

**EXHIBIT — 4**

**COMPARISON OF CLEARANCE USING VARIOUS  
SIZES OF TUBING IN 5-1/2" 23# FT CASING**

<u>Wt/Ft</u>	<u>Drift ID</u>	<u>1.</u>	<u>2.</u>	<u>3.</u>	<u>4.</u>	<u>5.</u>	<u>Combinations</u>	<u>Clearance - Inches</u>
		<u>Joint OD of 1-1/2" Tbgs. w/Hydril CS Couplings</u>	<u>Joint OD of 1-1/2" Non Upset Tubing</u>	<u>Joint OD of 1-3/4" Special Tubing (Camco)</u>	<u>Joint OD of 2-1/16" Tbgs. w/Hydrill CS Joints</u>			
23	4.545"	2.113"	2.200"	2.500"	2.330"	2.500"	1 & 1	4.545 - (2.113 + 2.113) = 0.319(1
							1 & 2	4.545 - (2.113 + 2.200) = 0.232(2
							1 & 3	4.545 - (2.113 + 2.500) = -0.068
							1 & 4	4.545 - (2.113 + 2.500) = -0.068
							1 & 5	4.545 - (2.113 + 2.330) = 0.102(3)
							2 & 2	4.545 - (2.200 + 2.200) = 0.145(4)
							2 & 3	4.545 - (2.200 + 2.500) = -0.155
							2 & 4	4.545 - (2.200 + 2.500) = -0.155
							2 & 5	4.545 - (2.200 + 2.330) = 0.015(5)
							3 & 3	4.545 - (2.500 + 2.500) = -0.455
							3 & 4	4.545 - (2.500 + 2.500) = -0.455
							3 & 5	4.545 - (2.500 + 2.330) = -0.285
							4 & 4	4.545 - (2.500 + 2.500) = -0.455
							4 & 5	4.545 - (2.500 + 2.330) = -0.285
							5 & 5	4.545 - (2.330 + 2.330) = -0.115

- (1) If gas lift valves, circulating subs, etc., are run (Joint OD = 2.250). Clearance =  $4.545 - (2.113 + 2.250) = 0.182$
- (2) Prefer to using Hydril CS joint over Non Upset because of greater joint tension factor and greater clearance
- (3) If gas lift valves, circulating subs, etc., are used on 1-1/2" string (Joint OD = 2.250) Clearance =  $4.545 - (2.250 + 2.330) = -0.035$
- (4) If gas lift valves, circulating subs, etc., are used on one string (Joint OD = 2.250) Clearance =  $4.545 - (2.250 + 2.200) = 0.095$
- (5) If gas lift valves, circulating subs, etc., are used on 1-1/2" string (Joint OD = 2.250) Clearance =  $4.545 - (2.250 + 2.330) = -0.035$

FEDERAL EXAMINER UTZ  
ENVIRONMENTAL COMMISSION  
Utz CASE NO. 1587 EXHIBIT NO. 4