABLE TOOLS<br>-----                                     |  |                                                |  |                                                                                                                                 |  |                     |  |
| 24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*<br>Pictured Cliffs 1,278'-1,304' K.B.                                                                                                    |  |                                                                      |                                              |                                             |                                    |                                                                        |                                | 25. WAS DIRECTIONAL SURVEY MADE<br>NO                    |  |                                                |  |                                                                                                                                 |  |                     |  |
| 26. TYPE ELECTRIC AND OTHER LOGS RUN<br>Induction Electric Log - Compensated Density & Neutron Log                                                                                                                     |  |                                                                      |                                              |                                             |                                    |                                                                        |                                | 27. WAS WELL CORED<br>NO                                 |  |                                                |  |                                                                                                                                 |  |                     |  |
| 28. CASING RECORD (Report all strings set in well)                                                                                                                                                                     |  |                                                                      |                                              |                                             |                                    |                                                                        |                                |                                                          |  |                                                |  |                                                                                                                                 |  |                     |  |
| CASING SIZE                                                                                                                                                                                                            |  | WEIGHT, LB./FT.                                                      |                                              | DEPTH SET (MD)                              |                                    | HOLE SIZE                                                              |                                | CEMENTING RECORD                                         |  | AMOUNT PULLED                                  |  |                                                                                                                                 |  |                     |  |
| 7"                                                                                                                                                                                                                     |  | 17#                                                                  |                                              | 126'                                        |                                    | 9-7/8"                                                                 |                                | 60 sx "B" + 2% CaCl <sub>2</sub> +<br>1/4# Celloflake/sx |  | -0-                                            |  |                                                                                                                                 |  |                     |  |
| 4-1/2"                                                                                                                                                                                                                 |  | 10.5#                                                                |                                              | 1,410'                                      |                                    | 6-1/4"                                                                 |                                | 160 sx 50-50 Pozmix w/2%<br>Gel, 1/4# Celloflake/sx +    |  | -0-                                            |  |                                                                                                                                 |  |                     |  |
| 4-1/2"                                                                                                                                                                                                                 |  | 10.5#                                                                |                                              | 1,410'                                      |                                    | 6-1/4"                                                                 |                                | Gel, 1/4# Celloflake/sx +                                |  | 0.5% CFR-2                                     |  |                                                                                                                                 |  |                     |  |
| 29. LINER RECORD                                                                                                                                                                                                       |  |                                                                      |                                              |                                             |                                    |                                                                        |                                |                                                          |  | 30. TUBING RECORD                              |  |                                                                                                                                 |  |                     |  |
| SIZE                                                                                                                                                                                                                   |  | TOP (MD)                                                             |                                              | BOTTOM (MD)                                 |                                    | SACKS CEMENT*                                                          |                                | SCREEN (MD)                                              |  | SIZE                                           |  | DEPTH SET (MD)                                                                                                                  |  | PACKER SET (MD)     |  |
|                                                                                                                                                                                                                        |  |                                                                      |                                              |                                             |                                    |                                                                        |                                |                                                          |  | 2-3/8"                                         |  | 1,242' K.B.                                                                                                                     |  | 1,242' K.B.         |  |
|                                                                                                                                                                                                                        |  |                                                                      |                                              |                                             |                                    |                                                                        |                                |                                                          |  | 2 3/4                                          |  |                                                                                                                                 |  |                     |  |
| 31. PERFORATION RECORD (Interval, size and number)<br>1,278'-89' w/1 JSPF<br>1,292'-1,304' (25 holes)                                                                                                                  |  |                                                                      |                                              |                                             |                                    |                                                                        |                                |                                                          |  | 32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC. |  |                                                                                                                                 |  |                     |  |
|                                                                                                                                                                                                                        |  |                                                                      |                                              |                                             |                                    |                                                                        |                                |                                                          |  | DEPTH INTERVAL (MD)                            |  | AMOUNT AND KIND OF MATERIAL USED                                                                                                |  |                     |  |
|                                                                                                                                                                                                                        |  |                                                                      |                                              |                                             |                                    |                                                                        |                                |                                                          |  | 1,278'-1,304'                                  |  | Brokedown w/750 gal 7 1/2% acid<br>w/additives + ball sealers.<br>Frac'd w/20,000 gal 60% Quality<br>Foam w/22,500# 10-20 sand. |  |                     |  |
| 33.* PRODUCTION                                                                                                                                                                                                        |  |                                                                      |                                              |                                             |                                    |                                                                        |                                |                                                          |  |                                                |  |                                                                                                                                 |  |                     |  |
| DATE FIRST PRODUCTION                                                                                                                                                                                                  |  | PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump) |                                              |                                             |                                    |                                                                        |                                | WELL STATUS (Producing or shut-in)<br>SI                 |  |                                                |  |                                                                                                                                 |  |                     |  |
| DATE OF TEST<br>4-9-81                                                                                                                                                                                                 |  | HOURS TESTED<br>24                                                   |                                              | CHOKE SIZE<br>3/8"                          |                                    | PROD'N. FOR TEST PERIOD<br>→                                           |                                | OIL—BBL.<br>0                                            |  | GAS—MCF.<br>177                                |  | WATER—BBL.<br>386                                                                                                               |  | GAS-OIL RATIO<br>NA |  |
| FLOW. TUBING PRESS.<br>75                                                                                                                                                                                              |  | CASING PRESSURE<br>180                                               |                                              | CALCULATED 24-HOUR RATE<br>→                |                                    | OIL—BBL.<br>C                                                          |                                | GAS—MCF.<br>177                                          |  | WATER—BBL.<br>386                              |  | OIL GRAVITY-API (CORR.)<br>NA                                                                                                   |  |                     |  |
| 34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)<br>VENTED DURING TEST                                                                                                                                       |  |                                                                      |                                              |                                             |                                    |                                                                        |                                |                                                          |  | TEST WITNESSED BY<br>T.C. DURHAM               |  |                                                                                                                                 |  |                     |  |
| 35. LIST OF ATTACHMENTS<br>SAMPLE DESCRIPTION ATTACHED                                                                                                                                                                 |  |                                                                      |                                              |                                             |                                    |                                                                        |                                |                                                          |  |                                                |  |                                                                                                                                 |  |                     |  |
| 36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records.                                                                                     |  |                                                                      |                                              |                                             |                                    |                                                                        |                                |                                                          |  |                                                |  |                                                                                                                                 |  |                     |  |

SIGNED [Signature] TITLE Production Engineer - RMD

DATE 5-06-81

\*(See Instructions and Spaces for Additional Data on Reverse Side)

NMOCG

# INSTRUCTIONS

**General:** This form is designed for submitting a complete and correct well completion report and log on all types of lands and leases to either a Federal agency or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office. See instructions on items 22 and 24, and 33, below regarding separate reports for separate completions.

If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, all types electric, etc.), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal and/or State laws and regulations. All attachments should be listed on this form, see item 35.

**Item 4:** If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.

**Item 18:** Indicate which elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments.

**Items 22 and 24:** If this well is completed for separate production from more than one interval zone (multiple completion), so state in item 22, and in item 24 show the producing interval, or intervals, top(s), bottom(s) and name(s) (if any) for only the interval reported in item 33. Submit a separate report (page) on this form, adequately identified, for each additional interval to be separately produced, showing the additional data pertinent to such interval.

**Item 29: "Sacks Cement":** Attached supplemental records for this well should show the details of any multiple stage cementing and the location of the cementing tool.

**Item 33:** Submit a separate completion report on this form for each interval to be separately produced. (See instruction for items 22 and 24 above.)

## 37. SUMMARY OF POROUS ZONES:

SHOW ALL IMPORTANT ZONES OF POROSITY AND CONTENTS THEREOF: CORED INTERVALS; AND ALL DRILL-STEM TESTS, INCLUDING DEPTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES

| FORMATION | TOP | BOTTOM | DESCRIPTION, CONTENTS, ETC. | GEOLOGIC MARKERS |             |                  |
|-----------|-----|--------|-----------------------------|------------------|-------------|------------------|
|           |     |        |                             | NAME             | MEAS. DEPTH | TRUE VERT. DEPTH |
|           |     |        | Sample Description Attached | Log Tops         |             |                  |
|           |     |        |                             | Ojo Alamo        | 20'         |                  |
|           |     |        |                             | Kirtland         | 135'        |                  |
|           |     |        |                             | Fruitland        | 940'        |                  |
|           |     |        |                             | Pictured Cliffs  | 1,280'      |                  |
|           |     |        |                             | T.D. Driller     | 1,420'      |                  |
|           |     |        |                             | T.D. Logger      | 1,412'      |                  |

SAMPLE DESCRIPTION

120-30            80% Ss: ~~H~~ grn, f-g, sbrnd, mod. cly fld, vy soft, tite  
                  20% Sh dk brn, blk, firm, carb. trace chert: orange,  
                  opaque, sbrnd, hard, loose.

130-90            100% Ss: ~~H~~ grn, dk brn sbrnd-blky, mod-vy clyfld,  
                  shly, firm-soft, tite.

140-50            90% Ss: AA  
                  10% Chert: wht, clear crypto-xln, ang-sbrnd, loose, hd.

150-60            30% Ss: ~~H~~ grn, fg, sbrnd, vy clyfld, soft, tite.  
                  70% Sh: dk grn, ~~pty~~-blk, firm-soft.

160-70            100% Ss: ~~H~~ grn, dk brown-gry, vf-fg, sbrnd, sl-vy clyfld  
                  firm, mst tite.  
                  trace chert: AA

170-80            80% Ss: AA w/dk brn.  
                  20% Sh: dk brn, sbrnd-blky, sandy-vy slty, firm  
                  trace Chert: AA

180-90            80% Ss: ~~H~~ grn, fg, sbrnd, carb incl & lg frags, vy clyfld,  
                  firm, tite.  
                  20% Sh: AA w/carb incl.

190-200           90% Ss: AA  
                  10% Sh: AA

200-10            80% Ss: dk brn, ~~H~~ grn, f-g, sbrnd, sme clyfld, mst  
                  shly, carb incl, firm  
                  20% Chert: clear, wht, ~~H~~ orange, crypto-xln, ang-sbrnd,  
                  hard, loose.

210-20                    60% Ss: AA

                         40% Chert: wht, clear, crypto-xln, ang, loose, hard

220-30                    70% Ss: ~~lt~~ grn, dk brn, vf-fg, sbrnd, mst vy clyflld,  
                          sme vy shly-sardy, firm, tite.

                         30% Chert: AA

                         trace pyrite: yellow, metallic, cs-xln, hard

                         trace Coal: blk, vitr, blk-ang, firm.

230-40                    80% Ss: AA w/sme wht, mst f-g.

                         20% Chert: AA w/sme yellow, opaque.

240-50                    60% Ss: ~~lt~~ grn, wht m-g, sbrnd, glave & amber incl,  
                          vy clyflld, firm

                         20% Sh: dk brn, blk-pty, sl. slty, firm, carb incl.

                         20% Chert: AA

250-60                    100% Ss: wht, m-g, sbrnd, lg. carb incl, vy clyflld,  
                          firm, tite.

                         trace Sh: dk grn, pty, carb incl, soft.

260-70                    80% Ss: grn, vf-g, sbrnd, carb incl, firm, shly, tite.

                         10% Chert: AA

                         10% pyrite: AA, but modular, drusy.

270-80                    80% Ss: brn, vf-g, sbrnd, carb incl, sl. shly, firm  
                          tite

                         20% Sh: AA w/sme blk-pty

                         trace Chert: AA

|         |                                                                                                                                                 |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 280-90  | 80% Ss: AA w/vf-fg<br>20% Sh: H grn, blk, soft<br>trace pyrite: AA                                                                              |
| 290-300 | 40% Ss: H grn, m-g, sbrn, vy clyflld, carb incl,<br>firm, tite.<br>50% Sh: dk brn, blk, vy slty-sl sandy, firm carb incl.<br>10% Chert. wht, AA |
| 300-10  | 90% Ss: grn, vy lt. grn, wht, vf-mg, sbrnd, vy sl-mod.<br>clyflld, carb incl, firm-soft,<br>10% Chert: AA                                       |
| 310-20  | 70% Ss: AA<br>20% Sh: dk grn, blk-plty, carb incl, soft<br>10% Chert: AA                                                                        |
| 320-30  | 90% Ss: AA w/dk brn. w/mstly firm.<br>10% Chert: AA                                                                                             |
| 330-40  | 100% Chert: clear, wht, grn, dk brn, crypto-xln-vy csgr<br>ang-sbrnd, hard, loose.                                                              |
| 340-50  | 100% Chert: AA                                                                                                                                  |
| 350-60  | 50% Ss: wht, vy lt grn, dk brn, vf-fg, sbrnd, carb incl,<br>sl-vy clyflld, firm, sl. poros.<br>10% Sh: AA<br>40% Chert: AA                      |
| 360-70  | 70% Ss: AA<br>30% Chert: AA                                                                                                                     |

370-80            80% Ss: AA w/mstly wht-clear.  
                  20% Chert: AA w/mostly clear

380-90            60% Ss: wht, grn, brn, vf-fg, sbrnd, glave & carb  
                  incl, sl-mod clyffl, firm-soft, sl. poros  
                  40% Chert: AA

390-400           60% Ss: AA  
                  20% Sh: grnsh gry, blk-ply, carb incl, sl. slty, firm  
                  20% Chert: AA

400-10            80% Ss: grnsh gry, grn, vf-fg, sbrnd, glave & amber  
                  incl, sl-vy clyfll, soft.  
                  10% Sh: AA  
                  10% Chert: AA

410-20            30% Ss: AA w/only vf-g w/o glave & amber  
                  50% Sh: AA  
                  20% Chert: AA w/sme orange staining

420-30            90% Ss: ~~H~~ grn, grn, vf-fg, sbrnd, carb & glave incl,  
                  mod-vy clyff, soft, tite.  
                  10% Chert: wht, clear, brn, crypto-xln, ang-sbrnd,  
                  hard, loose.

430-40            60% Ss: AA  
                  20% Sh: grnsh gry, dk brn, ply, carb incl, firm  
                  20% Chert: AA w/sme red staining

440-50            80% Ss: wht, m-g, sbrnd, glave, amber & carb incl,  
                  vy clyflld, firm.  
                  10% Sh: AA w/sl. slty,  
                  10% Chert: AA

|         |                                                                                                                                                                              |
|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 450-60  | <p>70% Ss: grnsh gry, f-g, sbrnd, carb incl, vy clyflld, soft, tite.</p> <p>10% Sh: AA</p> <p>20% Chert: AA</p>                                                              |
| 460-70  | <p>40% Ss: AA w/sme grn,</p> <p>50% Sh: grnsh gry, blk, carb incl, firm</p> <p>10% Chert: wht, clear, cs-xln, ang, hard, loose</p>                                           |
| 470-80  | <p>50% Ss: AA</p> <p>40% Sh: AA w/sme sl. slty</p> <p>10% Chert: AA</p>                                                                                                      |
| 480-90  | <p>30% Ss: AA w/sme reddish orange stain (oxid)</p> <p>50% Sh: AA</p> <p>20% Chert: AA</p>                                                                                   |
| 490-500 | <p>20% Ss: AA w/o stain</p> <p>70% Sh: AA</p> <p>10% Chert: AA</p>                                                                                                           |
| 500-10  | <p>30% Ss: wht-vy <del>H</del> grn, f-g, sbrnd glave incl, vy clyflld, firm-soft</p> <p>50% Sh: grnsh gry, plty-blk, glave incl, vy sl. slty, firm.</p> <p>20% Chert: AA</p> |
| 510-20  | <p>20% Ss: <del>H</del> grn-wht, f-g, sbrnd, glave &amp; amber incl, vy clyflld, soft, tite.</p> <p>80% Sh: dk gry, grnsh gry, blk-plty, carb incl., firm</p>                |

520-30            30% Ss: AA  
                 70% Sh: AA  
                 trace Chert: ~~H~~ yellow, transl, cs-xln, ang-sbang,  
                 hard, loose

530-40            20% Ss: AA  
                 70% Sh: brn, grnsh gry, blk-y-plty, carb incl, sl-mod  
                 slty, firm  
                 10% Chert: clear, cs-xln, ang, hard, loose.

540-50            60% Ss: wht-~~H~~ grn, vf-fg, sbrnd, carb & glave incl,  
                 sl-vy clyflld, firm-soft, sl. poros.  
                 40% Sh: AA  
                 trace Chert: AA

550-60            80% Ss: AA  
                 20% Sh: grnsh gry, blk-y, carb incl, sl. slty, soft

560-70            60% Ss: grn, f-g, sbrnd, carb & glave incl, sl. clyfll,  
                 firm, tite.  
                 40% Sh: AA  
                 trace Chert: clear, cream, cs-xln, ang-sbang, hard, loose.

570-80            70% Ss: AA w/vf-fg, sl-mod clyfll,  
                 30% Sh: AA  
                 trace Chert: AA

580-90            80% Ss: AA  
                 20% Sh: AA  
                 trace Chert: AA



590-600      40% Ss: grn, gry, vf-fg, sbrnd, carb incl, vy clyflld,  
firm, tite.  
60% Sh: grn, dk gry, blkylt, sme vy carb, sl. slty,  
firm-vy soft.

600-10      40% Ss: wht-lt. grn, f-g, sbrnd, glave incl, vy clyflld,  
firm, tite.  
60% Sh: AA

610-20      10% Ss: AA  
90% Sh: AA

620-30      100% Sh: lt grn, dk grn, grnsh gry, blkylt, sl-mod  
sandy, carb incl, firm.  
trace Chert: clear, cs-xln, ang-sbang, hard, loose

630-40      100% Sh: AA

640-50      100% Sh: AA

650-60      100% Sh: AA

660-70      100% Sh: AA  
trace Chert: AA

670-80      60% Ss: wht, f-g, sbrnd, glave & mica incl, vy clyflld,  
firm-soft.  
40% Sh: AA  
trace Chert: cream, transl, cs-xln, ang-sbang, hard  
loose.

680-90      30% Ss: AA w/sme vy lt. grn.  
70% Sh: dk grn, dk gry, grnsh gry, blkylt, sl. slty-  
sandy, firm.

|         |                                                                                       |
|---------|---------------------------------------------------------------------------------------|
| 690-700 | 100% Sh: AA                                                                           |
| 700-10  | 100% Sh: lt grn, dk grnsh gry, plty-blky, sme sl. slty,<br>soft.<br>trace Chert: AA   |
| 710-20  | 10% Ss: grn, vf-g, sbrnd, carb & glave incl, sl, clyflld,<br>firm.<br>90% Sh: AA      |
| 720-30  | 20% Ss: wht, f-g, sbrnd, sme vy sm. carb incl, mod-vy<br>clyflld, firm.<br>80% Sh: AA |
| 730-40  | 20% Ss: AA<br>80% Sh: AA w/sme carb frags & stringers                                 |
| 740-50  | 30% Ss: AA w/incl. carb frags<br>70% Sh: AA                                           |
| 750-60  | 30% Ss: AA<br>70% Sh: AA                                                              |
| 760-70  | 20% Ss: AA<br>80% Sh: AA                                                              |
| 770-80  | 40% Ss: lt grn, f-g, sbrnd-blky, mod clyflld, firm, tite.<br>60% Sh: AA               |
| 780-90  | NS                                                                                    |
| 790-800 | 30% Ss: AA<br>70% Sh: AA                                                              |

800-10            40% Ss: ~~H~~-md grn, f-g, sbrnd, vy clyflld, firm, tite.  
                  60% Sh: grnsh gry, blk-y-plty, sl. slty, firm

810-20            40% Ss: AA  
                  40% Sh: AA  
                  20% Chert: wht, clear, cream, cs-xln, ang-sbrnd,  
                  loose, hard

820-30            NS

830-40            40% Ss: wht, f-g, sbrnd, sl. ark, sme carb incl, vy  
                  clyflld, firm poss. sl. poros  
                  60% Sh: AA

840-50            40% Ss: AA w/vy soft  
                  60% Sh: AA

850-60            40% Ss: wht, f-g, sbrnd, carb & glave incl, sl-mod  
                  clyflld, firm.  
                  50% Sh: grnsh gry, plty-blky, carb incl & stringers,  
                  sl. slty, soft.  
                  10% Chert: cream, cs-xln, hard, loose

860-70            20% Ss: AA w/vf-g  
                  80% Sh: AA w/decreased slty-ness

870-80            10% Ss: AA  
                  90% Sh: grnsh gry, gry, blk-y-plty, carb incl, sl.  
                  slty, firm.  
                  trace Chert: clear, cs-xln, ang, loose, hard.

880-90            10% Ss: AA  
                   90% Sh: AA w/mst grnsh gry

890-900          10% Ss: AA  
                   90% Sh: AA w/sme mod slty-sandy

900-10           100% Sh: grnsh gry, gry, plty-blky, carb incl, sl-mod  
                   slty, firm.  
                   trace Chert: AA

910-20           20% Ss: ~~H~~ grn, wht f-g, sbrnd, carb incl,  
                   80% Sh: AA  
                   trace Chert: clear, orange, cs-xln, ang, hard, loose

920-30           10% Ss: AA w/mstly wht  
                   90% Sh: AA

930-40           10% Ss: AA  
                   90% Sh: AA w/mst dk brown-gry  
                   trace Chert: AA

940-50           100% Sh: AA

950-1050        No samples; vy strong gas blow.

1050-60          10% Ss: wht, f-g, sbrnd, carb incl, vy clyflld, firm,  
                   tite.  
                   70% Sh: grn, gry, blky, carb incl. sl. slty, firm,  
                   20% Chert: clear, wht, cs-xln, ang-sbrnd, har, loose.  
                   trace pyrite: yellow, metallic, modular, hard

|           |                                                                                                        |
|-----------|--------------------------------------------------------------------------------------------------------|
| 1060-70   | 20% Ss: AA                                                                                             |
|           | 60% Sh: AA                                                                                             |
|           | 20% Chert: AA w/cream & sme orange staining                                                            |
| 1070-80   | 30% Ss: wht, f-g, sbrnd, glave & carb incl, vy clyflld, soft                                           |
|           | 40% Sh: grn, dk brn, grnsh gry, blk, sl-mod slty, soft                                                 |
|           | 20% Coal: blk, vitr-ang-blk, firm.                                                                     |
|           | 10% Chert: Aa w/ mstly clear                                                                           |
| 1080-90   | 10% Ss: AA w/sl-mod clyflld, sl. poros                                                                 |
|           | 60% Sh: AA                                                                                             |
|           | 20% Coal: AA                                                                                           |
|           | 10% Chert: AA                                                                                          |
| 1090-1100 | 30% Ss: AA w/vy clyflld, vy soft, tite.                                                                |
|           | 60% Sh: AA                                                                                             |
|           | 10% Chert: AA                                                                                          |
| 1100-10   | 20% Ss: wht, f-g, sbrnd, lg carb incl, occ glave, incl, sl-mod clyflld, vy soft-friable, fair porosity |
|           | 50% Sh: AA w/carb frags & stringers                                                                    |
|           | 10% Coal: AA w/sme dull, earthy, sl. shly                                                              |
|           | 20% Chert: AA                                                                                          |
| 1110-20   | 10% Ss: wht, grn, f-g, sbrnd, lg carb incl, sme glave incl, mod clyflld, vy sft, poss. sl. poros       |
|           | 40% Sh: AA                                                                                             |
|           | 10% Coal: AA                                                                                           |
|           | 40% Chert: AA w/orange, cream                                                                          |

1120-30      30% grn, gry vf-fg, sbrnd, carb incl, glave incl,  
              sl-mod clyfll, firm-soft, sl poros  
              50% Sh: gry, brwn, grnsh gry, blk, slty-sl sandy,  
              carb incl, firm  
              20% Chert: AA

1130-40      10% Ss: AA w/mstly gry  
              80% Sh: AA  
              10% Chert: AA

1140-50      40% Ss: AA  
              50% Sh: AA  
              10% Coal: blk, earthy, blk, lignitic, soft

1150-60      10% Ss: wht-~~H~~ gry, f-g, sbrnd, carb incl, sl clyfll,  
              firm, vy calc, tite  
              70% Sh: grnsh gry, dk gry, blk, sl-mod slty, carb incl,  
              firm.  
              20% Chert: clear, ~~H~~ orange, brown, pink, cs-xln, ang-  
              sbang, hard, loose.

1160-70      30% Ss: AA w/sme lg carb frags & stringers  
              50% Sh: AA  
              20% Chert: AA  
              trace Coal: blk, vitr, ang-blk, firm

1170-80      10% Ss: AA  
              70% Sh: AA  
              20% Chert: AA

1180-90      30% Ss: gry, f-g, sbrnd, carb incl, vy sl. clyfll, firm  
              friable, fair poros.

|           |                                                                                     |
|-----------|-------------------------------------------------------------------------------------|
|           | 50% Sh: AA w/sme plty                                                               |
|           | 20% Chert: AA w/sme red                                                             |
| 1190-1200 | 20% Ss: AA                                                                          |
|           | 60% Sh: AA                                                                          |
|           | 20% Chert: AA                                                                       |
| 1200-10   | 30% Ss: gry-wht, f-g, sbrnd, carb incl, sl. clyflld,<br>soft-friable, fair porosity |
|           | 50% Sh: gry, brn, grnsh gry blk, sme carb, mod slty-sl.<br>sandy, soft.             |
|           | 20% Chert: AA                                                                       |
|           | trace Coal: blk, vitr, ang, firm.                                                   |
| 1210-20   | 30% Ss: AA w/sme grnsh gry                                                          |
|           | 40% Sh: buff, grnsh gry, brn, sl-mod. slty, carb incl,<br>soft-firm                 |
|           | 20% Coal: blk, vitr-dull, ang-blky, earthy                                          |
|           | 10% Chert: AA                                                                       |
| 1220-30   | 80% Sh: grnsh gry, brn, vy dk gry, blk, firm.                                       |
|           | 10% Coal: AA                                                                        |
|           | 10% Chert: AA                                                                       |
| 1230-40   | 80% Sh: AA                                                                          |
|           | 20% Chert: AA                                                                       |
|           | trace Ss: AA                                                                        |
| 1240-50   | 80% Sh: AA                                                                          |
|           | 10% Coal: AA                                                                        |
|           | 10% Chert: AA                                                                       |
| 1250-60   | 10% Ss: gry, f-g, sbrnd, carb frags & incl, mod clyflld,<br>sl. shly, vy sft, tite. |

30% Sh: AA  
 60% Coal: blk, vitr, ang-blky, firm  
 trace Calcite: wht, opaque, cs-xln, hard, loose, vy calc.  
 1260-80 10% Ss: gry, f-g, sbrnd, carb & glave, incl, sl. clyfll,  
 firm mod clac, tite  
 20% Sh: AA  
 70% Coal: AA  
 1280-90 20% Sh: grnsh gry, dk brn, gry, blky, sl-mod slty  
 carb incl. soft  
 80% Coal: blk, vitr, ang-blky, firm  
 trace Chert: AA w/mstly wht.  
 1290-1300 30% Sh: AA  
 70% Coal: AA  
 trace Ss: wht, f-g, sbrnd, glave incl, mod-vy clyflld,  
 soft, tite.  
 1300-10 20% Ss: wht, m-g, sbrnd, sl. ark, vy clyflld, soft,  
 tite.  
 20% Sh: AA  
 60% Coal: AA  
 trace Chert: AA  
 1310-20 30% Ss: AA w/clave & carb incl, vy sft.  
 30% Sh: brn, gry, blky-plty, carb incl, vy slty, soft  
 40% Coal: AA



1320-30            40% Ss: AA  
                   30% Sh: AA  
                   30% Coal: AA  
                   trace Chert: AA

1330-40            30% Ss: AA  
                   20% Sh: AA  
                   50% Coal: AA

1340-50            10% Ss: AA  
                   30% Sh: grnsh gry, dk brn, blk, carb incl, soft.  
                   60% Coal: AA  
                   trace Chert: wht, cream, pink cs-xln, ang-sbang, hard,  
                   loose.

1350-50            30% Ss: wht, f-g, sbrnd, carb incl, sl. ark, sl. clyflld,  
                   firm, vy calc.  
                   20% Sh: AA  
                   50% Coal: blk, vitr, ang-blk, firm

1360-70            50% Ss: AA  
                   20% Sh: grn, brn, dk brn, blk-pty, carb incl, sl-mod  
                   slty.  
                   30% Coal: AA

1370-80            40% Ss: wht, f-g, sbrnd glau & carb. incl, sl. ark,  
                   mod clyflld, firm, mod calc, sl. poros.  
                   20% Sh: AA  
                   40% Coal: blk, vitr, blk, firm.

1380-90            40% Ss: AA  
                  30% Sh: AA  
                  30% Coal: AA

1390-1400        50% Ss: wht, f-g, sbrnd, glave & carb incl, mod clyflld  
                  firm, by calc, sl. poros.  
                  30% Sh: AA  
                  20% Coal: AA

1400-10           30% Ss: wht, f-g, sbrnd, sl ark, carb & glave incl, sl-  
                  mod clyflld, firm, mod calc, poss. sl. poros.  
                  50% Sh: grn, dk brwn, H. brn, blkyl-pty, sl slty-sl  
                  sandy, soft.  
                  20% Coal: AA  
                  trace Chert: AA

1410-20           20% Ss: AA  
                  50% Sh: AA  
                  10% Coal: AA  
                  10% Chert: AA

15 min. circ. sample

                  20% Ss: AA  
                  50% Sh: AA  
                  10% Coal: AA  
                  20% Chert: AA