

Manual Gas Lift Design (Casing Pressure Drop)

Gradient Curve s– Define Operating Envelope

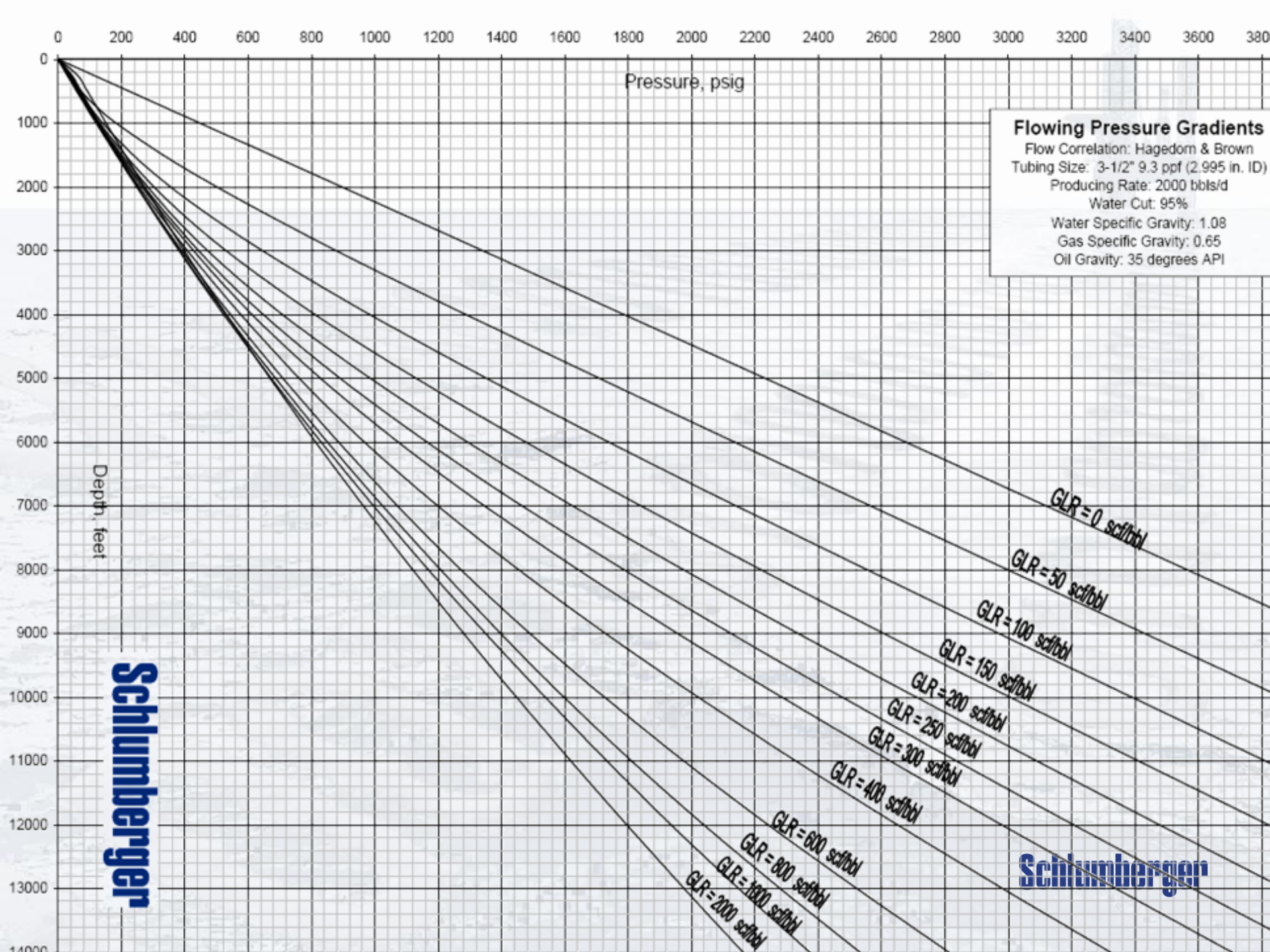
TUBING SIZE	: 3.5" 9.3 lb/ft
CASING SIZE	: 7" 26 lb/ft
AVERAGE DEVIATION	: Vertical Well
TARGET PRODUCTION RATE	: 2,000 bpd
WATERCUT	: 95 %
OIL API	: 35°
WATER S.G.	: 1.08
GAS S.G.	: 0.65
PACKER SETTING DEPTH	: 9300 FT
END OF TUBING	: 9500 FT
MID PERFORATION DEPTH	: 10,000 FT
TVD	: 11,000 FT
WELLHEAD FLOWING PRESSURE	: 150 psig
SHUT IN BOTTOM HOLE PRESSURE	: 2,800 psig
PRODUCTIVITY INDEX	: 5 stb/d/psi
FORMATION GLR	: 150:1
CASING KICKOFF PRESSURE	: 1,400 psig
CASING OPERATING PRESSURE	: 1,200 psig
AVAILABLE GAS FOR INJECTION	: 2.0 MMSCF/D
TEMPERATURE @ DEPTH	: 210° F
TEMPERATURE @ SURFACE	: 70° F
FLOWING TEMPERATURE @SURFACE	: 120° F
KILL FLUID GRADIENT	: 0.465 psi/ft
AMBIENT TEMPERATURE	: 80° F

Draw...

1. Mid-Perf Line
2. Packer Line
3. SBHP
4. Static Gradient from SBHP
5. Injection Gas Pressure
6. Kick-Off Gas Pressure
7. FBHP (Calculated from PI)
8. Well Flowing Gradient
9. Deepest Injection Point
10. FWHP
11. GLR Curve above Injection

Find...

- Injection Gas Volume



Manual Gas Lift Design (Casing Pressure Drop)

Gradient Curve s– Define Operating Envelope

TUBING SIZE	: 3.5" 9.3 lb/ft
CASING SIZE	: 7" 26 lb/ft
AVERAGE DEVIATION	: Vertical Well
TARGET PRODUCTION RATE	: 2,000 bpd
WATERCUT	: 95 %
OIL API	: 35°
WATER S.G.	: 1.08
GAS S.G.	: 0.65
PACKER SETTING DEPTH	: 9300 FT
END OF TUBING	: 9500 FT
MID PERFORATION DEPTH	: 10,000 FT
TVD	: 11,000 FT
WELLHEAD FLOWING PRESSURE	: 150 psig
SHUT IN BOTTOM HOLE PRESSURE	: 2,800 psig
PRODUCTIVITY INDEX	: 5 stb/d/psi
FORMATION GLR	: 150:1
CASING KICKOFF PRESSURE	: 1,400 psig
CASING OPERATING PRESSURE	: 1,200 psig
AVAILABLE GAS FOR INJECTION	: 2.0 MMSCF/D
TEMPERATURE @ DEPTH	: 210° F
TEMPERATURE @ SURFACE	: 70° F
FLOWING TEMPERATURE @SURFACE	: 120° F
KILL FLUID GRADIENT	: 0.465 psi/ft
AMBIENT TEMPERATURE	: 80° F

Draw...

1. Static Gradient from FWHP to Kick-Off Gradient
2. Station Location and Transfer point
3. Static Gradient from Transfer point to Injection Gradient
4. Injection Pressure drop
5. Repeat 3 & 4 to Deepest Injection Point using 20-psi pressure drops

Find...

- Injection Gas Volume at each station