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EVANS " K" 1
C-SE SW SEC. 14
T16S R43W
CHEYENNE, COUNTY
COLORADO

RICHARD E. BACON
GEOLOGIST



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RESUME

OPERATOR: TEXAS OIL & GAS PRODUCTION CORP.
WELL NAME & LOCATION: EVANS "K" 1 C-SE SW SEC. 14 T16S R43W
COUNTY: CHEYENNE
STATE: COLORADO
SPUD DATE: JANUARY 21, 1984
COMPLETION DATE (TD): JANUARY 30, 1984
ELEVATIONS: 3995' GL 4005' KB
TOTAL DEPTHS: 5011' DRILLER 5010' LOGGER
CONTRACTOR: J.W. GIBSON DRILLING CO. RIG#93
GEOLOGIST: RICHARD E. BACON
TOOL PUSHER: DALE CARBERRY
MUD CO.: SERVICE MUD LLOYD WELLS ENGINEER
TYPE DRILLING MUD: CHEMICAL GEL
HOLE SIZES: 12 1/4" to 417' 7 7/8" to 5411'
CASING: 10 JOINTS 8 5/8" 24# K-55 SET AT 413'. CEMENT WITH
285 SACKS CLASS C 3% CaCl₂
MUD LOGGING BY: TOOKE ENGINEERING UNMANED HOTWIRE
CORES: NONE
DST DEPTHS: 978-996 CODELL SAND SEE DST REPORT



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WELL CHRONOLOGY

DATE	7:00am DEPTH	ACTIVITY
1-21-84	-	SPUD 10:30pm
1-22-84	417'	RUN CASING, 10 JOINTS 8 5/8" 24# K-55 SET AT 413' CEMENT WITH 285 SACKS CLASS C 3% CaCl ₂ PLUG DOWN 9:00am W.O.C.
1-23-84	1697'	TRIP OUT AT 1:30am 2 1/4 HOURS DEV. 1/2° 1460'
1-24-84	2926'	DRILLING
1-25-84	3594'	DRILLING
1-26-84	4039'	BIT TRIP AT 4112' 5 1/2 HOURS DEV. 3/4°
1-27-84	4308'	DRILLING
1-28-84	4720'	DRILLING
1-29-84	5065'	DRILLING
1-30-84	5380'	TD AT 5411' at 9:00am CONDITION HOLE DEV. 2° FOR LOGS COMMENCE LOGGING AT 5:45pm COMPLETE LOGGING AT 12:30am
1-31-84	5410	WAIT ON ORDERS
2-1-84		DST RUN ON THE CODELL SAND SEE REPORT PLUGGED AND ABANDONED ACCORDING TO STATE ORDEPS



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MUD RECORD

DEPTH	WEIGHT	VISCOSITY	pH	WATER LOSS	CHLORIDES
4071	9.4	38	9.0	17.6	36,000
4395	9.2	43	10.0	16.6	30,000
4789	9.2	44	10.0	9.8	26,000
5157	9.1	49	10.0	8.0	22,000
5411	9.1	62	10.0	9.8	17,000

BIT RECORD

NO.	SIZE	MAKE	TYPE	DEPTH OUT	FOOTAGE	HOURS
1	12 1/4	STC	FTD	417	417	6 1/4
2	7 7/8	STC	DT	1460	1043	8
3	7 7/8	HTC	J22	4213	2753	82 1/2
4	7 7/8	WM	053	5411	1198	75 3/4

DRILLING PARAMETERS

DEPTH	RPM	WEIGHT	PRESSURE	SPM
1650	70/75	25/35	1100	72
2390	65/70	30/35	1200	72
3585	65/70	30/40	1200	72
4213	60/65	30/35	1050	72
4937	60/65	40	1200/1250	72
5283	50/58	40	1200	72



LITHOLOGIC TOPS

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	EVANS "K" 1		CHAMPLIN EVANS 1
FT. HAYS	906 +3099		910 +3089
CODELL	982 +3023		984 +3015
CARLILE	1024 +2981		1026 +2973
GREENHORN	1086 +2919		1092 +2907
GRANEROS	1240 +2765		1245 +2754
DAKOTA	1381 +2624		1394 +2605
KIOWA	1588 +2417		1576 +2423
CHEYENNE	1720 +2285		1720 +2279
MORPISON	1811 +2194		1800 +2199
STONE CORRAL	2766 +1239		2749 +1250
NEVA	3498 +507		3479 +520
FORAKER	3571 +434		3549 +450
WABAUNSEE	3704 +301		3681 +318
TOPEKA	3936 +69		3914 +85
HEEBNER	4164 -159		4138 -139
LANSING	4286 -281		4248 -249
MARMATON	4668 -663		4634 -635
FT. SCOTT	4754 -749		4716 -717
CHEROKEE	4800 -795		4760 -761
ATOKA	4941 -936		4893 -894
MORROW	5120 -1115		5064 -1065
LOWER SAND	5198 -1193		5139 -1140
LOWER LIME	5214 -1209		5174 -1175
STE. GENEVIEVE	5238 -1233		5190 -1191
ST. LOUIS	5320 -1315		5224 -1225

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SUMMARY

THE EVANS "K" 1 WAS DRILLED TO A DEPTH OF 5410' -1405. THE PRIMARY OBJECTIVE WAS THE LOWER MORROW SAND.

THIS WELL, A WILD CAT, WAS DRILLED AS AN OFFSET TO THE CHAMPLIN EVANS 1. DRILLED FIVE YEARS EARLIER AS A SPERGEN TEST THE MORROW SAND WAS NOT REALLY TESTED. LOGS FROM THIS WELL SHOWED PROMISE IF STRUCTURE COULD BE OBTAINED ON THE EVANS "K" 1.

THE ONLY SHOW WAS ENCOUNTERED FROM 4540-4550. A DENSE, CRYPTO-CRYSTALLINE LIMESTONE WITH NO VISIBLE POROSITY DISPLAYED A TRACE OF SPOTTY BRIGHT YELLOW-GREEN FLUORESCENCE. A VERY FAINT PALE YELLOW STREAMING AND LEFT A VERY FAINT PALE YELLOW RING. LOGS PRECLUDED TESTING THIS ZONE.

THE LOWER MORROW SAND CAME IN 53 FEET LOW TO THE CHAMPLIN-EVANS 1 AND WAS WITHOUT FLUORESCENCE OR CUT. THE SAND WAS VERY TIGHT AS VERIFIED BY LOG CALCULATIONS. UPHOLE, HOWEVER, THE CODELL SAND LOOKED WORTH TESTING BUT A DST RECOVERED 5 FEET OF MUD. THOUGHT WET THIS FORMATION WILL BE LOOKED AT MORE CLOSELY IN FUTURE WELLS IN THE AREA.

WRS	
FIP	
IHM	
JAM	
RCC	
LAR	
CGM	
LD	



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SAMPLE DESCRIPTIONS
 (NOT LAGGED)

- 500-590 SH-100% light-medium grey, grey brown, soft-firm, subfissile, blocky, very calcareous, trace bentonitic
 Trace LS-white, cryptoxln, firm, dense, stylolite
- 590-650 SH-100% light-medium grey, grey brown, soft-firm, subfissile, blocky, very calc, trace bentonitic
 Trace LS-white, cryptoxln, firm, dense, stylolite
- 650-710 SH-100% light-medium grey, grey brown, soft-firm, subfissile, blocky, very calc, trace bentonitic
 Trace LS-white, cryptoxln, firm, dense, stylolite
- 710-770 SH-100% light-medium grey, grey brown, soft-firm, subfissile, blocky, very calc, trace bentonitic
- 770-830 SH-100% light-medium grey, grey brown, soft-firm, subfissile, blocky, very calc, trace bentonitic
 Trace LS-white, cream, light tan, firm, dense, cryptoxln, pyritic in part
- 830-890 SH-100% grey brown, medium-light grey, soft, blocky, very calcareous
- 890-950 LS-90% white, light grey, cryptoxln, firm, dense, cnalky, some with imbedded sand grains
 Sh-10% light-medium grey brown, as above
- 950-1010 LS-60% white, light grey as above becoming more arenaceous also tan, cryptoxln, hard, lithic, pyritic
 SS-30% dirty white, light-medium grey, medium grain, subround-subangular, firm, calc, clay filled, trace pyritic, tight some traces pinpoint Ø NO SHOW
 SH-10% light-medium grey, grey brown as above
- 1010-1070 SH-95% dark grey, grey brown, firm, flakey, slightly bentonitic in part
 SS-5% dirty white, light-medium grey as above
 Trace LS-white, light grey, tan as above free pyrite
- 1070-1220 SH-100% dark grey-black, firm, blocky, calc, speckled, bentonitic, trace stylolite LS free pyrite
- 1220-1250 Sh-95% dark grey-black, as above some interbedded LS
 LS-5% light grey, cryptoxln, firm dense, also tan, cryptoxln, firm, lithic
 Trace BENT-light grey soft
- 1250-1280 SH-100% dark grey-black, firm, blocky as above
 Trace LS-light-medium tan, cryptoxln-medium xln, firm-hard, dense, stylolite in part, trace light grey, cryptoxln, firm,dense, pyritic free pyrite



- 1280-1310 SH-100% dark grey-black, firm, blocky, calc, speckled, bentonitic
- 1310-1340 SH-100% dark grey-black, firm as above
Trace SS-medium grey, very fine-medium grain, subround-subangular, friable, calc, micaceous, poor sorting, pyritic, argillaceous, tight NO SHOW
- 1340-1370 SH-100% medium-dark grey, firm, blocky, calcareous, speckled
Trace LS-cream, light-medium tan, crypto-microxln, firm-hard, dense, lithic, some stylo
Trace BENT-light grey, soft free pyrite
- 1370-1400 SH-100% medium-dark grey, firm as above
- 1400-1430 SH-95% medium-dark grey, firm as above
LS-5% tan, cryptoxln, hard, dense
- 1430-1460 SH-80% medium-dark grey, firm as above
SS-20% light-medium grey, white, very fine-medium grain, subround friable-firm, calcareous-slightly calcareous, slightly to very glauconitic, some carbonaceous, some fair to good intergranular porosity, NO SHOW
Trace LS-tan, crypto-microxln, firm-hard, dense, lithic, light tan, microxln, hard, dense, dolomitic
- 1460-1490 SH-90% medium-dark grey, firm as above
SS-10% light-medium grey, white as above
Trace LS-white, tan, cryptoxln, firm-hard, dense, lithic, chalky
- 1490-1520 SH-95% medium-dark grey, firm, blocky, less calcareous, less speckled
SS-5% light-medium grey, white, as above
- 1520-1550 SH-95% medium-dark grey, as above
SS-5% light-medium grey, white, very fine-medium grain, subround friable-firm, calcareous in part, glauconitic in part, some fair intergranular porosity NO SHOW
Trace BENT-light grey, soft free pyrite
- 1550-1580 SH-90% medium-dark grey, firm as above
SS-10% light-medium grey, white, as above also white, very fine grain, subround, friable-firm, slightly calcareous, fair sorting, fair intergranular porosity NO SHOW



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- 1580-1610 SS-60% buff, very fine-fine grain, subangular, friable, firm, clay filled, fair sorting, tight NO SHOW
 also clear, fine-medium grain, firm, some intergranular porosity poor, NO SHOW
 also light grey, fine-medium grain, subround-subangular, firm, calcareous, glauconitic, poor sorting, argillaceous, tight NO SHOW
 SH-40% medium-dark grey, firm, blocky, calcareous speckled in part
 Trace LS-white, tan, cryptoxln, firm-hard, dense, lithic, chalky
- 1610-1640 SH-60% medium-dark grey, as above becoming less speckled
 SS-40% buff, light grey, clear as above free pyrite
- 1640-1670 SH-50% medium-dark grey, firm as above
 SS-50% light-medium grey, very fine-fine grain subangular, firm, calcareous, glauconitic, poor sorting, tight NO SHOW
- 1670-1700 SH-50% medium-dark grey, grey brown, soft-firm, blocky, micromicaceous
 SS-50% light-medium grey, very fine-fine grain as above free pyrite
- 1700-1730 SH-75% medium-dark grey, grey brown as above
 SS-25% light-medium grey as above also clear-white, very fine-fine grain, subangular-subround, firm, calcareous, trace pyritic, some poor intergranular
- 1730-1760 SH-80% medium-dark grey, grey brown as above
 SS-20% light-medium grey, clear-white, fine-medium grain, as above
- 1760-1790 SS-50% light-medium grey, clear-white as above also clear-translucent, coarse-very coarse grain, subround, unconsolidated
 SH-50% medium-dark grey, grey brown, tan, firm, blocky, calcareous, waxy in part free pyrite
- 1790-1820 SH-60% medium-dark grey, grey brown, tan as above also light grey, firm, blocky, arenaceous
 SS-40% light-medium grey, clear-white, clear-translucent as above
 Trace LS-white, translucent, cryptoxln, firm, dense free pyrite
- 1820-1850 SH-40% light-medium grey, grey brown, grey green, light tan, firm, flakey, splintery, micromicaceous some arenaceous
 SS-60% white, clear, light grey, very fine-coarse grain, firm-friable, poor to fair sorting, calc in some clay filled, trace pyritic, some fair to good intergranular porosity also unconsolidated, clear-translucent, medium-very coarse grain NO SHOW abundant free pyrite



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- 1850-1880 SH-50% light-medium grey, grey brown, grey green, light tan, firm, waxy, flakey, splintery, micromica in part, some arenaceous,
SS-50% white, clear, light grey, very fine-coarse grain, firm-friable, poor to fair sorting, calc in part, some clay filled, trace pyritic, some fair-good intergranular porosity also unconsolidated clear-translucent, medium-very coarse grain NO SHOW free pyrite
- 1880-1910 LS-90% buff-cream, cryptoxln, firm, dense
SH-10% light-medium grey, grey brown as above
Trace SS-white, clear, light grey as above
Trace CHT-clear opaque
- 1910-1940 LS-90% buff-cream, cryptoxln, firm, dense
SH-10% light-medium grey, grey brown as above
Trace SS-white, clear, light grey as above
Trace CHT-white
- 1940-1970 LS-80% buff-cream, cryptoxln, firm, dense
SH-20% light-medium grey, grey brown as above also light brown, cryptoxln, soft, blocky, silty, calc
Trace SS-white-clear, fine grain, subround, firm, friable, calcareous, fair sorting, tight NO SHOW
Trace ANHY-white, firm, dense, free pyrite
- 1970-2000 LS-80% buff-cream, cryptoxln, firm, dense
SH-20% light-medium grey, grey green, light brown as above
Trace SS-white, clear, dirty white, as above trace pyritic
Trace CHT-white, opaque
Trace ANHY-white, firm, dense
- 2000-2030 ANHY-80% white, opaque, firm, dense
SH-20% dark grey-black, grey green, soft-firm, waxy in part, flakey, splintery
- 2030-2060 SH-90% red-orange, dark grey, grey green, firm, flakey, splintery, blocky, silty in part
ANHY-10% white, opaque, firm, dense
- 2060-2090 SS-50% red-orange, very fine grain, subround, friable-firm, clay filled, fair sorting, tight grading to red-orange SH NO SHOW
SH-50% red-orange, dark grey, grey green as above
- 2090-2120 SH-80% red-orange, dark grey, grey green, as a bove
SS-20% red-orange, very fine grain as above
- 2120-2150 SS-50% red-orange, very fine grain, subround, friable-firm, clay filled, fair sorting, tight NO SHOW
SH-50% red-orange, dark grey, grey green, as above
- 2150-2180 SH-70% red-orange, dark grey, grey green, as above
SS-30% red-orange, very fine grain as above



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- 2180-2210 SH-90% red-orange, dark grey, grey green, firm, flakey, splintery, blocky, silty in part
SS-10% red-orange, very fine grain, subround, friable, firm, clay filled, fair sorting, tight NO SHOW
- 2210-2240 SH-95% red-orange, dark grey, grey green waxy in part
SS-5% red-orange, very fine grain as above
Trace CHT-clear white
- 2240-2270 SH-70% red-orange, dark grey, grey green as above
ANHY-30% white, translucent, soft-firm, dense
Trace LS-light grey, cryptoxln, firm, dense, dolmitic
- 2270-2300 ANHY-60% white, translucent, soft-firm, dense, xln
SH-40% red-orange, medium-dark grey, grey green as above
- 2300-2330 ANHY-40% white, translucent, soft-firm, dense, xln
SH-60% red-orange, medium-dark grey, grey green as above
- 2330-2360 ANHY-75% white, translucent, soft-firm, dense, xln,
SH-25% red-orange, medium-dark grey, grey green, soft-firm, flakey, splintery, blocky, silty in part, waxy in part
- 2360-2390 ANHY-60% white, translucent, soft-firm, dense, xln
SH-40% red-orange, medium-dark grey, grey green, pyritic in part as above
- 2390-2420 SH-60% red-orange, medium-dark grey, grey green as above
ANHY-40% white, translucent, soft-firm, dense, xln
- 2420-2450 SH-60% red-orange, medium-dark grey, grey green as above
ANHY-40% white, translucent, soft-firm, dense, xln
- 2450-2480 SH-90% red-orange, medium-dark grey, grey green as above
ANHY-10% white, translucent, soft-firm, dense, xln
- 2480-2630 SH-100% red-orange, medium-dark grey, grey green as above
- 2630-2660 SS-50% clear, translucent, fair sorting, coarse-very coarse grain, round, unconsolidated
SH-40% red-orange, medium-dark grey, grey green as above
ANHY-10% white, translucent, soft-firm, dense, xln,
- 2660-2690 SH-60% red-orange, medium-dark grey, grey green some anhydritic inclusions, arenaceous in part
ANHY-30% white, translucent, soft-firm, dense, xln
SS-10% red-orange, very fine-fine grain, angular-subround, firm, clay filled, poor to fair sorting, some tight, some fair intergranular porosity, NO SHOW



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- 2690-2720 SH-70% red-orange, medium-dark grey, grey green, soft-firm, flakey, blocky, splintery, waxy, some anhydritic inclusions, some arenaceous
ANHY-25% white, translucent, soft-firm, dense, xln
DOL-5% light pink, cryptoxln, firm, dense
- 2720-2750 SS-70% red-orange, very fine-fine grain, subangular-subround, firm-friable, clay filled, poor to fair sorting, some poor intergranular porosity also unconsolidated, clear, translucent, fair sorting, coarse-very coarse grain, round NO SHOW
SH-15% red-orange, medium-dark grey, grey green as above
ANHY-10% white, translucent, soft-firm, dense, xln
DOL-5% light pink, cryptoxln, firm, dense
- 2750-2780 SH-80% red-orange, medium-dark grey, grey green as above
SS-20% red-orange, very fine-fine grain as above grading to arenaceous SH
- 2780-2810 SH-60% red-orange, medium-dark grey, grey green as above some arenaceous
ANHY-40% white, translucent, soft-firm, dense, xln
Trace DOL-light pink, cryptoxln, firm, dense
- 2810-2840 SS-90% red-orange, very fine grain to silt, subangular, firm, clay filled, tight NO SHOW
ANHY-10% white, translucent, soft-firm, dense, xln.
- 2840-2870 SS-80% red-orange, very fine grain to silt as above
SH-10% red-orange, medium-dark grey, grey green as above
ANHY-10% white, translucent, soft-firm, dense, xln
- 2870-2900- SH-90% red-orange, grey green, light-medium grey, soft-firm, blocky, flakey, silty in part, some arenaceous
SS-10% red-orange, very fine grain to silt, as above
Trace DOL-light pink, cryptoxln, firm, dense
- 2900-2930 SH-90% red-orange, grey green, light-medium grey as above
SS-5% red-orange, very fine to silt, as above
ANHY-5% white, translucent, soft-firm, dense, xln.
- 2930-2960 SH-100% red-orange, grey green, light-medium grey as above
- 2960-2990 SH-95% red-orange, greygreen, light-medium grey, as above
ANHY-5% white, translucent, soft-firm, dense, xln
- 2990-3020 SH-100% red-orange, grey green, light-medium grey becoming more arenaceous as above
- 3080-3140 SH-60% red-orange, grey green, light-medium grey as above
SS-40% red-orange, very fine grain, subround-subangular, clay filled, tight NO SHOW



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- 3140-3170 SH-100% red-orange, grey green, light-medium grey, soft-firm, blocky, flakey, silty in part less arenaceous
Trace loose quartz xls
- 3170-3200 SH-100% red-orange, grey green, light-medium grey, as above
- 3200-3230 SH-100% red-orange, grey green, light-medium grey as above
- 3230-3260 SH-100% red-orange, grey green as above less silty & sand
- 3260-3290 SH-100% red-orange, grey green, light-medium grey as above
- 3290-3320 SH-75% red-orange, grey green, light-medium grey, as above
SS-25% white, light grey, very fine grain, angular-subangular, friable-firm, very slightly glauconitic
fair sorting, tight NO SHOW
- 3320-3350 SS-90% white, light grey as above also red-orange, very fine-fine grain, subangular, firm-friable, slightly calcareous, silty, poor sorting, tight NO SHOW
SH-10% red-orange, grey green, light-medium grey as above
- 3350-3380 SH-100% red-orange, grey green as above less arenaceous
- 3380-3410 SH-100% red-orange, grey green as above more arenaceous
- 3410-3440 SH-85% red-orange, grey green, light-medium grey as above
LS-15% cream-white, cryptoxln, firm, dense
- 3440-3470 SH-90% red-orange, grey green, light-medium grey as above
LS-10% cream-white, cryptoxln, firm, dense
- 3470-3500 SH-95% red-orange, grey green, light-medium grey as above
LS-5% cream, white, cryptoxln, firm, dense
- 3500-3530 LS-80% cream-white, micro-fine xln, friable-firm, dense, xln, sucrosic in part, slightly dolomitic
SH-20% red-orange, grey green, light-medium grey as above
- 3530-3530 SH-90% red-orange, light-medium grey as above
LS-10% cream-white, micro-fine xln as above
- 3560-3590 SH-100% red-orange, light-medium grey, light brown, soft-firm, blocky, flakey, slightly calcareous in part
- 3590-3520 SH-60% red-orange, light-medium grey, light brown with carbonaceous inclusions
LS-40% cream-white, micro-fine xln as above also white, cryptoxln, firm, dense
- 3620-3650 LS-90% cream, light grey, buff, crypto-microxln, firm, dense, lithic
SH-10% red-orange, light-medium grey, light brown as above



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- 3650-3680 SH-85% red-orange, light-medium grey, light brown, soft-firm, blocky, flakey, slightly calc in part
LS-15% cream, light grey, buff, crypto-microxln, firm, dense, lithic
- 3680-3710 LS-60% cream, light grey, white, buff, crypto-fine xln, firm, dense, lithic, micaceous in part
trace oolimidic fair porosity
- 3710-3740 LS-70% cream, light grey, white, buff as above
SH-30% red-orange, light-medium grey, light brown as above
- 3740-3770 LS-60% cream, light grey, white, buff as above
SH-40% red-orange, light-medium grey light brown as above
Trace DOL-buff, microxln, firm, dense
- 3770-3800 LS-60% cream-light grey, crypto-fine xln, firm, dense, lithic, slightly argillaceous in part, some micro-fossiliferous, trace micro-oolitic, elliptical-buff, trace oolimidic fair porosity, dolomitic in part
SH-40% red-orange, light-medium grey, light brown as above
Trace SS-white-medium grey, very fine grain, subangular-subround, friable-hard, calcareous to siliceous, slightly to very glauconitic, fair sorting, tight NO SHOW
- 3800-3830 LS-90% light-medium grey, tan, grey brown, cream-white, crypto-microxln, firm-hard, dense, lithic, argillaceous in part, some silty, trace biotite and mica
SH-10% red-orange, light-medium grey, light brown as above
FOSS-crinoid
- 3830-3860 LS-90% light-medium grey, tan, grey brown, cream-white as above some grainy
SH-10% red-orange, light-medium grey, light brown as above
- 3860-3890 LS-100% light-dark grey, cream, buff, crypto-very fine xln, firm-hard, dense, becoming very argillaceous in part, some grainy
FOSS-crinoid
- 3890-3920 LS-100% light-dark grey, cream, buff as above, trace silty, micaceous, biotite
- 3920-3950 LS-100% cream, buff, light-dark grey, crypto-fine xln, firm-hard, dense, lithic, less argillaceous
- 3950-3980 LS-100% cream, buff, crypto-very fine xln, firm-hard, dense, lithic, chalky, trace oolitic ellip-white
Trace SH-dark grey-black, soft-firm, blocky, calcareous
- 3980-4010 LS-100% cream, white, buff, crypto-fine xln, firm-hard, dense, lithic, chalky, trace oolitic ellip-white
Trace SH-dark grey, black, soft-firm, blocky, calcareous



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- 4010-4040 LS-100% cream, white, buff, crypto-fine xln, firm-hard, dense, lithic, chalky.
Trace SH-dark grey-black, soft-firm, blocky, calcareous
- 4040-4070 LS-100% cream, buff, white, tan, light grey, crypto-microxln, firm-hard, dense, lithic, chalky, more oolitic round-buff, elliptical-white, trace fossiliferous trace arenaceous
Trace SLTST-medium grey, arenaceous, glauconitic
- 4070-4100 LS-100% cream, white, grey brown, crypto-fine xln, firm-hard, dense, lithic, trace oolitic round-white, trace fossiliferous, trace pinpoint porosity
Trace SS-light grey, very fine grain, subangular-subround, firm, calcareous, slightly argillaceous fair sorting, slightly glauconitic, tight NO SHOW
- 4100-4130 LS-100% cream, white, buff, medium grey, light grey green, crypto-very fine xln, firm-hard, dense lithic, chalky, some argillaceous, some silty
Trace SH-medium grey, soft, blocky, very calcareous
- 4130-4160 LS-100% cream, white, buff, crypto-microxln, firm-hard, dense, lithic, chalky
Trace CHT-grey brown
- 4160-4190 LS-100% cream, white, buff, crypto-microxln, firm-hard, dense, lithic, chalky
- 4190-4220 LS-100% as above abundant cavings sample caught after bit trip
- 4220-4250 LS-100% cream-white, light grey, crypto-very fine xln, firm-hard, dense, lithic, chalky, some grainy,
Trace SH-medium-dark grey, soft, blocky, calcareous ip
- 4250-4280 LS-100% cream, white, buff, light grey, crypto-very fine xln, firm-hard, dense, lithic, chalky,
trace micaceous, trace pyritic, some very argillaceous
- 4280-4310 LS-100% cream, white, crypto-microxln, firm-hard, dense, lithic, chalky
Trace SS-light grey, very fine grain, subangular, firm, calcareous, glauconitic in part, fair sorting, tight NO SHOW
- 4310-4340 LS-100% cream, white, buff, tan, crypto-microxln, firm-hard, dense, lithic, chalky
Trace CHT-white, opaque, buff, micro-fossiliferous ip
- 4340-4370 LS-100% cream, white, buff, tan, crypto-microxln, firm-hard, dense, lithic, chalky, trace arenaceous, trace pyritic
FOSS-brachiopods



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- 4370-4400 LS-100% cream, buff, white, crypto-microxln, firm-hard, dense, lithic, trace drusy, trace micro-fossiliferous
- 4400-4430 LS-100% cream, buff, light grey, crypto-fine xln, firm-hard, dense, lithic, some silty, mica, trace arenaceous
Trace SH-black, firm, blocky, slightly calcareous
- 4430-4460 LS-100% cream, light grey, buff, crypto-very fine xln, firm-hard, dense, lithic, micro-fossiliferous in part, some bioclastic, trace arenaceous, trace cherty, argillaceous in part
Trace DOL-translucent, coarse xln, firm, xln, some interxln porosity poor
- 4460-4490 LS-100% cream, light grey, buff, crypto-very fine xln, firm-hard, dense, lithic, micro-fossiliferous in part, less bioclastic, trace arenaceous, argillaceous in part
Trace SH-dark grey-black, firm, blocky, slightly calc
FOSS-crinoid, brachiopod
- 4520-4550 LS-100% cream, light grey, tan, buff, crypto-fine xln, firm-hard, dense, lithic, chalky, fossiliferous in part, some bioclastic, silty & argillaceous in part some arenaceous
- 4550-4580 LS-100% cream, light grey, tan, buff, crypto-medium xln, firm-hard, dense, lithic, chalky, fossiliferous in part, trace densely oolitic elliptical, round-white, trace oolimoldic poor \emptyset , silty & argillaceous in part, trace cherty, trace pyritic
TRACES SPOTTY BRIGHT YELLOW-GREEN FLUORESCENCE
VERY FAINT PALE YELLOW SLOW STREAMING
VERY FAINT PALE YELLOW EVEN RING NO VISIBLE \emptyset
Trace SH-dark grey-black, firm, blocky, flakey, calcareous
- 4580-4610 LS-100% cream-buff, light tan, crypto-very fine xln, firm-hard, dense, lithic, less fossiliferous & oolitic, less silty & argillaceous
Trace SH-dark grey-black, firm, blocky, calcareous
FOSS-crinoid
- 4610-4640 LS-100% cream-buff, light grey, crypto-microxln, firm-hard, dense, lithic, trace fossiliferous, some grainy
- 4640-4670 LS-100% cream, buff, tan, light grey, crypto-microxln, firm-hard, dense, lithic, some slightly argillaceous
FOSS-crinoid
Trace SH-dark grey-black, firm, blocky, calcareous



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- 4670-4700 LS-100% cream, buff, tan, grey brown, mottled, crypto-microxln, firm-hard, dense, lithic, trace arenaceous FOSS-crinoid
- 4700-4730 LS-100% cream, buff, tan, light-medium grey, crypto-very fine xln, firm-hard, dense, lithic, becoming argillaceous, trace arenaceous
- 4730-4760 LS-100% cream, buff, tan, light-medium grey, crypto-very fine xln, firm-hard, dense, lithic, argillaceous
- 4760-4790 LS-100% cream, buff, tan, light-medium grey, crypto-very fine xln, firm-very hard, dense, lithic, trace pyritic, argillaceous in part Trace SH-dark grey-black, firm, flakey, slightly calc Trace CHT-buff
- 4790-4820 LS-100% buff, cream, light grey, tan, crypto-microxln, firm-very hard, dense, lithic, some fossiliferous & bioclastic, trace pyritic Trace SH-dark grey-black, firm, flakey, calc in part
- 4820-4850 LS-100% light-medium grey, buff, tan, crypto-microxln, firm-very hard, dense, lithic, becoming argillaceous some oolitic round-dark grey Trace SH-dark grey-black, firm, flakey
- 4850-4880 LS-100% cream, buff, light grey, crypto-microxln, firm-hard, dense, lithic, trace fossiliferous argillaceous in part
- 4880-4910 LS-95% cream, buff, light grey, crypto-microxln, firm-hard, dense, lithic, some fossiliferous, argillaceous in part SH-5% dark grey, black, firm, flakey, blocky
- 4910-4940 LS-95% cream, light grey, buff, crypto-microxln, firm-very hard, dense, lithic, some very fossiliferous, some silty
- 4940-4960 LS-95% cream, light grey, buff, tan, crypto-microxln, firm-very hard, dense, lithic, less fossiliferous SH-5% dark grey, black, soft-firm, blocky, flakey, Trace CHT-tan, amber
- 4960-4990 LS-95% cream, light grey, buff, tan, crypto-microxln, firm-very hard, dense, lithic, trace fossiliferous trace pyritic SH-5% dark grey, black, soft-firm, blocky, flakey some very calcareous Trace CHT-light-medium tan, amber, spotted in part



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- 4990-5010 LS-95% light-medium grey, cream, tan, crypto-very fine xln, firm-very hard, dense, lithic, becoming argillaceous
SH-5% dark grey, black, soft-firm, blocky, flakey, some calcareous
Trace CHT-tan, amber, buff, spotted in part more abundant
- 5010-5030 LS-90% light-dark grey, buff, cream, tan, crypto-microxln, firm-very hard, dense, lithic, argillaceous ip
SH-10% dark grey, black, soft-firm, blocky, flakey, some calcareous, trace pyritic
Trace CHT-tan, amber
- 5030-5050 LS-90% light -dark grey, buff, cream, tan, crypto-fine xln, firm-very hard, dense, lithic, trace cherty, argillaceous in part
SH-10% dark grey, black, soft-firm, blocky, flakey, some calcareous, trace pyritic
Trace CHT-tan
- 5050-5070 LS-95% light-dark grey, buff, cream, tan, crypto-very fine xln, firm-very hard, dense, lithic, more arg
SH-5% dark grey, black as above calcareous in part
Trace CHT-amber, spotted
- 5070-5090 LS-95% light-dark grey, buff, cream, buff, tan, crypto-microxln, firm-hard, dense, lithic, some silty, trace fossiliferous
SH-5% dark grey, black as above trace pyritic
Trace CHT-tan, grey brown, spotted free pyrite
- 5090-5110 LS-95% cream, light-dark grey, buff, tan, crypto-microxln, firm-very hard, dense, lithic, less argillaceous
SH-5% dark grey, black, as above
Trace CHT-tan, amber
- 5110-5130 LS-95% cream, light-dark grey, tan, grey brown, crypto-microxln, firm-very hard, dense, lithic, argillaceous in part, some micro-fossiliferous, trace pyritic
SH-5% dark grey, black, soft-firm, blocky, subfussile, calcareous in part
- 5130-5140 LS-95% cream, light-dark grey, tan, grey brown, crypto-microxln, firm-very hard, dense, lithic, argillaceous in part, some micro-fossiliferous, trace pyritic
SH-5% dark grey, black as above
Trace CHT-amber



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- 5140-5150 LS-90% cream, light-dark grey, tan, grey brown, crypto-microxln, firm-very hard, dense, lithic, argillaceous in part, some micro-fossiliferous
SH-10% dark grey, black, soft-firm, blocky, sub-fissile, calcareous in part
- 5150-5170 LS-90% light-dark grey, cream, grey brown, tan, crypto-microxln, firm-very hard, dense, lithic, trace fossiliferous, some argillaceous in part
SH-10% dark grey, black, firm, blocky, subfissile, slightly calcareous in part
- 5170-5180 LS-90% cream, buff, light-medium grey, mottled, crypto-microxln, firm-very hard, dense, lithic, trace fossiliferous, less argillaceous
SH-10% dark grey, black, as above
Trace CHT-buff, tan, spotted in part
- 5180-5200 LS-90% cream, grey brown, light-dark grey, tan, crypto-microxln, firm-very hard, dense, lithic, very argillaceous in part, some pyritic
SH-10% dark grey, black, as above trace grey green, waxy, flakey, glauconitic, pyritic
- 5200-5210 LS-90% cream-buff, light-dark grey, tan, grey brown, crypto-microxln, firm-very hard, dense, lithic, trace fracture, trace fossiliferous, trace pyritic
SH-10% dark grey, black, grey green as above
abundant free pyrite
- 5210-5220 LS-90% cream-buff, light-dark grey, tan, grey brown, crypto-microxln, firm-very hard, dense, lithic, also cream-buff, microxln, hard, dense, fossiliferous, densely oolitic elliptical-white, very sl glauconitic
SH-10% dark grey, black grey green as above
Trace SS-white, medium-very coarse grain, angular-subangular, firm-hard, calcareous, poor sorting, very slightly glauconitic, tight NO SHOW
- 5220-5250 LS-90% cream, buff, dark tan, grey brown, light grey, crypto-coarse xln, firm-very hard, dense, lithic, fossiliferous in part, trace slightly glauconitic trace pyritic, trace densely oolitic round-white
SH-10% dark grey, black, grey green as above
Trace CHT-tan
- 5250-5260 LS-90% cream, buff, tan, crypto-microxln, firm-hard dense, lithic, some very fossiliferous and densely oolitic elliptical-white
SH-10% dark grey, black as above some interbedded with pyrite slightly calcareous



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- 5260-5270 LS-90% cream, buff, tan, crypto-microxln, firm-hard, dense, litnic, some very fossiliferous and densely oolitic elliptical-white
 SH-10% dark grey, black, soft-firm, blocky, subfissile, slightly calcareous in part, pyritic in part
 Trace DOL-white, finexln, hard, dense, micro-sucrosic
- 5270-5290 LS-90% cream, buff, tan, crypto-coarse xln, firm-very hard, dense, litnic, trace very slightly glauconitic, trace pyritic
 SH-10% dark grey, black as above less pyritic abundant free pyrite
- 5290-5300 LS-95% cream, buff, mottled, tan, crypto-medium xln, firm-very hard, dense, litnic, some very fossiliferous trace slightly glauconitic
 SH-5% dark grey, black as above
- 5300-5310 LS-95% cream, buff, tan as above also cream, white, cryptoxln, friable-firm, dense, arenaceous
 SH-5% dark grey, black, as above free pyrite
- 5310-5330 LS-100% cream, buff, mottled, tan as above less fossiliferous more cream-white, cryptoxln, friable to firm, dense, very arenaceous becoming oolitic elliptical-buff
- 5330-5350 LS-95% cream, buff, tan, cream-white as above
 SH-5% dark grey, black as above free pyrite
- 5350-5380 LS-90% cream, white, buff, tan, crypto-very fine xln, friable-hard, dense, some arenaceous & oolitic
 SH-10% dark grey, black as above pyritic in part abundant free pyrite
- 5380-5400 LS-95% cream, white, buff, tan crypto-very fine xln, friable-hard, dense, lithic, arenaceous & oolitic in part becoming more buff-light tan, cryptoxln, very hard, litnic
 SH-5% dark grey, black, soft-firm as above

CIRC. 1 HOUR

LS-95% cream, white, buff, buff to tan, crypto-very fine xln, friable-very hard, dense, lithic, arenaceous & oolitic in part
 SH-5% dark grey, black as above

CIRC. 1 1/2 HOUR

LS-95% cream, white, buff, buff to tan as above
 SH-5% dark grey, black as above
 Trace CHT-white