VANS NERGY DEVELOPMENT INC.

P.O. Box 266   Paola, Kansas 66071   (913) 294-9083

WELL LOG
Knabe D - #4
Kelly Company L.C.
API #15-091-22,588
October 30 - November 3, 1993

Thickness of Strata	Formation	Total
8	soil & clay	8
7	lime	15
5	shale	20
17	lime	37
8	shale	45
9	lime	54
9	shale	63
14	lime	77
21	shale	98
75	lime	173
32	shale	205
8	lime	213
21	shale	234
6	lime	240
5	shale	245
8	lime	253
33	shale	286
1	lime	287
10	shale	297
28	lime	325
7	shale	332
21	lime	353
4	shale	357
16	lime	373-base of the Kansas City Group
173	shale	546
4	lime	550
5	shale	555
3	lime	558
5	shale	563
6	lime	569
18	shale	587
4	lime	591
5	shale	596
4	lime	600
5	shale	605
2	lime	607
30	shale	637
2	lime	639
62	shale	701
1	shale & shells	702

11.5	shale	713.5
.5	sand & silty shale	714-drilled, light bleeding brown san and gray silty shale
.5	sand	714.5-good bleeding, brown
.5	sand & silty shale	715-40% light bleeding sand, 60% silt shale
116.7	shale	831.7
.3	limey sand	832-brown, hard, good bleeding, drill
5.4	sand	837.4-brown, oil saturated, good bleeing, 10% thin shale seams
1.2	sand & shale	838.6-80% light gray, shale, 20% bleeing sand
6	shale	844.6
1.4	sand & shale	846-wavey laminations, brown, light bleeding sand & gray shale
1.6	sand	847.6-brown, light bleeding, few very thin shale seams
3.8	shale	851.4-dark
.8	coal	852.2
40.8	shale	893-TD

Set 20.0' of 7" Threaded & Coupled Surface Casing.

Set 883' of new 4 1/2" casing including 4 Centralizers, 1 Float Shoe, 1 Clamp.

Lower Squirrel Core Times			Bartlesville Core Times		
	Min.	Sec.		Min.	Sec.
715	1	00	833	1	00
716		45	834		35
717		45	835		45
718		40	836		45
719		40	837		50
720		40	838		55
721		50	839	1	00
722		55	840	1	05
723	1	00	841	1	00
724	1	00	842	1	00
725	1	00	843	1	00
726	1	00	844	1	10
727	1	00	845	1	10
728	1	00	846	1	05
729		50	847	1	00
730		55	848	1	10
731		50	849	1	05
732	1	00	850	1	10
733	1	00	851	1	10
734	1	00	852	1	10