**Tank Capacity Calculations**

**Rectangular Tanks With Flat Bottoms**

Side End

Sample Case 1 : Determine the total capacity of a rectangular tank with

Flat bottom using the following data :

Length = 30 ft  
Width = 10 ft  
Depth = 8 ft

Sample Case 2 : Determine the capacity of this same tank with only 5-1/2 ft

Of fluid in it :

**Rectangular Tanks with Sloping Sides :**

side end

Sample Case : Determine the total tank capacity using the following data :

Length = 30ft  
Width1 (top) = 10 ft  
Width2 (bottom) = 6 ft  
Depth = 8 ft

**Circular Cylindrical Tanks**

Side

Sample Case : Determine the total capacity of a culindrical tank with the

following dimensions :

Height = 15 ft

Diameter = 10 ft

NOTE : The radius (r) is one half of the diameter

**Tapered Cylindrical Tanks**

Volume of cylindrical section :

*Vc = 0.1781 x 3.14 x rc2 x hc*

Volume of tapered section :

*Vt = 0.059 x 3.14 x ht x (rc2 + rb2 + rb rc)*

Where, Vc = volume of cylindrical section (bbl)

rc = radius of cylindrical section (ft)

hc = height of cylindrical section (ft)

Vt = volume of tapered section (bbl)

ht = height of tapered section (ft)

rb = radius of bottom (ft)

Sample Case : Determine the total volume of a cylindrical tank with the

following dimensions :

Height of cylindrical section = 5.0 ft

Radius of cylindrical section = 6.0 ft

Height of tapered section = 10.0 ft

Radius at bottom = 1.0 ft

Solution :

1. Volume of cylindrical section :

Vc = 0.1781 x 3.14 x 6.02 x 5.0

= 100.66 bbl

b. Volume of tapered section :

Vt = 0.059 x 3.14 x 10 ft x (62 + 12 + 1 x 6)

= 1.8526 (36 + 1 + 6)

= 1.8526 x 43

= 79.66 bbl

c. Total volume :

bbl = 100.66 bbl + 79.66 bbl

= 180.32

**Horizontal Cylindrical Tank**

a. Total tank capacity :

Sample Case : Determine the total volume of the following tank :

Length = 30 ft

Radius = 4 ft

b. Partial volume :

Sample Case : Determine the volume if there are only 2 feet of fluid in

This tank :

Length = 30 ft

Radius = 4 ft

To convert volume ft3 to barrels, multiply by 0.1781

To convert volume ft3 to gallons, multiply by 7.4805

Therefore, 2 feet of fluid in this tank would result in :

Volume (bbl) = 294 ft3 x 0.1781

= 52.36 bbl

NOTE : This is only applicable until the tank is half full (r – h). After

that, calculate total volume of the tank and subtract the empty

space. The empty space can be calculated by h = height of empty

space.