

HOLE NO: P-2 (CORE) SHEET 1 OF 1 DATE: 21 OCT 74 LOGGED BY: E.C. GENTZLER COLLAR: TD:

DEPTH	±MM	FRX	PP	ASSAY 10 20 30 40	GAL TON	REC. BRGD	LITH.	DESCRIPTION
573								DRILLING CONTRACTOR:
574								ROGER SCHOCKE, HENDERSON COLO.
575								DRILLING RIG:
576								FAILING 2500, 12 3/4" CASING,
577								6 3/4" CHRISTIANSEN "M-21" (P) DIAM. BIT
578								DRILLER:
579								FRANK GUSTAFSON
580								ELEVATION DATUM:
581								KOLLY BUSHING (5.8' ABOVE ADJ. G)
582								[XX] LOST CORE ZONE
583								[H] TUFFACEOUS S
584								[E] BITUMEN FLECKS
585								[A*] Nodulite (x) aggregates - generally
586								[H] Hematite, blebs, streaks, kerogen
587								N.B. - The Mahogany Bed was shown @ 84' ON THE W.S.U. 88 density log of P-2 (Pilot). The M.M. was then projected 13' above this (as @ P-1 & WOSCO EX-1) but this proved to be erroneous. MM logged @ 825.11 - 825.48. (819.11 - 819.48)
588								(DIL) SHALE; med-dk brn; f. - thinly laminated, v. calc., appears to be med. grade oil.
589								(?)
590								Tuff Ss (584.05 - 584.19) & (584.28 - 584.34) "colitic" texture H & u's but core eroded (spiral) in three zones. v. highly calc.
591								Tuff Ss (588.21 - 588.53), irreg. upper & lower contact, v. porous, & petroliferous
592								(The chunks or pieces of core recovered from this zone are of the same Oil Shale - but some surfaces have the same blue-grey color that the oil shale horizons develop in weathered outcrop.)
593								One minor Muscovite (?) lens noted in one of these pieces.

REMARKS: ① ACTUALLY DROPPED TO 609.0'. DRILLER SURE THE BRIDGE WAS FULL SO CORE FROM INTERVAL 588.84 - 609.0 WAS LEFT IN HOLE. (CRATER SLIPPED IN SHALE ZONES & FINALLY CAUGHT ON SS @ 588.2). DRILLER (FRANK GUSTAFSON) DID NOT THINK CRATER NEEDS TO BE REPLACED.

Notes: 1. At this point we decided from these depths measurements because of the height of the hole.

Notes: 2. The Mahogany Bed was shown @ 84' ON THE W.S.U. 88 density log of P-2 (Pilot). The M.M. was then projected 13' above this (as @ P-1 & WOSCO EX-1) but this proved to be erroneous. MM logged @ 825.11 - 825.48. (819.11 - 819.48)

DEPTH	±MM	FRX	PP	ASSAY 10 20 30 40	GAL/ TON	REC. ERGQ	LITH.	DESCRIPTION
594	+225							
595								
596	+220							
597								
598								
599	+220							
600								
601	+225							
602								
603								
604	+215							
605								
606	+220							
607								
608								
609	+210							
610								
611	+205							
612								
613	+200							
614								
615	+195							
616								
617	+190							
618								
619	+200							
620								
621	+195							
622								
623								
624	+195							
625								
626	+190							
627								
628								
629	+190							
630								
631	+185							
632								
633								
634	+185							
635								
636	+180							
637								
638								
639	+180							
640								
641	+175							
642								

+++ = TUFF
 *** = Nodulite
 [] = BITUMEN FLECK
 [] = High Grade Zone

[Oil SH] (see description, preceding page)

Tuff. SS (612.30-42.31) v. fine, irreg. lower contact (good cast).
 (Tuff. Stringers @ 612.10 & 612.00 & 612.8)

[Oil SH w/ TUFF] fine to thin, laminated; med-dk dk brn. mod. grade, w/ many v. thin Tuff SS. layers (Gradational) contact @ about 618 w/ Oil SH desc. above.
 V. calc. Interval 624.5-636 also contains frag. v. thin layers of Nodulite b) aggregates & frag. thin bitumen lenses. Interval 636-637 appears to be high grade oil sh. exhibits stly. distorted beds.

Tuff. SS. (627.23-627.34) petrolif., diff. compacted upper surface, lower shows local cast distortion. (sh. soft & non-calc.)

Tuff. SS (629.48-629.60) f. grad. petroliferous irreg. upper & lower contacts & some sh. inclusions. Boulding in sh. only stly. distorted above & below this zone. Tuff. rel. soft & non-calc.

Tuff. SS. (638.8-639) v. f. grad., extremely rich in oil & bleeding gas, zone actually consists of several Tuff. SS. lenses, v. irreg. & interbedded w/ the sh.

Tuff. SS (648.78-.83) f. grad., w/ much dead oil & some nodulite

(Massive Nodulite 17' 6" to 6' 4" v. thin lower)

3) TUBED BARREL - ENTIRE LENGTH OF CORE LEFT ON BOTTOM! AM 22 OCT 74 - RETURNED ENTIRE LENGTH PLUS SOME FROM REMAINING MATERIAL

2) DRILLER WENT BACK IN HOLE, TRIED TO SUP BARREL OVER 20' ON CORE LEFT IN THE HOLE, & THEN DROPPED AN ADDITIONAL 5' BARREL. THE STRESS LENGTH (31.5') OF THIS INTERVAL RESULTED IN CHANGING THE STRESS LENGTH TO 31.5' (31.5' - 31.5' = 0.0'). THIS RESULTING FROM DRILLER MISTAKENLY CHANGING IN MEASUREMENT BARREL LENGTH (31.5' - 31.5' = 0.0'). DRILLER STUCK-UP ON KULLY (THOUGH GRADUALLY CORRECTED EVERY KELLY-DOWN)

1 PM, 21 OCT 74
 NTS: 3
 610' N
 101' 7" L
 29.74' CUT / 22.73' REM
 30.18' /
 8:30 AM, 22 OCT 74 - 29.74' CUT / 22.73' REM
 N:30 AM, 22 OCT 74 - PULLED 30.18'
 NOTE (5)

HOLE NO: P-2 (CORE) SHEET 3 OF DATE: 22 Oct. 74LOGGED BY: EC GENTZLER COLLAR: TD:

DEPTH	±MM	FRX	PP	ASSAY				GAL/TON	REC. ERGD	LITH.	DESCRIPTION
				10	20	30	40				
644	+175										(MOD Oil yield zone 650-651)
645										+++	Tuff ss lenses (651.50-85) petalite, containing Na
646											
647											
648											
649	+170									98% / 98% Rec	(Thin layer of Nahcolite egg. @ 655.05)
650										+++	
651											
652											
653											
654										+++	
655	+165										
656											
657											(Many Bitumen flecks & venalets)
658											(Mod grade Oil zone 663-664)
659	+160									+++	
660											
661											
662										+++	
663											
664	+155										No CORE (670.49-670.92) & (671.21-671.27)
665											
666										++++	(Extremely High grade Oil zone 671-672)
667										++++	Containing thin (0.1-0.2) Tuff ss. (682.15 & 683.5)
668		85° 0.82'									Med. coarse gnd, w/ Nahcolite, V. irreg. lenticles
669	+150									+++	Tuff ss (675.8), varies from .01-.10' thick
670		Vert Frx 676.22 m	.29							+++	Med-gnd, w/ Nahcolite. Very irreg. contacts.
671		677.69	.09								& cuts bedding in shale.
672											(High grade zone 678.5 to 679.5)
673											
674	+145										
675											
676											
677											
678											
679	+140										(High grade zone 684.8-685.8)
680										++++	
681										+++	Tuff ss. (686.0-686.7) & med-gnd, saturated w/
682										+++	dead oil; extremely irreg. lenses interbedded
683										++++	(w/ sh.)
684	+135									++++	
685										++++	
686										++++	
687										++++	Tuff ss (693.42-.59), med coarse gnd, w/ Nahcolite
688										++++	& some oil. Also 0.1' thick zone @ 694.2
689	+130		.61							++++	& 695.05 & irreg. contacts on last 2'
690											
691											(High Oil zone 697.6 - 699.0)
692											

REMARKS: (4) LOGGED IN RAIN

672

682

NOTE: (2)

30.15' CUT / 30.09' REC. 79% REC / 98% REC

30.15' CUT / 30.09' REC. 79% REC / 98% REC

HOLE NO: P-2 (CORR) SHEET 4 OF DATE: 23 Oct. 74 LOGGED BY: E. GENTZLER COLLAR: TD:

DEPTH	±MM	FRX	PP	ASSAY 10 20 30 40	GAL/ TON	REC. BERQD	LITH.	DESCRIPTION
694	+125							
695			.07			701.07		
696	+122							
697								
698								
699	+120							(High Grade Zone)
700								
701	+125						++++	(707.40-45)
702			.80				++++	Tuff SS (707.60-67) & (708.17-24); med-gr distorted bedding, petroliferous.
703								
704	+115		.96				++++	Tuff SS (709.80-710.56) much dead oil, sh. interbeds, sh. interbeds - thin, bedded, slightly distorted shale inclusion at 710.40 (buff)
705	+120							
706								
707								
708								
709	+110						++++	Tuff SS (713.28-713.59), petrolif. , No oil.
710								
711	+125		.26				++++	Tuff SS (718.05-718.29), v. contorted bedding w/ sh. interbeds. sh. interbeds , & petrolif.
712							++++	Likewise for (719.10-.15) & (719.30-37) & 1015 @ 721.3
713	+105							
714								
715	+120						++++	
716							++++	
717							++++	
718							++++	(726.30-726.44)
719	+100						++++	Tuff SS (727.71-728.05), distorted bedding w/ sh. interbeds, slty petrolif. 3rd @ (726.4- 726.65) contains <u>macrofossils</u> .
720							++++	
721	+125						++++	
722							++++	
723							++++	
724	+95						++++	
725							++++	
726	+120						++++	Tuff SS (731.27-731.32) & (731.50-.55) highly irreg. app. & low contacts; Petroliferous.
727							++++	
728							++++	
729	+90						++++	Tuff SS (734.20-27), reg. contacts, petrolif.
730			.30				++++	
731	+95		.24				++++	Tuff SS (734.30-.45), reg. app. contact, highly irreg. lower contact, saturated w/ dead oil, & contains <u>macrofossils</u> (1) & much clay.
732							++++	
733							++++	
734	+85						++++	
735							++++	
736	+90						++++	
737			.24				++++	
738							++++	
739	+80						++++	Tuff SS (745.81-.93) & (745.91-.96) irreg. bedd, note, clay. & petrolif.
740							++++	
741	+85						++++	UPPER WAVY BED -- Tuff SS (746.85-748.74) w/ irreg. sh. lower (747.20-.35) & smaller sh. into

LOGGED IN THE RAIN

⑤

REMARKS:

HOLE NO: P-2 (CORE) SHEET 5 OF DATE: 24 Oct. 74 LOGGED BY: E.C. GENTZLER COLLAR: TD:

DEPTH	±MM	FRX	PP	ASSAY 10 20 30 40	GAL /TON	REC. GRD	LITH.	DESCRIPTION
744	+75							
745							+++++	
746	080						+++++	
747								
748								
749	+70							
750								
751	080						+++++	(Zone 752-760 contains numerous v. thin, clay & isolated blebs of Hematite!)
752								
753								
754	+65					754.39		(Appears to be v. low grade zone to pp @ 757.82)
755								
756	080							
757								
758								(Hematite layer [0.1' thick] @ 758.45. Blebs & irregular lenses of same between 758.15 & 758.35 & 0.01 to .02' thick)
759	+60							
760			.82					
761	085							
762								(765-774; Oil (?) staining Xing bedding)
763								
764	+55							
765								
766	080							
767								
768								
769	+50							
770								
771	080							
772			.41					
773								
774	+45							(2 small, white, chloroform cent. lenses @ 781.3)
775								(V. High grade zone (781.85-782.20)
776	+40							
777								
778								
779	+40							Tuff. ss, irreg. lenses (783.65-69) w/ clay & slty petrofit & v. petrofit lenses @ 786.7 to 787.2 thick. V. petrofit lower 788.24-77.
780								
781	085	.40						(Med. grade zone - 785.6 to 786.7. Coarser grained & slty distorted bedding)
782		.53 (Virt)						(thin dk ss @ pp @ 789.22)
783		.22						MARLSTONE (789.22 - 794.01), v. f. to f. It buff colored, v. to slty calc. & v. chlam. V. thin (c. 1) vuggy zone filled w. woodwrt. op. white, powdery mineral. Highly karstified limestone & thin mlt ss. layers 792-794.
784	+35							
785								
786	+30							
787			.12					
788		.33						
789	+30							(794.01 - 794.33), opaque, white, granular & saccharoidal mineral, HZT.
790								
791	+30		.84					
792								

REMARKS: (C) LOGGED AT NIGHT BY TRUCK HEADLIGHTS

30.46' CUT / 30.39 REC
100% REC
NOTE (C)
750 PM, 24 OCT 74

HOLE NO: P2 (CORE) SHEET 6 OF DATE: 25 Oct 74 LOGGED BY: E.C. GENTZLER COLLAR: TD:

DEPTH	±MM	FRX	PP	ASSAY 10 20 30 40	GAL/TON	REC. ERGD	LITH.	DESCRIPTION
804	+25							
805	450							
806	450							
807								(Med Grade Zone (802.4 - 803.7) distorted bedding, w/ thin petrolif. tuff ss.
808								
809	+20		.20					Tuff SS (805.00 - 805.35) irreg contacts; Y.
810			.52					Contented bedding & Petrolif., minor py. ^{clay, some minor}
811	450							(805.35 - 806.52) Zone of Hematite Filled
812			.96					Tuff. SS, layers, lenses, & blocks.
813								Tuff SS, contorted, extremely Petrolif (bleeding oil) w/ clay & nahcolite
814	+15		.64					
815								
816	450		.86					(.19', No Core)
817			.06					HIGH GRADE OIL SH (812.86 - 814.41) V. hi.
818		.30	.41					grade w/ several thin, tuff ss layer w/ nahcolite aggregates - all oil saturated - MB??
819	+10							SHALE (815 - 816), lt brn to med brn, causing distinct sanding, calc to data
820			.71					
821								
822	+5							
823								
824	450							
825								
826								
827								
828								
829	0		.17					(819.11 - 819.16)
830								MAHOGANY MARKER 825.11 - 825.48
831								Tuff. SS interbedded w/ sh.
832								
833								
834	-5		.05					one very thin dark colored band of pyritiferous material (828.5) (zone of thin layers & lenses of hematite)
835								
836			.73					
837	-10							
838								
839			.30					Black, extremely RICH OIL SH (839.30 - 839.68)
840	-15		.81					
841			.22					MAHOGANY BED blk, extm rich oil sh (844.82 - 843.22) which has parting plane
842		in opp. direct.	.02					contact w/ MASSIVE NAHCOLITE zone (842.02 - 843.02) which include V. highly distorted layer of extremely rich oil sh.
843			.54					
844	-20		.14					
845								
846			.70					

REMARKS: ① Logged @ Night by Jack Headlights

HOLE NO: P-2 (CORE) SHEET 7 OF DATE: 25 Oct 74 LOGGED BY: E.C. GENTZLER COLLAR: TD:

DEPTH	±MM	FRX	PP	ASSAY 10 20 30 40	GAL/ TON	REC. ERQD	LITH.	DESCRIPTION
844	-25							
845								
846								
847								
848			.80					(High grade zone [853.25-807])
849	-30							Tuff S ₂ (854.34-50),
850								highly context, much malcolite & silty for
851								interbedded w/ S ₄ .
852								(High grade zone [854.80-857.38]) w/
853								W a PY stringer @ (855.48-.41), WRC
854								W malcolite & appropate (oil saturated) at
855	-35		.84					& below. Smaller stringer @ 855.76, &
856								Numerous others to 858.
857								(Silt SH & MARLSTONE) (860.0-862.3) ^{light} alb-mal
858								& V. calc. grading into calc.
859								(SILTSTONE) (862.3-) relative to this, lower
860								light to dk Bm, w/ variable oil content (most
861	-45							distinctive zones of oil & dk, bedding silty
862								inter through & containing minor thin
863			.36					tuff S ₂ & hematite, & occ. Nohc II layers.
864			.37					
865	-50							
866			.49					
867								
868								
869	-55							
870								
871								
872								
873								
874	-60							
875								
876								
877								
878								
879								
880	-65							
881								
882								
883								
884								
885								
886			.84					
887								
888								
889	-70		.72					
890								
891			.30					
892			.47					

REMARKS: (3) REMAINING 5.19' thought to be in bottom. No fused hand sample
up to beginning of shift - so 1 additional new core catcher put on.
(4) LOGGED BY HERRING, only 0.52' of 3.19' left in hole on previous run recovered.

Core catcher
died at
1.21
1.27
1.45
1.86
1.88
1.98
1.99
2.02
2.28
2.34
2.71
2.94
3.17
3.13

853.50

30.26' CUT / 27.07' REC. Note: (8)
89% REC.

12:30 PM, 26 Oct 74

28.70' CUT / 30.22' REC
102% REC.

(9)

OZG

LOST CORE

Oil SH - V. high grade 1' @ (884.15), do
(884.25-.32)"Oil SH" 11" med. dk Bm, mod. grade, silty calc
actually siltstone & occ sandy.

Tuff ss - oil sat.

(ext. High Grade bed (895.72-76))

HOLE NO: P-2 (CORE) SHEET 8 OF DATE: 26 Oct 74 LOGGED BY: E. GENTZLER COLLAR: TD:

DEPTH	±MM	FRX	PP	ASSAY 10 20 30 40	GAL/TON	REC. ERQD	LITH.	DESCRIPTION
894	-80							
895								
896								Chalcedony (?) (908.74-74), v. thin layer
897								massive, opaque, white.
898								
899	-85							Tuff SS lenses, v. distorted bedding, ^{much} weak m. & some oil
900								(beds thicker & stly distorted)
901								(bleeding oil from Tuff SS @ (908.03-07))
902								(Hem, py, muscovite layers & lenses)
903								
904	-90							
905								
906								
907								
908	-95							Tuff SS (901') @ (913.58) bleeding much oil.
909								
910								
911								
912								
913	-100							Tuff SS (919.92-920.80). Thin layers interbedded
914								w/ thin layers sh, petrelif - some layers bleeding oil
915								do @ (920.35-40)
916								
917								
918	-105							Tuff SS (924.45-60) bleeding oil & containing
919								internal thin muscovite layers.
920								
921								
922								
923	-110							within tuff SS (as above) bleeding oil
924								
925								Tuff SS (930.70-95) bleeding much oil (foss), 3 thin
926								such layers between 930.46 & 930.70.
927								
928	-115							MARLSTONE, 1/4 to med
929								(935.95-936.60)
930								
931								SILTSTONE & TUFF SS / BLEEDING OIL (936.6-939.0)
932								(bleeding oil & foss probably from thin layers to
933								some up to 1/4" thick)
934	-120							
935								SILTSTONE & MARLSTONE #10 med Brn
936								
937								
938								
939	-125							
940								
941								
942								

REMARKS: Logged by Handwritten

HOLE NO: P-2 (CORE) SHEET 9 OF DATE: 27 Oct 74 LOGGED BY: E.C. GENTZLER COLLAR: TD:

DEPTH	±MM	FRX	PP	ASSAY 10 20 30 40	GAL TON	REC. ERGQ	LITH.	DESCRIPTION
944	-130		.07				BNHNNH	
945			.140					
946								
947			.98				HN	
948			.25 .45 .123				HN	
949	-120							
950								
951								Tuff Ss (958.00 - 97.17), highly contorted, w/ sh
952								interbeds & Gilsomite (?) & bitumin contorted layers
953								
954	-140							
955							BNHNNH	(some distortion of bedding)
956							BNHNNH	
957								
958								
959	95							
960								Tuff Ss (966.80 - .94) w/ much nephelite (?)
961								do (967.60 - .72) w/ more PI layers.
962		Healed vert.					BNHNNH	(Hemimorphite (?) layer 968.90 - 94)
963							BNHNNH	Tuff Ss (969.55 - .70) w/ Hemimorphite (?) layer @ 969.55
964	-150							
965								
966								
967								
968								Tuff Ss (973.70 - .66), oil sat, making gas.
969	-105						X	LOST CORE
970								Thin SH (976.38 - 980.7) ^{low to} mid grade, distorted
971								bedding upper part (esp. 972.85 - .55)
972								Continuing thin, white clarkstonite layer & block
973		Vent. .02 - .10						978.12, 5' layer w/ vert. fr. (979.02 - .10)
974	-160							
975								
976								(micro-slumpage in beds @ 982.7)
977								
978			.98					
979	415		.10 .46 .13 .79					Tuff Ss (983.62 - .79) Contorted, petrodit lens
980								(Highly calmed, finely banded)
981			.06 .89					
982			.67					
983								(c/c)
984	-170		.65					
985								(Gilsomite (?) layer - 992.57 - .52)
986			.96					Tuff Ss (992.88 - 993.32), Bk. highly petrodit.
987								(micro-slumpage in bedding @ 993.4)
988			.06					
989								
990								(H. to be used Bca)
991								(distorted bedding, low grade, oil sh)
992								Tuff Ss (998.88 - 999.12) Contorted, oil sh.

REMARKS:

PROJECT: WHITE RIVER SHALE CONTRACT UNIT

994

[illegible]

(11) LOGGED ~~BY MEANS OF~~ IN COMPOUND, HEAVILY LOGGED
downhill because of rain.

MENTS: