Samples by Whisnand

Gas No. 1 Kerns PLEA-667
Pleasants County, W. Va.

dir - Strike N

4180 - 4200	Sh, 10% lt gr, grading to 90% drk gr to blk - some pyrite inclusions.
4200 - 20	sl Tr Dol, limy, m-csc gran, sl silty; 100% Sh, drk gr to blk.
	Hole wet @ approx. 4200'
20-40	100% Sh, gr Tr of which is v. lt. gra.-gr.
40 - 60	100% Sh, gr, some pyritic - v sl Tr loose siltstone in bottom of washed spl.
60 - 80	100% Sh, gr., softer than above.
80 - 00	100% Sh, "
	(Hole wet @ 4317' and stuck drill pipe - no gas indicating on chart - sediment bulb picked up w/tr - taste not salty. [1-14-71])
4420 - 30	100% Sh, drk gr, sl pyritic; some free pyrite
30 - 40	Tr Lm, brn to tan, f-med gran, fairly hard 100% Sh, gr to brn-gr some free pyrite TOP Dev by drlg. time 4433'
Fract. sa. 40 - 42	10% Chert, tan-gr, opaq. Lm, ranging from buff, chalky to wh, m-csc xln to brn, f gran dns. Some fluor. v sl Tr vis por. around wh xls in Lm.
	SHOW OF GAS (50 UNITS) @ 4433 - OUT @ 4443', PEAKED @ 4436' (100 UNITS)
42 - 50	40% Chert, gr, opaq., 60% Lm, wh chalky to lt gr, near wh, f-m-some csc gran w/some well developed calcite xls indicated secondary growth. Muck Sh. Considered caving.

KCMS #1 Ser #815

4450-60	30% Ch, gr, spag; 70% Lm, mostly wh to near wh, chalky to f-m grain and some gr, f grain. Much Sh, gr considered caving.
60-70	30% Ch, gr to tan, opag; 70% Lm, wh chalky to wh, lt gr and some H, tan, f-m grain.
70-80	30% Ch, mostly gr opag, some tan; 70% Lm, wh, buff and tan, mottled, ranging from chalky to f grain, some tan, f grain, dense, hard.
80-90	40% Ch gr to some wh, opag w/hair line fracture patterns in some; 60% Lm as above Tr oo ch; Tr Dol, gr f grain, dns.
90-00	30% Ch, as above w/few hair line fractures; 70% Lm as above, few brachiopod frags. Heavy Tr Dolo, gr, f grain; v. sl. Tr free calcite xls w/blk residual stain. Only v. dull fluor, No vis. cut.
* 4500-10	50% Ch, as above; 50% Lm, wh to buff, earthy to f-m xln. Tr fluor on vuggy or fracture (edge of piece) por w/good cut. Also v sl Tr free calcite xls as above show gas (35 units) over very short interval.
10-20	50% Ch, gr to tan some brn mottled, Tr fossiliferous, only v. few evident hair line frac. 70% Lm, buff to tan, f-m grain still fairly soft.
20-30	30% Ch, gr to wh w/only v fine hairline frac; 70% Lm, wh, buff some tan mottled, f-m grain to chalky. Tr fluor around obvious frac in Lm, fair cut
30-40	40% Ch gr to tan, opag; 60% Lm, wh chalky to buff-tan f-m grain. Several visible frac in both Ch and Lm, w/good to fair fluor and cut.
* 40-50	30% Ch as above; 70% Lm as above; Tr Lm buff-wh chalky becoming fairly silty w/some gtz; Few vis frac in both Lm and Ch w/shows as above. Two short interval shows of gas (30 units)
CAUGHT@ 4529 50-60	30% Ch, gr, tan brn, opag 70% Lm, wh to buff chalky and buff tan, mottled, f-m grain Tr silty as above, v sl Tr glauconite incl Few blk specks in Lm. Few vis frac w/shows as above in both Lm and Ch.

Core #1 Ser 815

4560-70	30% Ch, gr, tan, brn, opaque; 70% Lm, buff chalky to mostly buff-tan mottled, f-m gran. Much silty Lm w/ x, sta and sl Tr glauconitic. Only sl Tr fluor on frac edge. Tr Dolo, gr f gran dense.
70-80	30% Ch, gr, tan w/ Tr hairline frac; 80% Lm, buff chalky to mostly buff-tan brn mottled, f-m gran. Only a Tr chalky, silty Lm; Tr glauconitic. Only sl Tr fluor.
80-90	40% Ch, gr, opaque; 60% Lm as above; Tr Dolo, gr, silty and glauconitic. Only sl. Tr fluor.
90-00	40% Ch, as above; 60% Lm as above.
* 4600-10	30% Ch, gr, opaque; 60% Lm, buff chalky to buff, tan, brn, mottled, f gran.
Top Dog Niagaran reefer	10% Ss, lt gy to wh, med to f some cse gr, x, poorly sorted, sl calcareous w/ some blk residual stain, much is glauconitic. Only sl Tr live fluor.
" " 10-20	30% Ch as above; 40% Lm as above; 30% Ss, as above.
" " 20-30	10% Ch " " 10% Lm " " 80% Ss lt gy to lt tan, f-m, some cse gran poorly sorted, x, becoming sl more calcareous. Only sl Tr dull fluor.
" " 30-40	10% Ch gr, opaque, 90% Ss, lt gy to lt tan, f-m some cse gran, x, poorly sorted, v well cmtd. Much blk residual stain, but only sl Tr dull fluor.
" " 40-50	10% Ch, gr, opaque; 90% Ss same as above w/ Tr pyrite
" " 50-60	10% Ch " " ; Tr Lm, tan, dense; 90% Ss as above becoming more calcareous and argillaceous. V sl Tr live oil stain w/ good fluor & cut
Base Dog " " 60-70	10% Ch, gr, grading to wh, opaque; Tr Lm, tan, dense; 90% Ss as above - no shows.
" " 70-80	80% Lm, brn-tan mottled, f-m gran, sl argillaceous, abundantly arenaceous. Tr live fluor w/ cut; 20% Ss most of which has become f-m-some cse, drk tan to brn, sl argillaceous and highly calcareous.
" " 80-90	Tr Ch, gr, opaque; 100% Lm, grayish-brn, tan, buff, mottled, f-m gran, arenaceous in part and sdy & argillaceous. Tr indurated Lscs w/ sl Tr fluor.

Cuttings S# 815

4690-00	10% Ch, gr to wh, opaque; 90% Lm, some wh, chalky to f grain, mostly grayish-tan to brn, f-vf grain, argillaceous in part, some Lm is sl arenaceous; Tr Sh, brnsh, arenaceous and calcareous. Tr fracs in Lm w/ fair fluor & cut. Show gas on detector (25 units)
4700-10	20% Ch, gr to tan; 90% Lm some wh, chalky to f-grain but mostly grayish brn, f-vf grain, dense; sl Tr Sh, brn, calcareous. Tr indicated fracs in Lm w/ fair fluor (shows still on detector)
10-20	10% Ch, gr, opaque; 90% Lm, some lt colored f-m grain, but mostly drk grayish brn, vf grain dense, sl argillaceous, grading to Tr Sh, drk grsh-brn, calcareous.
20-30	10% Ch, gr, opaque; 90% Lm, same as above w/ some indicated frac and fair fluor and cut.
30-40	Tr Ch, gr, opaque; 100% Lm, grayish-brown, f-vf, dense w/ indicated fracs, very poor fluor, some buff to v lt gray wh, earthy.
40-50	Tr Ch, gr to wh, opaque; 100% Lm, as above becoming sl arenaceous in part.
50-60	30% Ch, gr to tan, opaque; 70% Lm as above
60-70	10% Ch, gr opaque, 90% Lm as above
70-80	10% Ch " " ; 10% Lm, wh, v lt wh, f-m-sc grain, "clean", fass; 70% Lm, brn, some tan to grsh-tan, f grain, sl argillaceous, only Tr arenaceous; 10% Sh, gr-b
80-90	30% Ch, gr-grsh tan-wh, glauconitic, granular in part; 60% Lm, wh-buff chalky to mostly tan, vf-dense, sl argillaceous; 10% Sh, brn, sl silty.
90-00	10% Ch as above; 90% Lm, some wh-buff m-f grain to mostly brn, vf grain, all is silty to some vf arenaceous, argillaceous. No shows
4800-10	10% Ch as above; 90% Lm as above, silty some sl. argillaceous. No shows
2nd Dup 10-20	10% Ch gr-wh-nodules in Lm.; 90% Lm. as above, silty to vf sandy, sl. argillaceous; Tr Ss, gr to lt tan, f-m-some csc grain, poorly sorted sl. Tr. blk residual stain, no fluor.

4820-30	10% Ch, gr opaq ; 90% Lm, some wh buff f-m gran, mostly tan, brn, f gran, sl arenaceous and argillaceous. Tr Ss, lt gr, f-m gran, poorly sorted & to Tr rounded.
* 30-40	20% Ch, gr to tan, glauconitic, some granular, silty(?) ; 80% Lm, tan-brn some wh, buff chalky; dk Lm is vf gran, silty to v.sl arenaceous, argillaceous; Only v. sl. Tr Ss. as above (*GAS KICK ON DETECTOR @ 4830' - 40 UNITS)
Trip	
* 40-50	20% Ch, gr as above ; 80% Lm as above; Only v sl Tr Ss as above (*GAS KICK 70 UNITS @ 4848' lasting to 4855' w/ decreasing amts.)
50-60	20% Ch, as above, 80% Lm as above, mick is f arenaceous to silty, sl. argillaceous, Tr ind. fracs w/ only dull fluor ; Only v sl Tr Ss. as above
60-70	10% Ch, tan to some wh ; 90% Lm, some as above but mostly brn, vf-dense hard; Only v sl Tr Ss as above (I suspect cave or recycled.)
70-80	10% Ch tan to some wh ; 80% Lm, brn, vf-dns, hard ; 10% Lm, brn, vf gran, argillaceous grading to calcareous Sh Sl Tr ind fracs w/ fair fluor and cut
* 80-90	Tr Ch, tan-wh ; 90% Lm, brn to buff-tan mottled, vf to m gran, arenaceous in part, ranges from chalky to v hard. Tr fracs w/ good fluor, but v poor cut (*GAS @ 4826 to 4897' - 135 UNITS AT FIRST KICK, DECREASING)
* 90-00	10% Ch, gr to tan, opaque to translucent, 90% Lm, hodgepodge buff-tan mottled chalky to brn, f-dns, hard, only v sl Tr arenaceous and sl Tr argill. V sl Tr ind frac. - v poor fluor.
* 4900-10	Tr Ch, wh, gr ; 100% Lm, buff-tan-brn mottled, f-med gran, only v sl arenaceous. No shows in 90's (*Gas kick 4903-06 [approx] - 70 UNITS MAX.)
No sample 10-20	100% Lm mostly buff-tan-brn mottled, chalky to f-m-csc gran, some brn, f gran sl argillaceous and silty. No Fluor

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No gas detector	4920-30	100% Lm, wh, buff ..., brn, chalky to m-csc gran, foss. No shows. Tr Lm is f. arenaceous.
" "	30-40	100% Lm as above. None arenaceous
" "	40-50	100% Lm " "
" "	50-60	100% Lm " " ; Tr Dolo, tan, vf gran. 4950 (-3865) 356' hi to Holtom well
" "	60-70	sl Tr Ch, wh-gr; 50% Lm, tan, brn, buff mottled, f-m-csc gran; 50% Dolo, tan, vf gran. Secondary calcite indicated, and some visible, fracs. filled
" "	70-80	50% Lm, as above; 50% Dolo as above; Calcite and Dolo veins and good xl. growth along piece edges. No fluor to v. dull, sl. fluor.
Sl. show 50 units 4988-90	80-90	20% Lm, brn, tan, f-m gran; 80% Dolo, tan, brn, vf gran - dense. Secondary calcite and dolomite xls indicate fracs. No fluor
Sl gas	90-00	100% Dolo, vf gran to dense, fracs. filled w/ Dolo and xls along edges. Tr Sh, tan, lt gr, dolomitic, fairly soft.
No gas on detector (SS repeated? Dolo??)	5000-10	10% Ch, gr, some wh, opaq.; 50% Dolo, tan, brn, f. gran, some vein wh. Dolo csc xln, some Dolo, sl f. arenaceous; 40% Ss, gr, f-vf gran, calcareous, ⊄, v. well cmt'd, quartzitic. Tr Sh, some tan, some lt grn w/ pyrite spheres. (COULD THIS BE REPEATED SECTION? — TRIP SPL)
No gas on detector	10-20	WHAT A HODGE PODGE!! Tr Ch, gr to wh; Lm, chalky to f m gran, arenaceous. Dolo, tan to lt gr, f-vf gran to dense; Ss, gr, f gran, ⊄, quartzitic, calc. Sh, lt grn to lt gr. Some Ss appears as Oriskany as observed @ 4600' to 4660'. 1 piece csc tan Dolo xln w/ good fluor & good cut. Numerous metal frags from bit.
No gas	20-30	Tr Ch, gr-wh; 70% Lm, buff, tan, brn mottled, m gran to brn, f-m gran, dolomitic in part; 20% Dol, brn, f to vf gran, arenaceous in part; 10% Ss, v lt gr to wh, f gran, v. well cmtd, ⊄, calc. Some Ss in Dolo appears in veinlets as though ...

COMMONWEALTH
KERNS #1 — 315

Nogas 30-40	20% Ls, buff tan, brn, mottled, f-m gran, arenaceous in part; 20% Dolo, brn, tan, vf-f gran, arenaceous in part; 60% Ss, gr, some tan, Tr wh, f-gran, ∠ quartz, extremely hard, siliceous, sl calcareous, v.sl Tr glauconite incl. No shows.
No gas 40-50	Tr Ch, brn, gr; 100% Dolo, tan, dense to sublithographic, few dolo veins indicating frac fill. Tr Ss as above No shows sl Tr Anhy in Dolo
v.sl Gas Brk @ 5052' 50-60 (Inconsiderable)	Tr Ch, wh-milky; Tr+ Anhydrite wh; 100% Dolo, tan to brn, f-vf gran, Tr sublitho few Dolo, wh, v/o frac-filled; Tr+ Ss as above No shows
No gas. 60-70	Tr Ch, Hgr-wh; 10% Anhydrite, wh; 90% Dolo, dk brn, tan, f-vf gran, sl anhydritic
70-80	Tr Ch, brn-gr; 20% Anhyd., wh; 80% Dolo, dk brn, tan, f-vf gran, sl anhydritic w/veins — frac fills?; Tr Ss, gr, some typical Oisk (cave?)
80-90	Tr Ch; 20% Anhyd.; 80% Dolo as above; Tr Ss as above
	RAN 7-INCH CSG @ 5095'
	DRILLED ON AIR 5095' to 5130' - HOLE DAMP - No SPLS.
	HOLE WET @ 5130' - BEGAN DRILLING ON FOAM
5130-50	No SPLS.
5150-60	10% Anhyd, wh, some tan; 90% Dolomite, tan-brn, vf-f gran, anhydritic
	sl Tr Sh, dk brn-blk
60-70	10% Anhyd, wh-tan; sl Tr Chert, lt tan, translucent; 90% Dolo, brn, some tan, f-vf gran, anhydritic; sl Tr Sh, dk brn to blk. Tr stylolites in Dolo.
70-80	10% Anhyd, wh-tan; v.sl Tr Chert, wh, opaq; 10% Dolo, lt tan, dns to lithographic few stylolites, v.few dark ss; 80% Dolo brn, f-vf gran, anhydritic.
	V. sl Tr lt grnsh. sh pyritic, in adherence w/ tan Dolo (Williamsport start?)
80-90	10% Anhyd, wh-tan; v sl Tr Chert, tan, transl; 10% Dolo, tan, dns to sub-lithos; 80% Dolo, brn, f gran, anhydritic; v. sl. Tr. lt grnsh. Sh. pyritic as above.

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5190-00 40% Anhyd, brn, some wh, sl dolomitic; 60% Dolo, brn, f-m gran, v anhydritic

5200-10 40% " " " " " " ; 60% Dolo, " " " "

Sl Tr Sh, blk, stylolitic

10-20 40% Anhyd as above ; 60% Dolo as above

20-30 20% Anhyd as above; 80% Dolo, brn, tan, dns-vf-f gran, anhydritic;
Tr + Sh, gc to grnsh gr, soft, exte pyritic; Tr pyrite incl in Dolo. (Williamsport coming in?)

GAS SHOW
* 30-40 Tr Anhyd, wh, ; 100% Dolo, brn, f grained, sucrosic, w/ dolo. chomb xl faces ;
conspicuous, few clear Dolo. xls indicate vugs or fracture fill, No fluor.

GAS SHOW TO 50 UNITS @ 5232' -

40-50 Tr Anhyd, wh, ; 100% Dolo, brn, f grain, sucrosic to some dense, (becoming sl anhydritic) Tr Sh dk brn-gy

50-60 100% Dolo, brn, f gran, anhydritic w/ some wh xln Dolo, fracture fill, Some pyrite incl.

60-70 100% Dolo, brn f gran anhydritic w/ some wh. xln Dolo. - fracture fill, Tr pyrite incl.
and Tr Dolo, argillaceous, darker brn.; Tr Sh, blk.

70-80 100% Dol, lt tan, f gran. to vf gran, only sl anhydrite, few wh. Dolo xls - fracture fill?

80-90 Tr Anhyd, wh, ; 100% Dolo, brn, f gran. anhydritic, sl. pyritic to lt tan, green
sl argill., sl pyritic, dense; Tr Sh, dk brn, pyritic, fairly soft.

90-00 10% Anhyd, wh-tan-brn.; 80% Dolo, ½ brn, f gran anhydritic, ½ lt gr-grnsh gr, dense
sl argill, sl pyritic, v sl anhydritic; 10% Sh, mostly lt grnsh gr, dolomitic, sl pyritic to some
grn, v soft and brn, pyritic.

5300-10 10% Anhyd, wh, tan, brn; 80% Dolo as above; 10% Sh as above (Much contamination from yellow-orange, soft, weathered surface sandstone ? Spl spilled?)

GAS FLARES ON CONN 10-20 from 5232' show
50% Anhyd, mostly brn mottled, sl dolomitic, some wh.; 50% Dolomite, brn, dnse, to lithog
to lt gry, grnsh gr, dense, sl arg, as above; Tr Sh, brn to gry as above.

20-30 40% Anhyd, wh to tan, some brn, mottled; 60% Dolo, brn, f-vf grain, dense, anhydritic,
Tr Sh. as above

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5330-40	40% Anhyd, wh, tan and brn, mottled some dolomitic; 60% Dolo, brn, f gran to dense, anhydritic, sl argill.
40-50	60% Anhydrite, mostly brn-tan mottled, (some wh), sl dolomitic, v sl Tr gr sh incl and pyritic; 40% Dolo, brn, vf-f gran, anhydritic
NOTE	GAS SHOW FROM 5232' STILL ON RECORDER AND HAS SLOWLY INCR TO 80 UNITS. NO SHARP INCREASES INDICATING ADDITIONAL PAY. WELL NOT FLARE WHILE DRILLING, BUT FLARES ON ACCUMULATION AFTER RESUMING AIR @ CONN. CONN @ 5350' OBSERVED: NO FLARE WHILE MAKING 25-MIN CONN; HOWEVER, AFTER RESUMING AIR (FOAM) FLARED FOR 2 MIN, 45 SEC.
50-60	60% Anhyd, mostly drk brn, to tan-brn mottled (some wh); dolomitic; 40% Dolo, brn, vf-f gran, anhydritic; Tr Sh, blk.
60-70	70% Anhydrite as above; 30% Dolo, drk brn, f-vf gran, anhydritic, sl arg. Tr Sh, blk to brnish blk.
76-80	90% Anhyd as above; 10% Dolo, as above + Tr Dolo, tan, dense, anhydritic Tr Sh, blk
Lith. change 80-90	30% Anhyd as above, 70% Dolo, some as above, but mostly tan, dense, pyritic w/ minute pyrite inclusions to buff, earthy, soft; Tr Sh, blk
90-00	20% Anhyd, wh to tan; 80% Dolo, tan, to lt gr, f gran to dense anhydritic. GAS STILL DOES NOT FLARE WHILE DRILLING, BUT SINCE TRIP @ 5393' INCR TO 125 UNITS - THERMAL READING INDICATES AIR STREAM (FOAMING) IS 10% GAS.
Lith. change 5400-10	80% Anhyd, brn, tan, mottled (some wh) sl dolomitic; 20% Dolo, brn, some tan, vf-f gran, dense, anhydritic. LOOKS LIKE SECTION 5310'-80' ON CONN @ 5413', AFTER RESUMING AIR 2'20", FLARED GAS FOR 3 MIN, w/ CONTINUED IGNITION IN AIR DISCHARGE LINE FOR SEVERAL MIN AFTERWARD.

COULD BE PAY, IF TO CONTINUOUS 5230' TO 5420'

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5410-20 30% Anhydrite, mostly wh, much tan; Tr Chert, amber, translucent; 70% Dolo, tan, gr, grish tan, dense, sl pyritic, argillaceous in part LOOKS LIKE 5380'-90' COULD THIS BE 30' REPETITION, CONSIDERING 5400'-5410' DESCRIPTION? AT 5420' FLARE FLICKS CONTINUOUSLY WHILE DRILLING - GAS HAS INCREASED TO 205' to 210' UNITS — THERMOS READING INCREASED TO 20%

*G:25

20-30 90% Anhydrite, mostly brn, brn-tan mottled, (some wh.) sl. dolomitic; Tr Ch, tan, translucent; 10% Dolo, buff, earthy, soft, some ~~gr~~ tan, lt gray, v. anhydritic looks like REPEAT OF REPEAT @ 5400'-10'! WHAT HAPPEN? SPLS ARE VALID; I WAS AT WELL DURING THIS ENTIRE SEQUENCE. GAS STOPPED FLARING CONTINUOUSLY @ 5436' - DECLINING GAS READINGS ON DETECTOR

@31

30-40 60% Anhyd, as above; 40% Dolo, brn to tan f-vf grained, anhydritic; No fluor.

40-50 30% Anhyd, as above; 70% Dolo, mostly tan caramel-colored to gr, some lt gy-gr, dense, only sl anhydritic appears fracture-filled; Tr Sh, lt gy-ech-gr dolomitic, gr. and brn. No fluor.

50-60 20% Anhyd as above; Tr Chert, gr-opaq-tan, translucent; 80% Dolo, tan-brn, vf-f grain, dense to sub-lithin, sl anhydritic, shows crossing patterns of secondary filling both wh. dolo and anhydrite; Tr Sh, blk, finely bedded

Fluor 60-70 80% Anhyd, mostly brn, brn-tan mottled (some wh.) sl dolomitic; 20% Dolo, brn to tan, f-vf grain, anhydritic, sl Tr fluor and good cut along apparent fracture edge, sl-bried.

Fluor 70-80 80% Anhyd, off white, tan, and brn mottled, sl dolomitic; Tr Chert, gr.; 20% Dolomite, brn, tan, f-vf grain anhydritic. Obtained bright cut from dull floor along what appears to be stylolitic sh. w/some anhyd vis.

80-90 10% Anhyd, as above; 30% Dol. as above. Can obtain cut from BLK Sh which is in thin beds and/or stylolites. V. sl. Tr (1 piece) Dol. w/vis. vuggy por., No fluor, and

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5490-00	90% Anhyd, tan-tan mottled, dolomitic; 10% Dol, brn, f gran, anhydritic
	Tr Sh, blk. Tr. V poor dull fluor, v poor cut
5500-10	70% Anhyd as above; 30% Dol, brn-tan, vf-f-dense, anhydritic
	Tr Sh blk No fluor
10-20	50% Anhyd as above; 50% Dol, tan, brn, grnsh gr dense sl argill. to tan-tan mottled, anhydritic. Abundant evidence of fractures — filled w/ dol and some anhyd - sl Tr not quite healed w/ blk residual stain. Only v dull fluor - no cut
	Tr Sh, M gry-gr and blk in v. thin layers and/or stylolites.
20-30	30% Anhyd tan-tan mottled, dolomitic to wh laths; 70% Dol, tan to brn, f vf gran. anhydritic to dense, Tr grn-gr to gr, dense, argill; Sl Tr Sh, gr to grn-gr
	GAS KICK (RECORDER) 5531' to 5532' INCREASE FROM 10% to 18-19%
	THEN DECR. TO 14%. FLARED BRIEFLY.
Sl Tr vugs 30-40	40% Anhyd as above; 60% Dol, tan to gr, f-gran to dense, anhydritic in most sl pyritic, and some argill.; Tr Sh, blk to gr, thin to stylolitic Much evidence of secondary frac filling. V sl Tr vuggy porous anhydritic Dol no show vis fr 5480-90'
Sl Tr vugs 40-50	70% Anhyd as above; 30% Dol as above still much secondary anhyd and Dol showing stress and/or frac fill. V sl Tr vis vuggy por as above
50-60	55% Anhyd, as above; 50% Dol, tan-brn, vf-dense, anhydritic w/ much evidence of cross pattern fracs w/ secondary [illegible]
60-70	30% Anhyd as above; 70% Dol, tan, brn, some gr, vf-dense, anhy sl anhydritic evidence of frac and secondary fill similarly
DRASTIC Lm-chert LITH CHANGE 70-80	20% Chert, wh, lt tan, to some smoky, translucent; 10% Anhyd as above; 60% Lm, buff, cream colored, earthy to lt tan, vf gran, "clean"; 10% Dol as above
Top 2nd Dol	AT 5580' GAS HAS SETTLED @ 160 UNITS — 10%. STILL FLARES ONLY ON CONN

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5580-90	30% Chert, wh, lt tan, some gr, translucent, some opaq.; 70 Lm, tan, f-vf grain to buff, f to earthy, some csc grain, "clean" = no residue on dissolving in HCl, some brn, f grain Lm also. @ 90' GAS BEGAN DECLINING ON RECORDER TO 150 UNITS UNTIL @ 5601' JUST BEFORE CONN, READING 135 UNITS & ONLY 3% @ THERMAL
5590-00	40% Chert, tan, some wh, gr, translucent; 60% Lm, tan, f grain to buff, earthy "clean" some brn, f grain.
5600-10	30% Chert, wh, tan, some gr, mostly transl, some opaque; 70% Lm, tan to buff, f-vf, some earthy, soft. Tr Lm, m-csc x/n, sl arenaceous w/ v. f grz, Tr Sh, blk
10-20	20% Chert as above; 50% Lm as above; 30% Dol, tan, vf grain "clean"
20-30	10% Chert wh, gr some tan, opaque to transl; 80% Lm, lt tan to buff, vf-f grain to earthy soft, some m-csc x/n, all "clean", 10% Dol, tan, vf grain
30-40	20% Chert, tan-wh, transl to opaq.; 40% Lm, wh, tan, buff, vf-f some mcd to earthy, most is dolomitic w/vis. rhomb faces in matrix; 40% Dol, tan, f-vf grain to buff, earthy, highly calc. @ first reacting to HCl, showing to Dol reaction, No shows GAS READING HOLDING @ 40% - 150-160 UNITS
40-50	10% Chert as above; 90% Lm & Dolo as above
50-60	30% Chert tan to wh, opaq. to transl; 80% Dolo and Lm, transl. mat as above mostly highly calc. clean, buff, tan wh, f grain (to some mcd), earthy, Tr Dol, brn f grain.
60-70	30% Chert, smoky gr, wh, some tan, mostly opaque to translucent - appears to be recrystallized silica. Dol could be vis in some, Remainder is Dol and Lm of transitional nature - most appears to be dolomitic Lm. All is buff-wh-tan f-med grain to earthy,
70-80	30% Chert, mostly wh, opaque to tan, smoky gr transl to opaq.; 20% Lm, buff-wh-lt tan, mostly to sucrosic, sl dolomitic; 50% Dol, tan to buff, f-vf grain Some earthy, most highly calc. and some darker brn, f grains, sl argill.

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5680-90	30% wh. gr., opaq.; 20% Lm, buff earthy to lt. tan, f gran, sl dolomitic in part; 50% Dol, tan, buff, vf-f gran, some v. calc, some brn, f gran.
	WHEN BACK TO DRILLING @ 5704': 8% Gas — 170 UNITS.
5690-00	10% Anhyd, wh.; 20% Chert, gr, wh, tan, opaq.; 70% Dolomite, tan, f gran. TRIP SPL.; V. FINE GROUND. ANHYD CAVE (?)
5700-10	10% Anhyd, wh.; 10% Chert, as above; 10% Lm, buff, earthy to lt tan, f gran; 70% Dolo, tan, some brn, vf gran. V. sl Tr clear Qtz x/l mineral, well developed, ind. secondary growth
*	Check GAS ON CONN @ 5712': 7/10" wtr thru 2" = 112 Mcfpd Registering 10% and 155 UNITS (STILL, I BELIEVE FROM SHOW @ 5232' TO 5420')
glauc. silty 5710-20	Tr Anhyd, wh.; 20% Chert, tan, wh, opaq.; Tr Lm, tan, f gran; 80% Dol, tan, some brn to lt tan, f gran. Tr of which is silty w/ x gtz. grains and glauconitic w/small inclusion v. sl. Tr fair fluor, fair cut in tan Dol.
glauc. silty 20-30 GAS INCR.*	Tr Anhyd, wh; 20% Chert, tan, gr, wh, opaq to translucent; 20% Lm, tan, buff, f gran to (glauconitic earthy, sl dolomitic; 60% Dol, tan, brn, f gran, some is silty w/ sub x to subrnd. gtz.; Tr Siltstone, tan, gr, sub x to subrnd, dolomitic, glauconitic
*	@ 5723' GAS INCR FROM 150 UNITS TO 165-170 UNITS AND FROM 10% TO 15%-16%
30-40	60% Chert, gr, wh, tan, opaq to translucent, some w/ wh. specules; 10% Lm, buff to tan, earthy to f gran; 30% Dol, tan to brn, f gran; Only sl Tr silty Dol & siltstone as above GAS STILL FLARES ON CONN @ 5744' SPLS STILL FINELY GROUND
40-50 glauconitic,	50% Chert, gr, some tan, opaq.; 50% Dol, tan, some brn, f-gran, Some is silty and v. rare Tr sand grain, x, imbedded in Dol. Flo shows 155-160 UNITS, 16% THERMAL READING

COMMONWEALTH
Kerns 815

5750-60 50% Ch, gr to wh, opag; 50% Lm, tan to buff, vf-f to earthy, only v.sl dolomitic only in part. Only Tr. Dol, brn-gr, silty, glauconitic

60-70 40% Ch, gr-tan, opag.; 60% Lm, tan to buff, f-vf gran to earthy, becoming sl dolomitic, much is silty and a Tr glauconitic; Tr Sh, gr-brn-gr; Tr Siltstone, gr-tan, calcareous, only sl glauconitic. GAS INCR @ 5765' to 18% & 175 UNITS

70-80 60% Ch, gr-near wh-tan, opag.; 40% Lm, tan, f-gran, sl dolomitic; Tr Siltstone gr, calcareous, sl glauconitic. GAS INCR TO 20% - 180 UNITS @ 5772' still there after conn @ 5774 - DECLINES RAPIDLY @ 5783' TO 100 UNITS AND 14% - THERMAL READING. THIS SHOW THEN VS FROM 5728' TO 5783' (55') DECLINE IT NOW APPEARS, MAY BE DUE TO LESSENING OF POWER - LIGHT PLANT FAULTY.

80-90 Tr Anhyd, wh; 10% Ch, gr to tan, opag.; 50% Dol, tan-brn, f-vf gran, some anhydritic 40% Ss, loose, clear qtz, f-m grain, sub ✗ to sub rnd - None cmtd in spl.

90-00 Tr Anhyd, wh-tan, 20% Ch, gr to tan, opag.; 30% Dol, tan to brn, f gran, some silty, glauconitic; 50% Ss, loose, clear qtz, f-m grain, ✗ to sub ✗ None in spl is cmtd.

5800-10 Tr Anhyd.; 10% Ch, gr-tan; 10% Dol, brn, sme tan, vf gran, dense; 80 Ss clear qtz, f-m, much silt-sized ✗, sub ✗ to sub-rnd, poorly sorted - All loose in spl. Abundance of metal filings from bit!!

10-20 10% Ch, gr-tan; 10% Dol, brn, vf gran, to dense; 80% Ss clear, vf-f much silt-sized, ✗ to sub ✗, poorly sorted - All loose in spl. Abund metal filings

20-30 Tr Anhyd, wh; Tr + Ch as above; 20% Dolo, brn to tan, vf to dense, sl anhydritic 80% Ss loose, qtz, f-vf much silt-size, ✗ to sub ✗, poorly sorted all loose in spl.

30-40 Tr Anhyd, wh; 10% Dol, brn to tan, vf gran, sl anhydritic; 90% Ss, loose, clear qtz, mostly vf to silt-sized ✗ to sub ✗, some med ✗ to sub ✗, v sl Tr cse, rnd.

40-50 Tr Anhyd, wh; 20% Dol, brn to tan, vf gran to dense, sl anhydritic; 80% Ss mostly silt-size to vf-f gran, ✗ to sub ✗, loose in spl

COMMONWEALTH
Kerns 815

5850-60 (Base 2nd 80' Base Dol.)	Tr Anhyd, wh-tan; 40% Lm, tan, f gran; 60% Ss, clear qtz, vf silt size to med, x to sub x, except much med. grained is rnd to sub rnd, frosted. Mostly loose in spl, but some clusters show poorly sorted, sl calcareous. No fluor.
60-70 (spl. vf ground; foss.→)	10% Chert, gr to tan, translucent; 50% Lm, tan, f gran to med gran, to buff, earthy; 20% Dol, brn to tan, f-vf gran, some arenaceous; 20% Ss, as above. Tr Brach. frag in Lm.
	CHECK GAS FLOW @ 5868' - STILL 112 Mcfpd.
70-80 (spl. vf ground)	10% Ch. as above; 60% Lm, as above; 30% Dol, as above.
80-90	Tr+ Ch, gr, smoky, opaq.; Tr Lm, brn-tan mottled, f-m gran; 100% Lm, dck brn to dark grsh-brn, vf-dense, highly argillaceous grading to some Sh, dck. grsh calcareous. Extr. hard, probably siliceous. Drilling time exceeds 30 min/Ft
TRIP	FOR NEW BIT 5893'
90-00	As above. Spls vf ground - Much metal in spl. JUNK IN HOLE ???
5900-10	20% Ch, lt gr - blue-wh, translucent; 80% Lm and Limey Sh. as above. Spls v.f. ground for descrip. Much metal still in cuttings.
	SINCE TRIP, GAS @ 50 UNITS AND 4-6% THERMAL { LEAKING SUCTION HOSE IN PANEL }
10-20 (spl vf ground)	60% Ch, lt gr to blue-wh, transl.; 20% Lm, tan, f gran.; 20% Dol, brn some tan, vf gran, sl argill.
20-30 (" " ; * GAS; foss. →)	50% Ch, lt gr to blue wh, transl.; 40% Lm, tan, buff, f gran; 10% Dol, brn, vf gran + sl argill. Tr Sh, dck brnsh-gr, calcareous. GAS FLARED BRIEFLY @ 5923' sl. Tr Brach frag in Lm.
	WHILE DRILLING. READINGS OF 18% and 100+ UNITS INVALID DUE TO LEAKING SUCTION IN PANEL - REPAIRED @ 5666'
30-40 (spl. vf ground)	20% Ch. as above; 70% Lm, tan to brn, vf-f gran, darker Lm is sl dolomitic, argill.; 10% Sh, gr to brnsh gr, soft, calcareous.
40-50 (CSE SPL. Good for description)	20% Ch. gr to wh, spicular in part, some obvious nodules in argill. Lm.; 70% Lm, tan mottled m-f gran, soft, to much dck. gr, f gran, highly argill. and arenaceous

5950-60 10% Ch, gr, opag.; 80% Lm, tan-wh mottled, m-c x'ln, foss. w/ breech. frag casts to dk gr-brnsh gr, f. gran, argill. and some arenaceous w/ silt size grs + 10% Sh, dk gr.

→ REPAIRED DETECTOR, READINGS 170 UNITS, 13% THERMAL

60-70 15% Ch, gr, opag.; 80% Lm, dk grsh-brn, f gran, argillaceous in part arenaceous siliceous; 10% Sh, dk gr.

70-80 10% Ch, gr, opag.; 70% Lm, some tan-near wh, mottled, m-cse gran, sl. foss, but mostly brn-dk grsh-brn, f gran, argill, arenaceous in part, siliceous, v. hard, w/ foss. (crinoid casts); 20% Sh, dk gr-gr, sl. calcareous w/ Lm. nodules and esp. crinoid casts.

80-90 Same (w/ Breech. frags in Lm & dk. crinoid)

90-00 10% Ch, gr, opag.; 60% Lm. as above; 30% Sh, dk gr, sl. calcareous, fairly hard, silic; Tr Siltstone, gr, extr. hard, highly sil.

* GAS SHOW 5999"-6000' (1') 180 UNITS TO 190 UNITS THEN BACK TO 180

* 6000-10 Tr Ch, as above; 80% Lm. as above; 20% Sh as above

* GAS SHOW 6003-6004' (1') 180 UNITS TO 200 UNITS BACK TO 180 UNITS

AFTER THIS SHOW, READINGS SETTLED BACK TO 160 UNITS AND 11% GAS.

10-20 Tr Ch, gr, opag.; 80% Lm, tan, brn, gr, mottled, f-m, cse gran, foss (breccias & crinoids) + argill, Tr. arenaceous; 20% Sh, dk gr, hard, calcareous

20-30 Tr Ch, gr, opag.; 90% Lm, tan, brn, gr, mottled, f-m-cse gran, foss, argill in part, Tr. arenaceous; 10% Sh, dk gr, calc.

INC chng. Base Ln

30-40 100% Lm, buff, tan, br, some gr, mottled, m-cse grain, soft; Some argill as above Tr Sh as above. GAS INCR. TO 200+ UNITS 6034'-39' FLARED WHILE DRILLING THIS BASE CHERT = 4873' IN HELDERBERG UPHOLE!

* GAS

40-50 As above v badly contaminated w/ drig grease no matter how well washed. GAS INCR.

* GAS 270 UNITS FLARED CONTINUOUSLY TO 6059' THIS SHOW APPEARS TO BE

COMMONWEALTH
Kerns 815

6050-60 100% Lm, tan, gr, brn, mottled, m-c gran, foss, only sl argill to mostly brn, f gran argill, v. foss.; Tr Sh, drk gr. Some Lm is chalky, wh.

60-70 Tr Ch, wh, trans. to transparent; 100% Lm, mottled, m-c gran, foss as above and brn, f-m gran, sl arg.; Tr Sh, drk gr. No shows. Tr ind. frac or vug fill in cse cole s/s. 1 piece tan, vf gran "clean" dolomite.

70-80 Tr Ch, wh, trans to transp.; 100% Lm, brn, tan, gr, mottled, f-m-cse gran, foss, arg. in part; Tr +Dol, v/lt tan, v.f. gran, clean. Ind frac fills. Tr Sh, drk gr. AETCE cond @ 6082'. READINGS SETTLED @ 135 units - 4%

80-90 Tr Ch, wh; 30% Lm as above; 20% Dol, tan to cream colored, some brn, vf gran. Tr Sh, drk gr. Blk stylolitic Sh. evident in Dol.

90-00 50% Lm, mottled as above; 10% Lm, v drk brn, bituminous; 40% Dol, tan, buff, some brn, v.f. gran; Tr Sh, drk gr. Stylolitic blk sh. in Dol. Some evidence of fractures along edges of Dol.

6100-10 20% Lm as above; 80% Dol, tan, buff, brn, v.f gran, anhydritic, some gr to grnsh-gr foss. sl arenaceous w/v.f qtz grains to sl Tr Ss, gr-grnsh gr, dolomitic, vf gran.

10-20 Tr Ch, wh, some gr; 10% Lm, mottled as above; 90% Dol, tan, buff, brn, v.f. gran, anhydritic; Tr Sh, drk gr; sl Tr Ss, gr, f gran, dolomitic, argill.

20-30 Tr Ch, wh; Tr Lm, mostly wh, tan, mottled, m-cse gran; 100% Dol, buff, tan, brn, vf gran, anhydritic, Tr of which is arenaceous w/ vf-f qtz grains.

30-40 Tr Ch, wh; Tr Lm as above; 100% Dol buff, tan, brn, gr, vf gran, anhydritic, some silty and f arenaceous; Tr Sh, gr to drk gr; Quite a bit of loose silt grains and vf qtz sand grains in bottom of washed sol.

40-50 10% Ch, gr, wh & gr, mottled, diatoms inclusions; 90% Dol, gr, tan, buff, brn, vf gran, anhydritic, some arenaceous w/silt-size and v.f. qtz grains; Quite a bit of loose silt and vf qtz grains.

COMMONWEALTH
Kerns 815

6150-60	Tr Ch, wh tan; 10% Anhyd, wh, some tan & brn.; 90% Dol, buff, lt tan, vf gran, sub-litho. to litho. to tan, brn, vf gran, anhydritic; Tr Sh, lt gr to grnsh gr, f arenaceous, Tr + Ss, lt gr to wh, f-vf gran, sil, x to sub x, hard, sl calc. Ind. Fracs. along some edges on Dol. - anhyd. - filled
60-70	Tr Ch, gr, wh, Tr mottled dk tans; 10% Anhyd, wh, tan; 90% Dol, tan, vf gran, sub-litho, stylolitic to tan, brn, f-vf gran, anhydritic; Tr Sh, grnsh gr, arenaceous; Tr + Ss. lt gr to wh, f gran, x, hard, sl calc. Ind fracs. w/ Anhyd fill along edges of Dol.
70-80	Tr Ch, gr, opaq.; 20% Anhyd, wh, tan, brn; 80% Dol, tan to brn, vf dense to some sub-litho, anhydritic; Tr Sh, grnsh gr, arenaceous in most; Tr Ss, wh to lt gr, f gran, v. hard, sl calc. No fluor.
80-90	Tr Ch, gr-wh; 20% Anhyd, wh, brn.; 80% Dol, tan dns sub-litho, to brn, dnse to sub litho, all anhydritic, some lt gr, vf gran f arenaceous, silty; Tr Sh grnsh gr, some arenaceous; sl Tr Ss, wh lt gr, f-vf gran, sl calc, hard.
90-6200	Tr Ch, gr, transl to tan; 10% Anhydritic, wh, tan, brn, 90% Dol, brn to tan, dns to sub-litho and some litho, anhydritic; Only Tr Sh, blk, usl Tr grnsh gr as above
6200-10	20% Anhyd, wh, tan, brn.; 80% Dol, tan, brn, vf gran, dns, to sub litho & litho, anhydritic; Tr Sh, blk, thinly bedded; Tr Ss, wh to lt gr, grnsh gr, f gran, hard.
10-20	Tr Ch, tan, gr.; 10% Anhyd, wh, tan, brn; 90% Dol, brn, tan, vf gran to sub-litho, anhydritic; Tr + Sh, blk.
20-30	sl Tr Ch, tan; 10% Anhyd, wh, tan brn; 90% Dol, tan, sub litho to litho, to brn-tan, " " Ch, carmel-colored dense, sub-litho, anhydritic; Tr Sh, blk, thinly bedded.
30-40	sl Tr Ch, tan, transl; 10% Anhyd, wh, tan, brn.; 90% Dol. as above; Tr Sh, blk, Tr Sh lt gr, extr. pyritic.
40-50	10% Anhyd, wh, tan, brn; 90% Dol, tan, brn, vf gran to dense, sub litho, anhydritic, Tr Dol, lt gr litho, usl pyritic; Tr Sh, blk; Tr Sh, grnsh gr, soft.

COMMONWEALTH
Kerns 815

6250-60	20% Anhydrite, wh, tan, brn; 80% Dol, tan-brn, vf-f gran, anhydritic, some lt grnsh gr, sl pyritic, dense; Tr Sh, blk
60-70	10% Anhyd, wh, tan, brn; 90% Dol, brn, tan, gr, vf-f gran, anhydritic, some lt. grnsh gr, dense, sl pyritic; Tr Sh, blk, Tr Sh, grnsh gr.
70-80	20% Anhyd, brn, tan, wh; 70% Dol, tan-brn, vf-f gran to some sub-lith, anhydritic; 10% Sh, grnsh gr to lt gr, v sl pyritic; Tr Sh, blk.
80-90	Tr Anhyd, brn, tan, wh; 100% Dol, brn, f gran, mostly sucrosic, to dense, anhydritic
90-00	Tr Anhyd. " " " ; 100% Dol, brn, f gran, anhydritic
6300-10	Tr Anhyd, brn, tan, wh; 100% Dol, brn, f-vf gran, anhydritic, Tr grnsh gr, dense, sl argill; Tr+ Sh, grnsh gr, soft.
10-20	10% Anhyd, brn, tan, wh; 90% Dol, brn, f-vf gran, anhydritic, and tan, vf-dense, anhydritic; v sl Tr Sh, grnsh gr. and blk.
20-30	Same as above.
30-40	20% Anhyd, brn, tan, some wh; 80% Dol, brn, vf-dense, anhydritic, Tr+ Sh, grnsh gr, pyritic.
40-50	30% Anhyd, brn, tan, wh; 70% Dol, brn, tan, vf-dense, anhydritic; Tr Sh, blk.
50-60	10% Anhyd " " " ; 90% Dol, brn, tan, vf-dense, anhydritic; Tr Sh, blk; Tr Sh, grnsh gr, sl pyritic
60-70	Tr Ch or 30% Anhyd, brn, tan, some wh; 60% Dol, brn some tan, gr, vf gran-dense anhydritic; 10% Sh, blk, some grnsh gr.
70-80	30% Anhydrite, brn, tan, some wh; 70% Dol, brn, tan, vf gran to dense, anhydritic Tr Sh, blk.
80-90	30% Anhydrite, brn, tan, some wh, sl dolomitic; 60% Dol, brn, tan; vf-dense to sub-litho, anhydritic; Tr Sh, blk, gr, and grnsh gr.
90-00	35% Anhyd, as above. 70% Dol brn, dense to sub-litho, some litho, anhydritic Tr Sh, blk.

COMMONWEALTH
Kerns 815

6400-10 10% Anhyd, brn gr, some wh.; 90% Dol, brn, some tan, dense to sub-litho and litho, anhydritic

10-20 20% Anhyd, brn tan, some gr to wh.; 80% Dol, brn to tan, dense, sub-litho to litho, anhydritic, some tan, sub-litho to litho w/ dk brn, phenoxls.; Tr Sh, blk, thinly bedded.

20-30 25% Anhyd as above; 75% Dol as above; Tr Sh, blk.

30-40 10% Anhyd. as above; 90% Dol brn to tan, vfgrain to dense, sub-litho and litho, anhydritic; Tr Sh, blk, thinly bedded.

— TRIP FOR BIT @ 6440 —

40-50 Sol v.f ground 10% Anhyd.; 90% Dol, tan to brn, vf gran, anhydritic Tr Sh, blk. Much metal filings in cuttings

50-60 Sol. vf ground; Tr Anhyd.; 100% Dol, tan some brn, vf. gran, anhydritic Tr Sh, blk. Much metal filings in cuttings

60-70 Sol. vf ground; Tr+ Anhyd, clear; 100% Dol, tan, some brn, vf gran, anhydritic; Tr Sh, blk Some Metal filings in cuttings

70-80 Sol. vf. ground Tr Anhyd.; 100% Dol as above; Tr Sh, blk.

80-90 Cover, Good Sol for description; Sl. Tr Anhyd, wh.; 100% Dol, tan to brn, vf gran to dense, anhydritic; Tr Sh, blk.

90-00 Tr Anhyd, wh.; 100% Dol, tan to brn, vf dense to sub-litho, anhydritic; Tr Sh, blk.

6500-10 sl Tr Ch, tan, opq; Tr Anhyd, wh; 100% Dol as above; Tr Sh, blk.

Cont'd 10-20 Tr Anhyd, wh, gy; 100% Dol, brn to tan f-vf gran, dense to sub-litho, anhydritic, Tr+ Sh, blk.

20-30 sl Tr Ch, tan, opq.; Tr Anhyd, wh; 100% Dol, tan to brn, vf gran, Tr litho-sub-litho, anhydritic; Tr Sh, blk, thinly bedded

Tr sol 30-40 Tr Anhyd; 100% Dol, tan to brn, vf gran anhydritic to tan-brn, f sucrosic anhyd

COMMONWEALTH
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6540-50 Tr Anhyd, Wh; 100% Dol, tan to brn, vf-f to dense, anhydritic; Tr Sh, blk

50-60 sl Tr Anhyd, 100% Dol, brn to tan, vf-f grain to dense, anhydritic; sl Tr Sh, blk

Fair 60-70 100% Dol, tan to brn, vf-f, some dense, mostly f-vf sucrosic, anhydritic, 10% scattered, poor pin point sol. por. No fluor & cut. Much indicated fracs

Fair 70-80 sl Tr Anhyd, Wh; 100% Dol, tan to brn, f-vf grain, mostly sucrosic, sl anhydritic 10% scattered, fair to poor sol. por. Still no fluor, as cut No gas increase detected Tr Sh, blk.

Fair 80-90 Tr Ch, tan; Tr Anhyd, wh; 100% Dol, brn-tan vf grain-dense, some sucrosic, anhydritic, w/ Tr poor por No fluor; Tr Sh, blk.

* GAS SMALL SHOW @ 6581' (1') - 170 UNITS TO 190 AND BACK TO 170

90-00 10% Anhyd, Wh; 90% Dol, brn-tan, vf grain-dense, little sucrosic, anhydritic; Tr frac indicated, Tr poor por No fluor.; Tr Sh, blk, v thinly bedded

* GAS INCREASE 6597' - 6603' FROM 170 UNITS TO 180 UNITS AND RETURN

6600-10 Tr Anhyd; 100% Dol, brn to tan, vf-dense to sublithe, slanhydritic; Tr + Sh, blk, v thinly bedded and stylolites.

* GAS INCREASE @ 6606' - 170 UNITS TO 190 UNITS, FLARED BRIEFLY JUST BEFORE CONN. AFTER CONN. SETTLED @ 180 UNITS

LIMESTONE 10-20 Tr Anhyd; 100% Dol, lt tan, buff, some brn, Tr grnsh-tan, f-vf to dense, sl anhydritic, v sl Tr w/ silt-sized alt. grains imbedded, some sl pyritic; Tr + Sh, blk, some grnsh gy, v sl pyritic.

20-25 Tr Anhyd, Wh; 90% Dol, tan, buff, brn, Tr grnsh tan, f-vf to dense, sl anhydritic, 10% Sh, dkgy to grnsh gy, v sl pyritic, some blk. Sh.

25-30 100% Dol, tan, brn, ltgy, Tr grnsh gy, vf grain to dense, only sl anhydritic;

* GAS Tr Sh, gy, grn & gy, soft to some blk.

GAS INCR. 6629-30 - 180 UNITS TO 210 UNITS, BACK TO 175 UNITS

COMMONWEALTH

Kerns 815

6630-35	v.sl. Tr Anhyd. wh.; 90% Dol, tan, buff, brn, some lt.gr to grnsh gr, vf to dense, anhydritic; 10% Sh, blk, dove gr and some grnsh gr. soft.
gained 110 Mcf/d	GAUGED GAS @ 6658' on conn. 11/16" wtr. 1/2" = 110 Mcf/d.
35-40	v.sl. Tr Anhyd, wh.; 90% Dol, tan, buff, brn, some lt.gr to grnsh.gr, v.f to dense, anhydritic; grnsh Dol is v.sl pyritic; 10% Sh mostly blk to gr and grnsh gr.
40-45	sl Tr Anhyd, wh; 90% Dol, tan, lt.gr, buff, some grnsh gr, v.f to dense - sch. lt brn, Tr lt brn, anhydritic; sl. Tr. Dol, buff, tan, brn, mottled, vf gran, sl silty to f arenaceous 10% Sh, dove gr to gr to blk., some gr. is pyritic.
45-50	Tr Anhyd, wh; 90% Dol as above, some is pyritic; 10% Sh as above.
sl. vf ground 50-55	Tr+ Anhyd, wh, 90% Dol as above " " " ; 10% Sh as above. Much metal fillings in spl
spl. vf ground 55-60	Tr+ Anhyd, wh; 90% Dol, tan to brn, only tr grnsh, vf gran to dense, anhydritic; 10% Sh, blk to gr, only Tr grnsh gr.
spl vf ground 60-65	Tr Anhyd, wh.; 90% Dol, tan, to buff, some brn, v.f gran, anhydritic; 10% Sh, blk to gr.
spl vf ground 65-70	Tr Anhyd, wh; 100% Dol, buff tan, some brn, v.f gran, anhydritic; Tr Sh, blk, some lt grnsh gr, v soft. Should be very near Sub top!
Par spl vf ground 70-75	Tr Anhyd, wh; sl Tr Ch, gr, tan, translucent; 100% Dol, tan, f-vf sucrosic to tan, some brn, vf gran, all anhydritic; Tr par in sucrosic Dol; Tr Sh, blk.
spl vf ground 75-80	Tr Anhyd, wh; 100% Dol as above Tr poor ppp in sucrosic Dol; Tr. Sh, blk.
" " " 80-85	10% Anhyd, wh; Tr Ch, gr-tan, transl; 100% Dol, tan, some brn, vf sucrosic, anhydritic, v.sl. Tr. (1piece) Siltstone, lt.gr.
" " " 85-90	Tr± Anhyd, wh; Tr Ch, tan, gr, transl.; 100% Dol, tan to brn vf gran, some sucrosic, anhydritic; v.sl Tr (1piece) Ss, wh, f grain, well rounded, friable.
90-95	20% Anhyd, wh, tan, brn, sl dolomitic; Tr Ch, tan, transl; 80% Dol, tan, brn, f-vf gran, some sucrosic, anhydritic, sl Tr poor ppp in sucrosic Dol.

COMMONWEALTH
Kerns 3.15

spls vf ground
6695-00 (sl. Tr Ch. gr, transl.) 10% Anhyd, wh, tan; 80% Dol, tan, brn., vf gran to dense to sub-lith, anhydritic; 10% Sh, blk

spls vf ground
00-05 10% Anhyd, wh, tan, brn.; 90% Dol, tan, brn, vf gran, anhydritic; Tr Sh, blk.

" 05-10 (Tr Ch, tan, gr, transl.) 10% Anhyd, wh, tan, brn; 90% Dol, tan, brn, vf gran, dense to sub-lith, anhydritic

(oo zone) 10-15 Tr Anhyd wh, tan, brn, sl. Tr Ch, tan, transl-opaq.; 100% Dol, tan-brn, vf gran w/scce oo, anhydritic, w/sl. Tr fair sol. por. No fluor

*GAS por GAS INCR @ 6712' to 6715' (3') - FROM 190 UNITS TO 250 UNITS AND RETURN

por 15-20 10% Anhyd, wh, tan, brn; 90% Dol, tan, brn, vf gran, dense, some succosic, Tr f-m oo, anhydritic, w/ heavy Tr vis fair to poor sol. por. w/apparent staining, but no fluor, no cut.

oo 20-25 Tr Anhyd, wh, tan, brn; Tr Ch, tan, transl; 100% Dol, brn, tan, vf gran, dense, some Tr oo, anhydritic w/sl. Tr vis, poor sol. por. No fluor, No cut. Tr Sh, blk

*Gas GAS INCR. 6722'-27' (5') - 190 UNITS TO 245 UNITS AND RETURN
GAS FLARED WHILE DRILLING 30 MIN. WHILE DRILLING THIS 5 FT.

25-30 10% Anhyd, wh, tan, pea; 90% Dol, brn to tan, f-vf gran, dense, some succosic, much oo, anhydritic, w/ Tr poor sol. por; Tr + Sh, blk. No fluor

fair Vsl Tr (1 piece) Ss, wh, f gran, rnd, fairly friable

30-35 10% Anhyd, wh, tan, brn; 80% Dol, brn to tan, vf gran, dense to sub-lith, some tan, f-m oo, anhydritic; 10% Sh, blk; v.sl. Tr Ss (1 piece) wh-lt gy, vf gran to silt-size, rnd to sub ∠, poorly sorted, fairly friable, only v. sl calcareous. sl. Tr. scattered, vf to silt-sized, rnd. clr in Dol.; 10% Sh, blk.

(Tr Ch, tan, gr) 35-40 10% Anhyd, wh, tan, brn; 80% Dol, brn, gy, tan, vf gran, dense, only Tr tan oo, anhydritic, v.sl. Tr arenaceous w/rnd. gr, vf to silt-size; Tr poor ppp in succosic Dol; 10% Sh, blk; v.sl. Tr (1 piece) Ss, gy to wh, vf gran, sub ∠, fairly friable

COMMONWEALTH
Kerns 315

6740-45 Tr Ankyd, brn, tan, some wh; 90% Dol, brn, dk brnsh gr, some tan, vf grain, dens ankydritic, argill in part; 10% Sh, blk, pyritic; v. sl Tr (piece) Ss as above

45-50 Tr Ankyd; 80% Dol as above; 20% Sh as above. Tr Dol, grnsh tan, vf-f, sl argill, pyritic

50-55 Tr Ankyd; 80% Dol, as above plus some brn-tan, f-m. ss, w/Tr poor ppp, no fluor; 20% Sh, blk. 1 piece Ss, wh, vf to silt-sized, x to sub x, sub sh mix, fairly friable

55-60 Tr Ankyd; 80% Dol, lt-med dk brnsh gr, Tr tan, vf-f grain, dens, ankydritic Tr silty, argill in part; 20% Sh, blk.; Tr Siltstone, dk gy, argill, and dolomitic

60-65 Tr Ankyd; 80% Dol, brn, dk brnsh gr, Tr tan, vf-dense ankydritic; 20% Sh, blk - Tr Sh, grn, soft, sl arenaceous w/f-vf g, sub rnd Mostly Ss, loose in spl, clear to some frosted, sub-rnd to sub x f-vf. 1 cluster is fairly calc (dolomitic) and has some Sh inclusions. No fluor; No gas incr on detector.

65-70 Tr Ankyd, 70% Dol, dk brn, brnsh gr vf-dense, ankydritic; 20% Sh, blk; 10% Sh, grn, soft; Tr Ss, wh, f-vf, sub rnd to sub x, sl dolomitic, Tr phosphate grain

70-75 (Some Ankyd & Dol as above considered lagged) 80% Sh, grn, soft; 20% Ss, wh, vf to silt-size w/some f grain, rnd to sub-rnd and sub x, mostly loose in spl. Few clusters exhibit sl dolomitic, fairly friable, "clean" fair sorting. Few clusters Ss, w/grn sh fill. No fluor. sl. GAS INCR @ 6774' and @ 6775' 180 UNITS TO 190 UNITS @ 6774' and 180 UNITS TO 200 UNITS @ 6775' and BACK TO 180 UNITS.

75-80 30% Dol, buff-tan, vf grain-dense; 70% Sh, grn, soft, few scatt incl Ss grains f, rnd, sub-rnd; Tr Ss, wh, f grain, rnd-sub-rnd, silicaceous, fairly well cmtd. No shows.

COMMONWEALTH
Kerns B15

6785-85	Tr Anhyd, wh; 90% Dol, buff, near-wh, some tan, vf gran, dense to grnsh, gr, vf-dense, sl argill.; 10% Sh, lt grn, sl calc, v few scatt. ss grains; Tr + Ss, wh, f-vf-loose med mostly loose in spl, rounded to sub rnd, few clusters ind. poorly sorted and non-calcareous, fairly friable. No shows.
85-90	70% Dol, buff to near wh, vf gran dense to mostly, grnsh gr, vf gran, sl argill. 30% Sh, lt grn, sl dolomitic in part; Tr + Ss, mostly loose, clear, f-vf to some med, rounded to sub-rnd, few clusters wh, fairly well sorted fairly friable and some clusters, highly sil, well cmtd. No shows.
90-95	80% Dol, buff tan, vf gran dense to mostly grnsh, gr, vf gran, sl argill, arenaceous in part w/ f-m qtz sand grains; 20% Sh, lt grn, soft, some arenaceous w/ f qtz grains; Tr Ss, clear mostly loose in spl-f-m-vf, round to sub rnd and sub ∠ - few clusters wh, fairly well sorted, fairly friable to v arg. and some v dolomitic
95-00	20% Dol, buff-lt tan, sub lithe; 60% Dol, grnsh, vf gran, sl argill.; 20% Sh, grn, soft, occ. qtz grains; v sl Tr Ss as above.
6800-05	Tr Anhyd wh; 90% Dol, some brn, dense, some buff, near wh, dense, mostly lt grnsh, dense argill., sl arenaceous; 10% Sh, grn, occ. qtz grains imb.; sl Tr Ss wh, gr, f gran qtzitic, sl argill. in part.
05-10	90% Dol lt tan-buff, dense; 90% Dol, lt grnsh, dense, argill, some scattered f qtz grains Some is silty; sl pyritic; 20% Sh, grn, soft, dolomitic
10-15	40% Dol, tan-buff-near wh, dense to sub-litho; 60% Dol, grn, grnsh gr, vf gran, sl silty, argill. grading to Tr + Sh, grn, dolomitic; sl Tr Ss, loose in spl, clear, f-m, rnd.
15-20	20% Dol, tan-buff, dense-sub-litho; 60% Dol, grnsh gr to grn, vf gran, argill, silty in part, scattered qtz grains imbedded; 20% Sh, grn, sl dolomitic, some brnsh-gr, soft; v sl Tr Ss. as above
20-25	80% Dol, tan, buff, near wh, dense, sub-litho to gran, vf, dense, arg. and sl arenaceous w/ f qtz grains, round to sub-rnd.; 20% Sh, grn, sl arenac

6825-30	70% Dol, tan, buff to gray, of dense to sub-litho, gen. is sl. silty to rare arenaceous; 30% Sh, gen to dk gr & blk.
30-35	80% Dol, tan, buff to gen, of dense to sub-litho, gen. is silty to sl. arenaceous, argill. (pyritic); 20% Sh, gen to gr, pyritic in part.
35-40	80% Dol, tan, brn, dense; 20% Sh, gen, some gr.
40-45	80% Dol, tan, brn, dense to sub-litho; 20% Sh, gr, some gen.
45-50	80% Dol, brn, tan, dense to sub-litho, 20% Sh, gr, some gen.
50-55	80% Dol, brn to dk. brnsh. gr, dense, sl. anhydritic; 20% Sh, dk gr. only a Tr grnsh gr. Few scattered Ss grains probably from Ss above.
55-60	Tr Anhyd, brn, some wh, (above this, Anhyd. was considered cave); 80% Dol, brn, tan, dense, anhydritic; 20% Sh, gr to blk, some gen.

T.D. 6862'

Gauged gas @ T.D 7/10" w/c thru 2" = 112 Mcfpd.

@ TD Gauged 7/10" w/c 112 Mcfpd

Kenneth Hart - Gas Measurement Sec.