

FROM	TO	INCH	AS 20' TO 40'	GA/TON	DESCRIPTION
0	28				OVERBURDEN
28	40			E	SILTSTONE, lt. Brn, v. calc, occ Biotite & Musc.
40	50			G	SILTSTONE, ditto
50	60				SANDSTONE, lt Brn to lt Gray, v. f-grd, hard, v. calc, much Biot.
60	70				SANDSTONE, do
70	80				SANDSTONE, do, only silty calc.
80	90			N	S.S. LT GRAY NON CALC Biotite FLECKS
90	100			R	SAME AS ABOVE
100	110			B	S.S. LT GRAY NON CALC, WITH SOME SILT LT BRN. Mod to V. Calc
110	120				SAME AS ABOVE
120	130				S.S. LT GRAY NON CALC
130	140				S.S. LT GRAY NON CALC Biotite FLECKS
140	150				S.S. LT GRAY SILTY CALC
150	160				S.S. LT GRAY SILTY TO MOD CALC
160	170				S.S. LT BR TO LT GRAY MOD TO V. CALC
170	180				S.S. LT GRAY WITH LT BR. SILTSTONE V CALC
180	190				S.S. LT GRAY SOME SILTSTONE LT BR. MOD TO V CALC.
190	200				S.S. LT GRAY NON CALC
200	210				S.S. LT GRAY TO BRN. MOD TO V CALC Biotite Flecks
210	220				SILTSTONE LT GRAY. SILTY TO MOD CALC
220	230				SILTSTONE LT BR. MOD TO V CALC Biotite and Pyrite FLECK
230	240				SILTSTONE LT BR TO BR. SILTY CALC
240	250				SILTSTONE LT BR TO BR NON CALC
250	260				SILTSTONE LT GRAY TO GRAY NON CALC Biotite FLECKS
260	270				SILTSTONE LT GRAY TO GRAY NON CALC
270	280			E	SILTSTONE, med Brn-Gray, silty calc, minor Biot, v. hard
280	290			G	SILTSTONE, lt Brn, silty calc
290	300				SILTSTONE, lt Gray-Brn, sandy (v. f-grd), much Biot, friable
300	310				SILTSTONE, do
310	320				SILTSTONE, lt-med Brn, sandy (v. f-grd), minor Biot, v. hard, v. calc.
320	330				SILTSTONE, lt-med Brn, sandy (v. f-grd), minor Biot, soft.
330	340				SILTSTONE, med-lt Brn, v. hard, v. calc, minor f. Musc & Biot.
340	350				SILTSTONE, do
350	360				SILTSTONE, do
360	370				SILTSTONE, med-lt Brn, v. hard, v. calc.
370	380				SILTSTONE, dk Brn, v. hard, v. calc
380	390				SILTSTONE, med Brn, v. hard, v. calc, minor Musc.
390	400				SILTSTONE, do
400	410				SHALE, med Brn, v. hard, v. calc.
410	420				SHALE, med-dk Brn, v. hard, v. calc, w/ minor v. f. Musc.
420	430				SHALE, do
430	440				SILTSTONE, dk Brn, v. hard, v. calc.
440	450				SILTSTONE, do
450	460				SHALE & MARLSTONE, dk Brn, v. hard, v. calc, minor Musc / lt Gray-Brn, dirty, do
460	470				MARLSTONE, lt Brn, silty, v. calc, hard
470	480				SHALE, med-dk Brn, v. hard, med-v calc
480	490			N	SHALE, MED-DK BRN V-HARD MOD CALC
490	500			B	SHALE, DK BRN V-HARD MOD CALC

① DEPTH MEASURED FROM TOP OF ROTARY TABLE, WHICH IS 4'6" FEET ABOVE GROUND LEVEL

CONTINUED

HOLE NO: X-11 SHEET 2 OF 2 DATE: 12/18/79 PROJECT: WHITE RIVER SHALE OR IV. BJORNE LOGGED BY: E. GENTLER COLLAR: TD: 1023

FROM	TO	IMM.	ASSAY				GAL/TON	DESCRIPTION
			10	20	40	40		
500	510							SHALE MED BRN TO DK BRN V. HARD. NON CALC.
510	520							SHALE MED BRN TO DK BRN V. HARD. SILTY CALC.
520	530							SHALE MED BRN TO DK BRN HARD. MED CALC.
530	540							SHALE LT BRN TO MED BRN V. HARD. MED TO V. CALC.
540	550							SHALE LT BRN TO BRN MED TO V. CALC.
550	560							SHALE DK BRN V. HARD V. CALC.
560	570							SHALE DK BRN V. HARD V. CALC.
570	580							SHALE LT BRN TO BRN V. HARD, V. CALC.
580	590							SHALE MED BRN TO DK BRN V. HARD V. CALC.
590	600							SHALE DK BRN V. HARD V. CALC.
600	610							SHALE BR TO DK BRN V. CALC.
610	620							SAME AS ABOVE
620	630							SHALE BRN V. HARD V. CALC.
630	640							N SHALE DK BRN, WITH SOME LT GRAY, V. CALC.
640	650							B SHALE LT BRN TO BRN V. CALC.
650	660							E SHALE, dk. BRN, silty, v. hard, v. calc, fissile to platy.
660	670							C SHALE, do.
670	680							SHALE, do.
680	690							SHALE, do.

CORE BELOW THIS DEPTH

[illegible]

Cote depth is measured from ground level

COMMENTS:

DEPTH	±MM	FRX	PP	ASSAY				CAL TON	REC ERGD	LITH.	DESCRIPTION
				10	20	30	40				
700											
701		50									
702											
703											
704		50									
705		50									
706		70									
707		100									
708		60									
709											
710		130									
711		23									
712											
713		23									
714		32									
715		35									
716		80									
717											
718											
719		20									
720		60									
721											
722											
723											
724											
725		50									
726											
727											
728											
729											
730											
731		30									
732											
733											
734											
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736											
737											
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739											
740											
741											
742											
743		60									
744		31									
745											
746											
747											
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799											
800											

SULFIDE FLAKES

SULFIDE SAND LAYERS

DARKER ZONE TO LIGHT OIL SHALE

RICHER ZONE W/ Sulfide FLAKES

OIL SHALE MEDIUM TO DARK  
BROWN WITH SOME BLACK  
ZONES - ~~RECENTLY~~ LENTICRICH IN GRADE - SULFIDE  
FLAKES SEEN IN MOST AREAS  
A FEW SANDSTONE LAYERS  
W/ BITUMEN?

721.58 - 722.24 BLACK SHALE ZONE

728.727 BLACK SHALE ZONE

734.60 - 734.68 SANDSTONE

734.60 - 734.68 SANDSTONE

735.0 - 735.60 DARKER ZONE, RICH OIL SHALE

742.66 - 742.84 SANDSTONE

IMPREGNATED WITH BITUMEN

742.66 END OF CORE

LOST CORE FROM 745.00 TO 752.00

TOTAL OF 7.74'

ACTUAL CORE LOSS 745.16 - 751.78

TOTAL 6.62'

COMMENTS: ANALYSIS OF CORES 511-515  
CALCULATED TO BE 511-515

DEPTH	±MM	FRK	PP	ASSAY 10 20 30 40	GAL TON	REC ERQD	LITH.	DESCRIPTION
750								
751						751.78	↑	CORE BEGINS AT 751.78
752								751.78 - 753.65 TUFF SANDSTONE MOD CAL
753			.95					753.65 - 754.0 OIL SHALE
754								754.0 - 756.25 TUFF SANDSTONE MOD CAL
755			.15					
756	+110		.25					756.25 - 756.84 OIL SHALE MED TO
757								DK - BRN, 756.84 - 756.91 S.S. IMPREGN
758			.32					WITH BITUMEN OIL SHALE 756.91 - 75
759								757.0 - 757.1 S.S. DK BRN
760								757.1 - 758.88 OIL SHALE
761								758.88 - 758.89 S.S.
762			762.0					758.89 - 758.89 OIL SHALE
763								758.89 - 758.89 S.S.
764								OIL - SHALE MED TO DK BRN
765								764.71 - 764.86 S.S. DK BRN
766	+100		.95					764.76 - 764.82 S.S.
767								764.83 - 766.95 S.S. DK BRN SULFIDE
768			.72					FLAKES
770								
771								
772			.30					
773								
774			.78					774.29 - 774.60 TUFF SANDSTONE BRN
775								775.82 - 776.14 " "
776	+90		.91					
777								
778								SHALE V. CALC
779								779.38 - 779.45 S.S.
780			.39					779.60 - 779.66 S.S.
781		100				781.0		
782								OIL SHALE - LIGHT TO MEDIUM BROWN
783								LOW TO MEDIUM GRADE VERY HARD
784								CALC WITH LAYERS OF SS -
785			.30					784.0 - 1 SS LAYER
786	+80							
787								
788								
789								LOW GRADE OIL SHALE
790			.33					
791								
792								
793								792.55 - 793.07 SANDSTONE LAYER IMPREGNATED
794			.86					793.08 - 795.78 UPPER LAYER BED
795								CONSOLIDATED SAND LAYER
796	+70							
797			.70					
798								LOW GRADE OIL SHALE
799								

DEPTH	±MM	FRX	PP	ASSAY 10 20 30 40	GAL TON	REC. GRD	LITH.	DESCRIPTION
800								Oil shale - low grade, med gray
801								WITH SOME DARKER, VERY THIN BANDS
802								VERY THIN BANDS, HARD, CAL
803								
804								
805								8057 - 8071, several very thin, interbedded zones
806	+60		150					of 55 ft. 100-1000 ft. 8077
807								
808								
809								
810								Rich zone
811	100	.25						OIL SHALE, dark brown, sh. - med calc.
812	100							OIL SHALE - MEDIUM TO DARK
813								BROWN - SOME BLACK -
814								LOW GRADE OIL SHALE
815								LOW GRADE OIL SHALE
816	+50							LOW GRADE OIL SHALE
817								MEDIUM GRADE OIL SHALE
818								
819								
820								LOW GRADE
821								OIL SHALE - DARK BROWN TO BLACK
822								
823								OIL SHALE MEDIUM GRADE
824								
825								82575-82580, SANDSTONE, tuffaceous, brown, oil saturated
826	+40							OIL SHALE DARK BROWN TO BLACK
827								(82580-82585) RICH ZONE
828								82608-82610, OIL SHALE, gray - light brown, fine
829								laminated, compact - hard
830								OIL SHALE DARK BROWN TO BLACK
831								RICH ZONE
832								SULFIDE LAYERS
833								LOW GRADE OIL SHALE WITH INNER BEDDED
834								LAYERS OF NAUPOLE (110)
835								" " " " " " " " " " " "
836	+30							" " " " " " " " " " " "
837								LOW GRADE OIL SHALE
838								OIL SHALE LOW TO MEDIUM GRADE
839								
840								
841								
842								OIL SHALE - LIGHT TO DARK
843								BROWN - SOME VERY DARK
844								BROWN TO BLACK, HIGH GRADE
845								ZONES. LOW GRADE NAUPOLE
846	+20		847.82					LOW GRADE TO 849.85, MEDIUM
847			847.82					GRADE TO 846.33, & RICHER 848
848								- 845.59
849			848.84					

N. BJORNE

DEPTH	±MM	FRX	PP	ASSAY 10 30 30 40	CAL TON	REC REQD	LITH.	DESCRIPTION
850			859.91					859.92 - 859.93 FINE 859.61 - 66 DOZING BITUMEN 859.92 - 859.93 FINE
851								850.85 THREE HIGH GRADE BANDS DOZING 851.71 BITUMEN
852								
853			852.95					MEDIUM GRADE ?
854								
855								854.75
856	-10							855.63 - 855.87 TURBIDOUS SS. GRADE LENSES
857								856.78 - 856.93 - 856.92 TURB. SS. MEDIUM GRADE
858								857.55
859								
860			859.60					
861								LOW GRADE ALL SAMPLES
862								
863								
864								
865								
866	0		865.84					865.57 MANGANESE MARKER 866.83 VERY HIGH GRADE - DOZING MUCH DARK BROWN BITUMEN
867								LOW GRADE
868			867.02 867.07					INCREASING IN GRADE FROM
869								
870								869.70 - 869.71 MANGANESE 870.87 TURBIDOUS SS BANDS
871								RELATIVELY HIGHER GRADE
872								872.45
873			873.60					OIL SHALE - LIGHT
874								TO DARK BROWN, LOCAL
875								HIGHER GRADE SECTION
876	-10		875.38 875.19 876.33					INTERMITTENT, THIN SS. LB
877								MEDIUM - HIGHER GRADE
878								877.83 - 877.91 SS. OUTCROP
879								
880			879.68 880.0 880.81					880.00 880.24 HIGHER GRADE 880.80 LOST CORE
881	15							HIGHER GRADE TO 882.66 ONLY
882			881.7 881.5					882.66 *DISTURBED N.G. 882.66 - 882.67 882.67 LOST CORE 882.78 - 882.79 BROKEN CORE
883								
884								
885								
886	-20							HIGHER GRADE
887			886.10 886.70					
888								888.04
889								
890			889.31 890.7					MEDIUM GRADE
891								890.7 890.83 HIGHER GRADE
892								MEDIUM GRADE
893								891.90 SS IN SILTSTONE? FILLER HTL FRANCHES 892.13 892.78 LOST CORE 892.78 LOST CORE
894			892.97					892.78 LOST CORE
895								MEDIUM TO HIGHER GRADE
896	-30							
897								896.71
898								MEDIUM GRADE
899								898.78 898.78

HOLE NO: X-11 SHEET 6 OF 8 DATE: 12/22/78 LOGGED BY: N. Moulton COLLAR: TD:

DEPTH	±MM	FRX	PP	ASSAY 10 20 30 40	GRV TON	REC. GRV	LITH.	DESCRIPTION
900			899.57					899.77
901								HIGHER GRADE
902								901.89
903			.28 .73					25. LENSES @ 901.12, 901.22, 901.85, 901.87, 902.1
904			.33					902.8, 904.33
905			.00 .65					HIGHER GRADE SHALE OIL SHALE - MEDIUM
906	-40		.40					TO HIGH GRADE -
907			.76					MEDIUM GRADE BLACK SOME
908								SHALE
909								LEAST HIGH GRADE
910			.68					TO HIGH GRADE
911								
912								
913								MEDIUM GRADE OIL SHALE
914								WITH SOME HIGH GRADE
915								BANDS
916	-50		.48					
917			.85					
918			.75					
919			.54					
920			.75					MEDIUM GRADE OIL SHALE
921			.22 .46 .71					
922			.30 .53 .80					
923			.33					
924			.07 .80					
925			.50					
926	-60		.40					MEDIUM GRADE OIL SHALE
927			.10 .31					
928			.40					
929			.28					
930			.80					MEDIUM TO HIGH GRADE SHALE
931			.75					
932			.67 .94					NO SAND LAYERS IN RUN.
933			.20					OIL SHALE LOW TO MEDIUM
934								GRADE SOME WITH LAYERS
935			.29					OF HIGH GRADE - LIGHT BROWN
936	-70							TO BLACK SOME LAYERS
937			.35					OF NAHCOLE AND SANDSTONE
938								SANDSTONE LAYERS COOZING
939								REINFORCED OIL
940								940.59 - 73
941								940.82 - 74 SANDSTONE LAYER OIL SATURATED
942								
943								
944								
945								MEDIUM TO LOW GRADE
946	-80							OIL SHALE
947								
948								
949								

COMMENTS:





