**Pressure Required to Break Circulation**

**Pressure required to overcome the mod’s gel strength inside the drill string**

Pgs = ( y ÷ 300 ÷ d) L

Where ;

Pgs = pressure required to break gel strength (psi)  
y = 10 min gel strength of drilling fluid (lb/lOO sq ft)  
d = inside diameter of drill pipe (inch)

L = length of drill string (ft)

Sample Case :

y = lO lb/lOO sq ft  
d = 4.276 inch  
L = 12,000 ft

Pgs = (10 ÷ 300 ÷ 4.276) 12,000 ft

= 0.007795 x 12,000 ft

= 93.5 psi

Therefore, approximately 94 psi would be required to break circulation.

Pressure required to overcome the mud’s gel strength in the annulus

Pgs = y ÷ [300 (Dh (inch) — Dp inch)] x L

Where ;

Pgs = pressure required to break gel strength (psi)  
L = length of drill string (ft)  
y = 10 min. gel strength of drilling fluid (lb/lOO sq ft)  
Db = hole diameter (inch)  
Dp = pipe diameter (inch)

Sample Case : L = 12,000 ft  
 y = 10 lb/lOO sq ft  
 Db = 12-1/4 inch  
 Dp = 5.0 inch

Pgs = 10 ÷ [300 x (12.25 — 5.0)] x 12,000 ft

= lO ÷ 2175 x 12,000 ft

= 55.2 psi

Therefore, approximately 55 psi would be required to break circulation.