





IV-35 (Rev 8-81)

Beparlment of Mines Gil und Ges Bivision

Date June 13, 1986 State of Mest Hirginia Well No. KEM #263 Farm Wilbur Tennant API No. 47 - 107 - 1224

WELL OPERATOR'S REPORT

DRILLING, FRACTURING AND/OR STIMULATING, OR PHYSICAL CHANGE

| WEIL TYPE: Oil / Gas X / Liquid Injection (If "Gas," Production X / Underground | / Waste nd Storage | Disposal Deep | $\frac{1}{X}$ Shall | .low/) |
|---|-----------------------|------------------|---------------------|---------------------------|
| LOCATION: Elevation: 865 GL Watershed I | Ory Run | | | |
| District: Harris County Wood | | Quadrangle | Lubeck | 7.5 |
| | | | | |
| COMPANY Kaiser Exploration and Mining Comp | any | | | |
| ADDRESS P.O. Box 8 Ravenswood, WV 26164 | Caging | Used in | | Cement fill up |
| DESIGNATED AGENT R. A. Pryce | Tubing | Drilling | in Well | Cu. ft. |
| ADDRESS P. O. Box 8 Ravenswood, WV 26164 | Size | | | |
| SURFACE OWNER Wilbur E. Tennant | 20-16 Cond. | | | |
| ADDRESS New England, WV 26154 | 10 3/4" x3×x0.4" | 292'KB | 292'KB | 150 sks clas |
| MINERAL RIGHTS OWNER same | 9 5/8 | | | |
| ADDRESS | 8 5/8 | | | |
| OIL AND GAS INSPECTOR FOR THIS WORK | 7 | 2065'KB | 2065'KB | 165 sks |
| ADDRESS | 5 1/2 | | · | |
| PERMIT ISSUED 9/21/82 3/20/86 | 4 1/2 | <u> </u> | 4520'KB | 220 sks pozn |
| DRILLING COMMENCED 10/18/82 7/34/35 | 3 | | | |
| DRILLING COMPLETED 10/24/82 6/05/86 | . 2 | | | |
| IF APPLICABLE: PLUGGING OF DRY HOLE ON CONTINUOUS PROGRESSION FROM DRILLING OR REWORKING. VERBAL PERMISSION OBTAINED ON | Liners used | | | |
| GEOLOGICAL TARGET FORMATION Oriskany Sandston | e | Dep | th 4422' | -4428' feet |
| Depth of completed well 4520' feet | Rotary | x_/ Cabl | e T∞ls_ | |
| Water strata depth: Fresh feet; | Salt | feet | :Drilled | on fluid, |
| Coal seam depths: | . Is coal | being mir | ed in th | area?No |
| OPEN FLOW DATA | | | | |
| Producing formation Devonian Brown Shale | Pa | y zone dej | oth 3609' | <u>-3775'</u> feet |
| Gas: Initial open flow Mcf/d | Oil: In | itial oper | ı flow | - Bbl/d |
| *Final open flow 400 (est) Mcf/d | Fi | nal open : | flow | Bbl/d |
| Time of open flow between init | ial and f | inal test | 3 <u></u> h | ours |
| Static rock pressure 750 psig(surface | ce measure | ment) aft | erho | urs shut in |
| (If applicable due to multiple completion | 1) | | | |
| Second producing formation Berea Sandston | ne Pa | ay zone de | pth 2121' | -2123 feet |
| Gas: Initial open flow Mcf/d | Oil: I | itial ope | n flow | Bbl/d |
| * Final open flow Mcf/d | Oil: F | inal open | flow | Bb1/d |
| Time of open flow between ini | tial and : | final test | s <u> </u> | ours |
| Static rock pressure 750 psig(surface | e measure | ment) afte | r ho | urs shut in |
| * Open flows are commingled | | (Cont | inue on r | SEP 2 198 everse side, |

6/05/86:

DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC.

Young's Wireline set Alpha permanent plug at 3876'(KB) dumped 1 bailer 4/24/86:

6/05/86:

McCullough perforated the Brown Shale with 70 holes (0.39" dia) from 3609' to 3775'. According Fractured the Shale with 695 MSCF nitrogen; 199 bbl Nowsco 75 quality foam fractured the Shale with 695 MSCF nitrogen; 199 bbl sand ladened fluid; 60,000# of 20/40 sand; 290 bbls total fluid. Break down pressure: 3530 psig; ISIP: 1700 psig; 5 minute SIP: 1120 psig. McCullough perforated the Berea with 10 holes (0.39" dia) from 2121' - 2123'

6/05/86:

6/05/86: Nowsco 75 quality foam fractured the Berea with 45,000# of 20/40 sand; 524,700 scf total nitrogen; total sand ladened fluid: 164 bbl; total fluid: 254 bbls; ISIP: 1160 psig; 5 min. SIP: 1050 psig.

WELL LOG

| FORMATION COLOR HAI | RD OR | SOFT | TOP | FEET | BOTTOM FEET | REMARKS Including indication of all fres and salt water, coal, oil and ga | |
|---------------------|-------|------|-----|------|-------------|---|--|
| See original OG-10 |) | | | | | | |
| | | | | | | | |
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| | | | | | | | |

(Attach separate sheets as necessary)

| KAISER EXPLORATION AND MINING COMPANY |
|---------------------------------------|
| Well Operator |
| By: RALC |
| Date: June 13, 1986 |
| Date: June 13, 1986 |

Regulation 2.02(i) provides as follows:
"The term 'log' or 'well log' shall mean a systematic detailed geological record of all formations, including and, encountered in the drilling of a well."



IV-35 (Rev 8-81)

Inte of West Wirginia

Department of Mines
Oil and Gas Nivision

| Date | Januar | y 31, 1 | 983 | 3 |
|-------|---------|---------|-------|------|
| Opera | | | | |
| Well | NO. KE | M 11763 | | |
| | | Tennan | | |
| API N | o. 47 - | 107 | (Tab) | 1224 |

WELL OPERATOR'S REPORT

DRILLING, FRACTURING AND/OR STIMULATING, OR PHYSICAL CHANGE

| WELL TYPE: Oil / Gas X / Liquid Inject (If "Gas," Production X / Underg | ion_/Was | te Disposa ge/ Dee | 1/ p_X/ Sha | ıllow/) |
|---|---|-----------------------|----------------|--|
| LOCATION: Elevation: 865 GL Watershed | Dry Run | | | , |
| District: Harris County | | Quadrangl | e Lubeck | 7.5 |
| | | | | |
| COMPANY Kaiser Exploration and Mining Company | | | | ************************************* |
| ADDRESS P. O. Box 8, Ravenswood, WV 26164 | Casing | Used in | 7.66 | Cement |
| DESIGNATED AGENT R. A. Pryce | Caşing Tubing | | | fill up Cu. ft. |
| ADDRESS P. O. Box 8, Ravenswood, WV 26164 | Size | DEFECTION | TI WELL | Cu. It. |
| SURFACE OWNER Wilbur E. Tennant | 20-16 | | | |
| ADDRESS New England, WV 26154 | Cord. | | | |
| MINERAL RIGHTS CHINER Same | į į | 292'(KB | 292'(KB) | 150 sks Class |
| ADDRESS | 9 5/8 | | | |
| OIL AND GAS INSPECTOR FOR THIS WORK Sam | 8 5/8 | 2065'(KB) | 2065'(KB) | 165 sks |
| Hershman ADDRESS Smithville, WV | 7 | | | |
| PERATT ISSUED 9/21/82 | 5 1/2 | | 4520'(KB) | 220 sks pozmi |
| DRILLING COMMENCED 10/18/82 | 4 1/2 | | | |
| DRILLING COMPLETED 10/24/82 | | | | |
| IF APPLICABLE: PLUGGING OF DRY HOLE ON | | | | |
| CONTINUOUS PROGRESSION FROM DRILLING OR REVORKING. VERBAL PERVISSION OBTAINED | Liners | | | |
| CN | used | | | |
| GEOLOGICAL TARGET FORMATION Oriskany Sandsto | W4 /2 | Pont | -h 10001 A | 428' feet |
| Depth of completed well 4520' feet | Rotary y | | | |
| Water strata depth: Fresh feet | | | : IWIS | March 1517 1 10 17 Million Institution in the teaching of the market in the last of the la |
| Coal seam depths: | *************************************** | | d in the | aroa2 No |
| | | acaig nuic | a ui uic | area: 110 |
| OPEN FLOW DATA | _ | _ | | |
| Producing formation Oriskany Sandstone | | | | |
| Gas: Initial open flow Irace Mcf/d | Oil: Ini | tial open | flow | Bbl/d |
| Final open flow 150 Mcf/d | | | | |
| Time of open flow between in | | | | |
| Static rock pressure 1500 psig(surfa | | ent) after | hour | s shut in |
| (If applicable due to multiple completion | | | MAY | 2 9 1984 |
| Second producing formation | Pay | zone dept | h | fcet ** |
| Gas: Initial open flow Mcf/d | Oil: Ini | crar obcu | I.low | Nol/d |
| Final open flow Mcf/d | Ull: Fin | ar open fl | CW | Bbl/d |
| Time of open flow between ini | | | | |
| Static rock pressure psig(surface | lan lin William (218. | ne, after | . lvan | s thut in |

DETAILS OF PERFORMIND INTERVALS, FRACTURING OR STITULATING, PHYSICAL CHARGE, ETC.

11/16/82: Perforated the Oriskany Sandstone from 4422'-4428', with 24 holes, .41" diameter.

12/10/82: Crosslink fractured the Oriskany Sandstone with 60,000# 20/40 sand,

743 bbl water, 244 MSCF of nitrogen.

WELL LOG

| | | <u> </u> | 7 |
|---|---|--|--|
| FORMATION COLOR HARD OR SOFT | TOP FEET | BOTTOM FEET | REMARKS Including indication of all and salt water, coal, oil and |
| Soil & Shale Sand Shale Siltstone & Shale Sand Shale Siltstone & Shale Sand Shale Sand Shale Sand Siltstone & Shale Sand Siltstone & Shale Salt Sands Shale Coffee Shale (Sunbury) Berea Sand Shale Brown Shale Brown Shale Onondaga Lime Oriskany Sand Helderberg Lime Total Depth | 0 298 342 402 648 706 796 941 961 1049 1104 1145 1594 1766 2100 2121 2124 3542 3779 4123 4329 4420 4456 4558 | 298 342 402 648 706 796 941 961 1049 1104 1145 1594 1766 2100 2121 2124 3582 3779 4123 4329 4420 4456 4558 | Show gas Show gas @ 3090, 3054, 3270 Show gas @ 3621, 3725 Show gas @ 4041, 4076 Show gas @ 4170 Show gas @ 4425, 4440 |
| Total Depth | 4336 | | |
| | | | • |
| | | | |
| | | | |
| | • | | |

(Attach separate sheets as necessary)

| | Kaiser Exploration and Mini | ng Company |
|-------|-----------------------------|--|
| We | ell Operator | |
| By: | RAP | ٠, |
| Date: | January 31, 1983 | The state of the s |

Note: Regulation 2.02(i) provides an follows: "The term 'log' or 'well log' shall mean a systematic detailed geological recent of all formations, including the sol, seem stired in the drilling of a wille!"



| Operati Well N | tor's No. <u>KEM</u> | #263 |
|-------------------|-------------------------|------|
| 1.400 | A CONTRACTOR SECURITY | |

API Well No. 47

107

1224

| | DEPART | STATE OF WEST VII MENT OF MINES, OIL A | RGINIA ND GAS DIVISION | State Count | y l'ermit |
|--------------------------------|--|--|--|--|--|
| | Comment of the commen | GAS WELL PERMI | | ON | |
| WELL TYPE: | Oil Gas | X / | 0 | ************************************** | |
| | (If "Gas", Production | | storage / | Deep X / S | hallow A |
| LOCATION: | Elevation: 865' | | | G projectionspiritemental and a second | Communication of J |
| | District: Harris | County: | Wood | Quadrangle: Lub | eck |
| WELL OPERAT | OR <u>Kaiser Exploratio</u> | | | | |
| .Address | P. O. Box 8 | | | P. O. Box 8 | |
| ي د د مرفو | Ravenswood, WV | | | Ravenswood. | |
| OIL & GAS- | NED Hilbur F. Tonnant | | | | |
| Address | NER <u>Wilbur E. Tennant</u> New England, WV | | COAL OPERATOR | None | |
| \$# W C 2 2 2 | New Lingtana, WV | COTO-4 | Address | | |
| | 39.6 | | | | |
| Acreage | Continued the first restaurant and control | HEGEN Y | POAL OWNER(S) 1 | WITH DECLARATION | N ON RECORD: |
| SURFACE OWN | IER Same | | None None | | |
| Address | CONTROL CONTRO | SEP 1 7 1982 | Address | | |
| | | Newspaperson and constitution of the constitut | - ADDITION TO COMPANY AND STORY | | |
| Acresge | ethnesis heard to come special secretaristic communication months and activities are enrecident assumed 1990 in | OIL & GAS DIVISIG | | | |
| FIELD SALE (II | F MADE) TO: | Filterance to the Country to the to | Address | | |
| -Address | PM - with committee to the design of the committee of the | ordinatilisain of jerophas i in quis magamatay et consequence quantiticates | · · | | |
| | | | OAL LESSEE WIT | H DECLARATION C | N RECORD: |
| | SPECTOR TO BE NOTIFIED | . | lame | | |
| | uel N. Hersman | - CHISTOCHARIA CONTRACTOR CONTRAC | -Address | | |
| | P. O. Box 66 | andersteen vallen v | And an indicate of a contract of the contract | | • |
| | Smithville, WV 2617 | E-P-CATHORNOCO PAPAT-A-L-MANDOCOMORIO COMPRENENZO COMPRENZO COMPRE | | | • |
| The undersigned | d well operator is entitled to ope | rate for oil or gas purpose | s at the above locatio | n under a deed | _/ lease_X |
| wither contract | /datedJune_1 | , 19 81 , to the | undersigned well op | erator from Wilb | ur E. & Sandra |
| K. Tennar | nt use, or other contract has been | 2 mondal | · · · · · · · · · · · · · · · · · · · | | The Control of the Co |
| Recorded on Ser | ptember 9, 19 81 in the | he office of the Clerk of th | e County Commission | Wood | |
| Va., in Lea | <u>seBook761at</u> | page 76 A ner | mit is requested as | Fallower | County, West |
| PROPOSED WO | ORK: Drill X / Drill deep | Per / Pad-ili | / Franks | ionows: | • |
| | Plug off old formation | / Perforate new | formation | r-stimulate/ | |
| | | | | | |
| 1 1 | Other physical change in | wen (specify) | *************************************** | | |
| | planned as shown on t | the work order on the re | verse side hereof | | Settlement of the set of the settlement of the s |
| The above name | d coal operator, coal owner(s), a | | and the second s | | |
| make by Code \$22 | 2-4-3 must be filed with the Dep | partment of Mines within | fifteen (15) days af | ction they wish to make | or are required to |
| Department. | • | | , and the second | er me receipt of this | Application by the |
| Copies of this Per | rmit Application and the enclose | d plat and reclamation pla | an have been mailed | by registered mail or de | clivered by hand to |
| the above named co | oal operator, coal owner(s), and | coal lessee on or before t | he day of the mailing | g or delivery of this Per | mit Application to |
| the Department of | Mines at Charleston, West V | irginia. | | | |
| PLEASE SUBMIT GEOPHYSICAL L | COPIES OF ALL | 1 | | 4. | |
| TO: | OUS PRECIEI | • | KAISER EXPL | ORATION AND MIN | ING COMPANY |
| WEST VIRGINIA | OIL AND GAS | | | Well Operator | The state of the s |

PL GE TO CONSERVATION COMMIS-SION 1615 WASHINGTON STREET EAST CHARLESTON, WV 25J11

TELEI'HONE: (304) 348-3092

By Z.A.P.

BLANKET BOND

lts General Manager

ACTUAL INFORMATION MUST BE SUBMITTED ON FORM 19-35 UPON COMPLETION 4 \$ 1/2 5 2 V (A \$1.2 \$ \$1+1 V \$ 1 DRILLING CONTRACTOR (IF KNOWN) Clint Hurt & Associates, Inc. Address P. O. Box 388 Elkview, WV GEOLOGICAL TARGET FORMATION, Oriskany Rutary X / Cable tools ____/ Estimated depth of completed well, 4585' feet Approximate water strata depths: Fresh, feet; salt, feet. Is coal being mined in the area? Yes____/ No____/ Approximate coal scam depths: CASING AND TUBING PROGRAM CEMENT FILL-UP OR SACKS (Cubic feet) FOOTAGE INTERVALS PACKERS CASING OR TUBING TYPE **SPECIFICATIONS** Loft in well For drilling Used Conductor 150 sks class A (to surface) 2501 250' 10_3/4" Fresh Water Sizes Coal 65 sks 50/50 bozmix intermediate 20301 2030' 100 sks Class 225 sks 50/50 pozmitxset 45851 45851 Production 4 1/2" Tubing Perforations: Liners Bottom NOTE: Regulation 7.02 of the Department of Mines provides that the original and four copies of Form IV-2 must be filed with the Department, accompanied by (i) a plat in the form prescribed by Regulation 11, (ii) a bond in one of the forms prescribed by Regulation 12, or in lieu thereof the other security allowed by Code § 22-4-2. (iii) Form IV-9. "Reclamation Plan", applicable to the reclamation required by Code § 22-4-12b and Regulation 23, (iv) unless previously paid on the same well, the fee required by Code § 22-4-12a, and (v) if applicable, the consent required by Code \$22-4-8a from the owner of any water well or dwelling within 200 feet of the proposed well. A separate Form ly-2 shall not be required for fracturing or stimulating a well where fracturing or stimulating is to be part of the work for which a permit is sought and is noted as such on the Form IV-2 filed in connection therewith. THIS PERMIT MUST BE POSTED AT THE WELL SITE. ALL PROVISIONS BEING IN ACCORDANCE WITH CHAPTER 22, ARTICLE 4 OF THE W. VA. CODE, THE LOCATION IS HEREBY APPROVED FOR _____ drilling ___ THIS PERMIT SHALL EXPIRE IF OPERATIONS HAVE NOT COMMEMDED IN 5-21-83 The following waiver must be completed by the coal operator and by any coal owner or coal lessee who has recorded a declaration under Code 22-4-20, if the permit is to be issued within fifteen (15) days of receipt thereof. WAIVER / lessee_ _/ owner_ I of the coal under this well location has examined this The undersigned coal operator_ proposed well location. If a mine map exists which covers the area of the well location, the well location has been added to the mine map. The undersigned has no objection to the work proposed to be done at this location, provided, the well operator has complied with all applicable requirements of the West Virginia Code and the governing regulations. . 19___

| FORM (Obve | W-2(B) | | | V. | |
|------------|--------|----|----|------|---|
| 7/85 : | | ER | 27 | 1989 | 3 |



| | *4 | |
|----|------------------|-------|
| 1) | Date: January 31 | 19_86 |

2) Operator's KEM #263, Tennant

Well No .__ 3) API Well No.

File

DIVISION OF OIL & GAS STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY, OIL AND GAS DIVISION APPLICATION FOR A WELL WORK PERMIT

| T) TEMPORAL EX | | | / G: | | | . *13 | | | W |
|--|-------------------|---|------------------------|------------------|--|--|--|--|-------------------------------------|
| * | | | | | | | | | \mathcal{L} Shallow \mathcal{L} |
| 5) LOCATIO | | | 865 | | | Watershed: | | | |
| | D | laiser | . E&B18 | ratio | n and | County: | WOOU | Quadrangle:QAGENTR_A | Lubeck 7.5' |
|) WELL OPI | | | | npany | CODE: | The second secon | | DAGENT <u>R. A</u> | <u>. Pryce</u> |
| Address | Simmilian Company |). Box | | 0030 | · ^ | | Address | Same | |
| والمستقال المسالم | | | d, WV | |)4 | marine marine tale serve to | | | |
| OIL & GAS | | | | FIED | | | 9) DRILLING C | | |
| Name | | | | | | 9 | | | |
| Address | | | ells, I | | int Esta 26150 | | Address | | |
| PROPOSE | D WELL | WORK: | Drili | | _/ Drill | deeper | / Redrill | / Stimulate | |
| | | | - | | | | ate new formation | | |
| | | | Other p | hysical | change in w | ell (specify) P | <u>lug Oriskan</u> | y, squeeze Be | <u>rea, frac Berea a</u> |
| GEOLOGI | CAL TAR | GET FOR | | | | Brown Sha | | commingled | |
| 12) Estima | ited depth | of comple | ted well, | | | | , | | |
| 13) Appro | ximate tra | ta depths: | Fresh, _ | N/ | <u> </u> | feet; salt | N/A | feet. | |
| | | | | | | | al being mined in th | e area? Yes | / No X |
| CASING A | ND TUB | ING PRO | GRAM | | | | | | |
| CASING OR | promise and | SPE | CIFICATION | s | 1 | FOOTAGE I | NTERVALS | I CEMENT FILLUP | PACKERS |
| UBING TYPE | Size | Grade | Weight per ft. | New | Used | For drilling | Left in well | OR SACKS (Cubic feet) | |
| nductor | | 1 | | | | 2 0 0 00 00 00 | Det. In wes | (Capti 1971) | Kinds |
| sh water | 10 3 | 14 h-4 | 0 45 | У | | 292 | 292 | 150 sks cl | 4 |
| a. | 1 -0 0 | 7 11-4 | 7 73 | ^ | | | CJL | 1 100 342 61 | Sizes |
| ermediate | 711 | J-55 | .20 | V | 1 | 2 065 | 2 065 | 165 sks cl | |
| | / 1 | 2"N80 | | F V | | 4520 | 4520 | 5: | |
| oduction | | 12 1100 18" J- | | 1 | | 4422 | 4520 | 220 sks po | KID do Ass se: |
| bing | 1 - C - S/ | 10 U= | 93 4.0 | ^ - | | 4422 | | | |
| RETS | | | + | | | | | | Perforations: |
| | | - | | 1 | | | | | Top 4422 Bottom 44 |
| | <u> </u> | ļ | | - | | | | | |
| · | li . | 1 | | Į. | <u> </u> | | 1 | 1 | |
| | • | | | | | | | | |
| ************************************** | | | | - | | EDIOT HOE | 72 TT 71 | ************************************** | |
| | · | *************************************** | | | | FFICE USE (| | | |
| | | | | () |) Di | RILLING PE | RMII | | |
| rmit number_ | 4 | 7-107 | -1224 | -Fr | ac | | | M | arch 20, 1986 |
| | | | | | | * | *************************************** | Dat | ······ |
| is permit cove | ring the w | ell operat | or and wel | locatio | on shown be | elow is evidence of | of permission grant | ed to drill in accordan | ice with the pertinent legal re- |
| irements subje | ct to the c | onditions | contained | herein a | and on the r | everse hereof Not | ification must be gi | ven to the District Oil | and Gas Inspector (Pefer to |
| OLLINE TO THE | e construct | uon oi roi | ios, focein | ons and | DHS IOI SON | permitted work. k has commence | in addition, the w | vell operator or his con | tractor shall notify the proper |
| - | | | | * | | | | | Symptomy with the paying the season |
| e permitted we erse hereof | ork is as d | escribed in | the Notic | e and A | application, | plat, and reclams | ation plan, subject | to any modifications a | nd conditions specified on the |
| | М | arch | 20. 1 | .988 | | | mark is see | | |
| mit expires _ | 125 | 220 2022 | <u> </u> | -000 | | uniess well | work is commenced | prior to that date and | prosecuted with due diligence. |
| | | | Ţ. | , | | | more made and the control of the con | | |
| | Ageni | : 1 | Plat: | Cași | ng Fe | e WPCP | _ S&E | Other | |
| Bond: | - Allianne | 1 | 11 | 010 | 7 1969 | 377 1 | 1 W- 1 | | |
| Bond: | ALD | · | r t | / \ | | 7/7 / | | * | |
| Bond: | ALD | | لك | X) | > 969 | 363 | | | |
| Bond: | ALD | | | X) | <u> </u> | 363 1 | | | Versant D. Has |