

Summary

This section contains the formulas, rules, and principles, and the rate schedules and calculation procedures for determining the assessed value of oil and gas well resource production equipment, and buildings located at an oil or gas well site.

Description

Resource production equipment includes the fixtures, machinery and other appliances by which petroleum oil or gas is produced to the surface, stored, transported from a well site or a battery or gas handling site, or is compressed.

Resource production equipment does not include the fixtures, machinery and other appliances by which petroleum oil or gas is stored at a battery site, or is compressed where the gas is, for the most part, a by-product of petroleum oil production.

Oil or Gas Well Site

The area of land on or under which is located the resource production equipment used to raise or pump the oil or gas to the surface, the resource production equipment used to inject air, water, steam or gas to enhance the production of a well, or the resource production equipment at a water source well, that was operated for 30 or more days in the 12 month period ending July 1 of the preceding year to which the assessment roll relates.

The resource production equipment located at an oil well site includes the pumping equipment, wellhead assembly, tubing and rods, and well accessories.

The resource production equipment located at a gas well site includes the wellhead assembly, tubing, chemical equipment, water handling equipment, and metering equipment.

The resource production equipment used to inject air, water, steam or gas to enhance the production of a well, and the resource production equipment at a water source well, includes the pumping equipment, wellhead assembly, tubing and rods, metering equipment, control valves, manifold, and well accessories.

New Well Site

An oil or gas well site that was drilled in the 12 month period ending July 1 of the preceding year to which the assessment roll relates.

Swabber Well Site

An oil or gas well site where on July 1 of the preceding year to which the assessment roll relates, the resource production equipment used in the preceding year has been removed from the site and has not been replaced with any other on-site resource production equipment.

Shut-In Well Site

The area of land on or under which is located the resource production equipment used to raise or pump the oil or gas to the surface, the resource production equipment used to inject air, water, steam or gas to enhance the production of a well, or the resource production equipment at a water source well, that was operated for less than 30 days in the 12 month period ending September 1 of the preceding year to which the assessment roll relates.

Observation Well Site

The area of land on or under which is located the resource production equipment used to monitor an oil or gas well to enhance the production of the well.

Gas Storage Well Site

The area of land on or under which is located the resource production equipment used to inject gas into a gas cavern or sub surface formation and to pump gas from a gas cavern or subsurface formation.

Flow Line

A flow line is a line of pipe used to transport oil or gas from a well site to a battery or gas handling site.

Replacement Cost New

The replacement cost new of oil and gas well resource production equipment and buildings located at an oil or gas well site, or a new well site shall be determined by the standard unit method.

The replacement cost new of oil and gas well resource production equipment located at a swabber well site or shut-in well site shall be limited to the wellhead assembly which shall be determined in accordance with the wellhead assembly specifications in Chapter 4 - Resource Production Equipment, Section 4.1.3 - Oil and Gas Well Resource Production Equipment, Well Classification.

The replacement cost new of oil and gas well resource production equipment located at an observation well site or gas storage well site, and the replacement cost new of flow lines shall be determined by the unit-in-place method.

The trended original cost method for determining replacement cost new shall be used where the replacement cost new of specific oil or gas well resource production equipment cannot be determined by the standard unit method or the unit-in-place method.

The trended original cost shall include all direct and indirect costs. Direct costs include materials, labour, supervision, equipment rentals, and utilities. Indirect costs include architectural and engineering fees, building permits, title and legal fees, insurance, interest and fees on construction loans, taxes incurred during construction, advertising and sales expenses, and overhead and profit. Trended original costs shall be determined FOB the well site as of January 1, 2015.

Standard Unit Method

The replacement cost new shall be determined as follows:

1. Determine the classification of the well.
2. Determine the resource production equipment needed to operate a substitute well. The substitute well must perform the same function as the well being valued.
3. Calculate the replacement cost new of the resource production equipment located at the well by summing the replacement cost of the substitute resource production equipment.

Unit-In-Place Method

The replacement cost new shall be determined as follows:

1. Determine the type of resource production equipment using the rating guide.
2. Determine the features requiring a unit-in-place lump sum or percentage adjustment.
3. Calculate the replacement cost new of the resource production equipment by adjustment of the base rate by the unit-in-place adjustments.

Trended Original Cost Method

The replacement cost new shall be determined as follows:

1. Determine the original construction cost of all the resource production equipment at the facility.
2. Determine the direct and indirect costs requiring an adjustment.
3. Determine the direct and indirect cost factor for oil and gas resource production equipment required to adjust construction costs to January 1, 2015.
4. Calculate the construction cost of all the resource production equipment at the facility by adjusting the original construction cost for any direct or indirect costs requiring adjustment and multiplying the adjusted original construction cost by the comparative cost index.
5. Determine replacement cost of resource production equipment that can be separately identified and rated by the unit-in-place method.
6. Calculate the replacement cost of the resource production equipment that can not be separately identified by subtracting the replacement cost of separately identified components from the construction cost of all the resource production equipment at the facility.

Physical Deterioration

The amount of physical deterioration for oil and gas well resource production equipment and buildings shall be determined using the lifetime depreciation method. No allowance shall be made for functional and economic obsolescence, except as may be accounted for in the downtime allowance or the production adjustment factor.

Lifetime Depreciation Method

The amount of physical deterioration shall be 40 percent. When calculating replacement cost new less depreciation no additional allowance shall be made for physical deterioration except as may be accounted for in the production adjustment factor.

Downtime Allowance

The downtime allowance for oil and gas well resource production equipment shall be determined by the schedule of rates method.

The downtime allowance and the production adjustment factor shall account for all of the loss in value due to under-utilization of the resource production equipment. This includes any loss in value due to differences in replacement cost and differences in the amount of depreciation, that have not been taken into account using the procedures in this manual.

Schedule of Rates Method

The downtime allowance shall be 10 percent. When calculating replacement cost new less depreciation and downtime, no additional allowance shall be made for downtime except as may be accounted for in the production adjustment factor.

Production Adjustment Factor

The production adjustment factor for oil and gas well resource production equipment and buildings located at an oil or gas well site, and flow lines shall be determined by the schedule of rates method.

The downtime allowance and the production adjustment factor shall account for all of the loss in value due to under-utilization of the resource production equipment or buildings. This includes any loss in value due to differences in replacement cost and differences in the amount of depreciation, that have not been taken into account using the procedures in this manual.

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: General Rules

A production adjustment factor shall not be applied to the oil and gas well resource production equipment located at a new well site, swabber well site, shut-in well site, observation well site, or gas storage well site.

Schedule of Rates Method

The production adjustment factor shall be 0.75 for qualified resource production equipment, buildings, structures and flow lines.

Qualifying Production Level

The production adjustment factor shall be applied to resource production equipment, buildings, structures and flow lines. The factor shall be a three year average of production from a 36 month period ending July 1 of the preceding year to which the roll relates.

The average production of the well shall be determined as follows:

1. Determine the volume of oil or gas produced by the well during the 12 month period of July 1 to June 30 for each of the three years.
2. Determine the number of days the well was operated during the 12 month period of July 1 to June 30 for each of the three years.
3. Calculate the production of the well for each year by dividing the volume of oil or gas produced by the well for the year by the number of days the well was operated during the year.
4. Calculate the average production of the well by summing the production of the well for the three years and dividing by three.

Oil Wells

Well Area (Abbreviation)	Crude Type	Qualifying Production Level	
		barrels/day	M ³ /day
Weyburn (WE)	Light	1.78	0.282
	Medium	1.79	0.284
Swift Current (SC)	Light	1.24	0.197
	Medium	1.68	0.267
	Heavy	3.49	0.555
Kindersley (KD)	Light	1.24	0.197
	Heavy	3.49	0.555
North Battleford - South (NB-S)	Heavy	3.49	0.555
North Battleford - North (NB-N)	Heavy	3.49	0.555

Gas Wells

Well Area (Abbreviation)	Qualifying Production Level	
	cu.ft./day	M ³ /day
Weyburn (WE)	19,710	558.10
Swift Current (SC)	15,023	425.40
Kindersley (KD)	17,026	482.12
North Battleford - South (NB-S)	19,710	558.10
North Battleford - North (NB-N)	19,710	558.10

Calculation Procedure

Resource Production Equipment at an Oil or Gas Well Site

Description	Document No.	Page No.
Standard Unit Resource Production Equipment [a), b), c)]		
a) Determine Well Characteristics		
a ₁ . Well Area	4.1.3	1
a ₂ . Well Type	4.1.3	1
a ₃ . Crude Type	4.1.3	1
a ₄ . Horizontal Completion	4.1.3	2
a ₅ . Depth	4.1.3	2
a ₆ . Rated Volume	4.1.3	2
a ₇ . Facility Type	4.1.3	2
a ₈ . Days Operated	4.1.3	2
b) Determine Substitute Well Features	4.1.3	3-18
c) Base Rate = (c ₁ + c ₂ + c ₃ ... + c ₉)		
c ₁ . Pumping Equipment Rate	4.1.5	1-6
c ₂ . Well head Assembly Rate	4.1.4	1
c ₃ . Tubing and Rods Rate	4.1.7	1
c ₄ . Chemical Equipment Rate	4.1.18	1
c ₅ . Water Handling Equipment Rate		
c ₅ = (c _{5,1} + c _{5,2})		
c _{5,1} Separator Rate	4.1.8	1-5
c _{5,2} Scraper Traps Rate	4.1.27	1
c ₆ . Metering Equipment Rate	4.1.15	1-4
c ₇ . Control Valves Rate	4.1.16	1-3
c ₈ . Manifold Rate	4.1.26	1
c ₉ . Flow Line Rectifier Rate	4.1.20	1
d) Unit-in-Place Resource Production Equipment	4.1.1	2-3
e) Trended Original Cost Resource Production Equipment	4.1.1	2-3
f) Replacement Cost New = (c + d + e)		
g) RCN less Physical Deterioration and Downtime Allowance = f x (1 - (g ₁ + g ₂))		
g ₁ . Physical Deterioration	4.1.1	4
g ₂ . Downtime Allowance	4.1.1	4
h) Production Adjustment Factor	4.1.1	3-5
i) Assessed Value = (g x h)		

The calculation procedure for oil and gas well buildings on an oil or gas well site is found on Document 3.1.3, Page 1.

Description

The comparative cost factors are used to determine the replacement cost of oil and gas well resource production equipment valued by the trended original cost method.

Application

The trended original cost method shall be used when the individual components of resource production equipment cannot be determined or estimated.

The trended original cost method shall not be used to determine the replacement cost of resource production and equipment located at an oil or gas well site, or to determine the replacement cost of resource production equipment that can be separately identified and rated.

Comparative Cost Factor

The comparative cost factor shall be used to calculate the replacement cost new of resource production equipment as of January 1, 2015.

Factors

Year	Comparative Cost Factor
1940 and older	
1941	
1942	
1943	
1944	
1945	
1946	
1947	
1948	
1949	
1950	
1951	
1952	
1953	
1954	
1955	
1956	
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1970	
1971	

Portions of this section are not available for viewing due to licensing with Marshall and Swift. Therefore the factors etc. have been intentionally left blank.

This information is available for purchase by contacting:

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Web Site: <http://www.sama.sk.ca>

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Comparative Cost Factor

Year	Comparative Cost Factor
1972	
1973	
1974	
1975	
1976	
1977	
1978	
1979	
1980	
1981	
1982	
1983	
1984	
1985	
1986	
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2006	
2007	
2008	
2009	
2010	
2011	
2012	
2013	
2014 and newer	

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Well Characteristics

This section describes the formulas, rules and procedures for determining the classification of resource production equipment located at an oil or gas well site. Oil and gas well resource production equipment shall be classified in accordance with the following well characteristics:

Well Area	Depth
Well Type	Rated Volume
Crude Type	Facility Type
Horizontal Completion	Days Operated

Well Area

The well areas shall be:

Well Area (Abbreviation)	Description
Weyburn (WE)	All municipalities east of the third meridian, from R.M. 1 to R.M. 371 inclusive, except R.M. 282.
Swift Current (SC)	All municipalities west of the third meridian, from R.M. 43 to R.M. 261 inclusive.
Kindersley (KD)	All municipalities west of the third meridian, from R.M. 282 to R.M. 382 inclusive, including R.M. 282 and R.M. 372.
North Battleford - South (NB-S)	All municipalities from R.M. 394 to R.M. 555 inclusive.
North Battleford - North (NB-N)	All municipalities from R.M. 561 to R.M. 622 inclusive and the Northern Administrative District.

Well Type

The well types shall be:

Oil	Gas Injection
Oil (New)	Continuous Steam Injection
Gas	Cyclic Steam Injection
Gas (New)	Water Source
Air Injection	Water Source (New)
Water Injection	

Oil (New) and Gas (New) wells are those wells located on a new well site that was drilled in the 12 month period ending July 1 of the year immediately preceding the year to which the assessment roll relates.

Crude Type

The crude types shall be:

- Light
- Medium
- Heavy

Horizontal Completion:

The horizontal completion types shall be:

- Vertical
- Horizontal

Depth

The depth of an oil or gas well shall be determined by measuring the distance from the kelly bushing to the average depth of the perforations in the well casing, or in the case of a horizontal well, the distance from the kelly bushing to the kick off depth.

Rated Volume

The volume for an oil well shall be determined based on the combined volume of oil and water produced.

The volume for a water source well shall be determined based on the volume of water produced.

The period July 1 to June 30 of the year immediately preceding the year to which the assessment roll relates, shall be used to determine the volume and days operated.

The rated volume shall be determined by application of the following formula:

$$RV = \text{volume} \div \text{days operated}$$

- where: RV = rated volume
 volume = number of barrels of oil and/or water produced by the well
 days operated = number of days the well was operated

Facility Type

The facility types shall be:

Type	Description
Tanks	Used to store oil on site until it is transferred to a battery.
Flow Lines	Used to transfer oil directly to a battery or gas directly to a gas plant, satellite or compressor station.

Days Operated

The number of days that the well was operated during the period July 1 to June 30 of the year immediately preceding the year to which the assessment roll relates.

Shut-In Well Site Reporting Period

The shut-in well site status shall be determined from the 12 month period ending September 1 of the year immediately preceding the year to which the assessment roll relates.

Pumping Units

All oil well pumping units shall be conventional or hydrabeam.

Water Handling Equipment

Type	Description	Rate (\$)
1	<ul style="list-style-type: none"> 20% of Metering Cabinet 10% - 125 - 260psi 12"x5' vertical two phase Separator 60% - 2" receiving and launching trap without bypass 70% - Test Leads 	11,600
2	<ul style="list-style-type: none"> 125 - 260psi 24"x10' vertical two phase separator 3" receiving and launching trap with bypass 	54,150

Metering Equipment

Type	Description	Rate (\$)
1	<ul style="list-style-type: none"> One 300psi gas, dry flow recorder chart 100" with 2 pens 50% of one 3" 300psi senior quick change 50% of one 3" 300psi simplex 	12,380

Water Handling Buildings

Type	Description	Rate (\$)
1	<ul style="list-style-type: none"> 10% - 8' height, 64 sq.ft. metal shed with lining and insulation, floor and heat 20% of 50% 40 barrel open top plastic pop tank 20% of 50% 120 barrel open top plastic pop tank 	1,570
2	<ul style="list-style-type: none"> 8' height, 64 sq.ft. metal shed with lining and insulation, floor and heat 300 barrel lap welded steel stock tank with open top 	42,800

Chemical Equipment

Type	Description	Rate (\$)
1	<ul style="list-style-type: none"> Alcohol drip (9 imp. gal. tank) 	1,600

Substitute Well Features: Weyburn Well Area - Light Crude Oil Wells

The resource production equipment required to operate a substitute oil well that performs the same function as the oil well being valued shall be determined in accordance with the following specifications:

Pumping Equipment

1. Vertical Wells
 - New wells ... 160 pumping unit
 - All other vertical well pumping units:

Rated Volume (barrels/day)	Depth (ft.)			
	<3000	3000-4799	4800-5700	>5700
< 3	40	114	114	228
3 - 9.9	57	114	114	228
10 - 74.99	57	160	160	320
75 - 119.99	80	160	228	320
120 - 199.99	PC-120	228	320	456
≥ 200	PC-120	320	456	640
Rated volume = oil per day + (water per day ÷ 2)				

2. Horizontal Wells
 - New wells ... 456 pumping unit
 - All other horizontal well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 120	160
120 - 199.99	228
200 - 299.99	456
300 - 449.99	456
450 - 599.99	640
≥ 600	912
Rated volume = oil per day + (water per day ÷ 2)	

3. Prime Mover ... electric motor.

Wellhead Assembly

Vertical ... threaded 2000 lbs.
 Horizontal ... flanged 2000 lbs.
 Dual wellhead for multizone completion.

Tubing and Rods

Vertical ... 2 7/8" tubing plain steel; 3/4" rod
 Horizontal ... 2 7/8" tubing plain steel; 3/4" rod
 Length ... depth of well for first tubing string
 ... depth of well minus 200 ft. for each additional tubing string

Well Accessories

Cathodic protection rectifier.

Building

n/a

Substitute Well Features: Weyburn Well Area- Medium Crude Oil Wells

The resource production equipment required to operate a substitute oil well that performs the same function as the oil well being valued shall be determined in accordance with the following specifications:

Pumping Equipment

1. Vertical wells
 - New wells ... 160 Pumping unit
 - All other vertical well pumping units:

Rated Volume (barrels/day)	Depth (ft.)			
	< 3000	3000-4799	4800-5700	> 5700
< 3	40	114	114	228
3 - 9.9	57	114	114	228
10 - 74.99	57	160	160	320
75 - 119.99	80	160	228	320
120 - 199.99	PC-120	228	320	456
≥ 200	PC-120	320	456	640
Rated volume = oil per day + (water per day ÷ 2)				

2. Horizontal Wells
 - New wells... 640 pumping unit
 - All other horizontal well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 120	160
120 - 199.99	228
200 - 299.99	456
300 - 449.99	456
450 - 599.99	640
≥ 600	912
Rated volume = oil per day + (water per day ÷ 2)	

3. Prime Mover ... electric motor.

Wellhead Assembly

Vertical ... threaded 2000 lbs.
 Horizontal ... flanged 2000 lbs.
 Dual wellhead for multizone completion.

Tubing and Rods

Vertical ... 2 7/8" tubing plain steel; 3/4" rod
 Horizontal ... 2 7/8" tubing plain steel; 3/4" rod
 Length ... depth of well for first tubing string
 ... depth of well minus 200 ft. for each additional tubing string

Well Accessories

Cathodic protection rectifier.

Building

n/a

Substitute Well Features: Swift Current Well Area - Light Crude Oil Wells

The resource production equipment required to operate a substitute oil well that performs the same function as the oil well being valued shall be determined in accordance with the following specifications.

Pumping Equipment

1. Vertical wells
 - New wells ... 40 pumping unit
 - All other vertical well pumping units:

Rated Volume (barrels/day)	Depth (ft.)		
	< 2000	2000-4500	> 4500
< 1.7	25	40	40
≥ 1.7	25	40	40
Rated volume = oil per day + (water per day ÷ 0.67)			

2. Horizontal Wells
 - New wells ... 456 pumping unit
 - All other horizontal well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 120	160
120 - 199.99	228
200 - 299.99	456
300 - 449.99	456
450 - 599.99	640
≥ 600	912
Rated volume = oil per day + (water per day ÷ 2)	

3. Prime Mover... electric.

Wellhead Assembly

Vertical... threaded 2000 lbs.
 Horizontal... flanged 2000 lbs.
 Dual wellhead for multizone completion.

Tubing and Rods

Vertical ... 2⁷/₈" tubing plain steel; 5/8" rod
 Horizontal ... 2⁷/₈" tubing plain steel; 3/4" rod
 Length ... depth of well for first tubing string
 ... depth of well minus 200 ft. for each additional tubing string

Building

n/a

Substitute Well Features: Swift Current Well Area - Medium Crude Oil Wells

The resource production equipment required to operate a substitute oil well that performs the same function as the oil well being valued shall be determined in accordance with the following specifications:

Pumping Equipment

1. Vertical Wells
 - New wells ... 114 pumping unit
 - All other vertical well pumping units:

Rated Volume (barrels/day)	Depth (ft.)		
	< 2000	2000-4500	> 4500
< 7	40	114	114
7 - 190	57	114	114
> 190	228	228	228
Rated volume = oil per day + (water per day ÷ 1.5)			

2. Horizontal Wells
 - New wells ... 640 pumping unit
 - All other horizontal well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 120	160
120 - 199.99	228
200 - 299.99	456
300 - 449.99	456
450 - 599.99	640
≥ 600	912
Rated volume = oil per day + (water per day ÷ 2)	

3. Mover ... electric motor.

Wellhead Assembly

Vertical ... threaded 2000 lbs.
 Horizontal ... flanged 2000 lbs.
 Dual wellhead for multizone completion.

Tubing and Rods

Vertical ... 2 7/8" tubing plain steel; 5/8" rod
 Horizontal ... 2 7/8" tubing plain steel; 3/4" rod
 Length ... depth of well for first tubing string
 ... depth of well minus 200 ft. for each additional tubing string

Building

n/a

Substitute Well Features: Swift Current Well Area - Heavy Crude Oil Wells

The resource production equipment required to operate a substitute oil well that performs the same function as the oil well being valued shall be determined in accordance with the following specifications:

Pumping Equipment

1. Vertical wells
 - New wells ... 160 pumping unit
 - All other vertical well pumping units ... 160 pumping unit
 - Related Volume = oil per day

2. Horizontal Wells
 - New wells ... PC-54 pumping unit
 - All other horizontal well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 180	PC-54
180 - 499	PC-64
> 499	PC-80
Rated volume = oil per day + (water per day ÷ 7)	

3. Prime Mover ... electric motor.

Facility Type	Prime Mover
Tank	Gas Motor
Flow Line	Electric Motor

Wellhead Assembly

Vertical ... flanged 2000 lbs.

Horizontal ... flanged 2000 lbs.

Dual wellhead for multizone completion.

Tubing and Rods

Vertical ... 3 ½" tubing plain steel; 1" rod

Horizontal ... 3½" tubing plain steel; 1" rod

Length ... depth of well for first tubing string

... depth of well minus 200 ft. for each additional tubing string

Building

Facility Type	Building	Rate (\$/unit)
Tank	64 sq.ft. pump shack	7,410
Flow Line	n/a	

Substitute Well Features: Kindersley Well Area - Light Crude Oil

The resource production equipment required to operate a substitute oil well that performs the same function as the oil well being valued shall be determined in accordance with the following specifications:

Pumping Equipment

1. Vertical Wells
 - New wells ... 40 pumping unit
 - All other vertical pumping well units:

Rated Volume (barrels/day)	Depth (ft.)		
	< 2000	2000-4500	> 4500
< 1.7	25	40	40
≥ 1.7	25	40	80
Rated volume = oil per day + (water per day ÷ 0.67)			

2. Horizontal Wells
 - New wells ... 456 pumping unit
 - All other horizontal well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 120	160
120 - 199.99	228
200 - 299.99	456
300 - 449.99	456
450 - 599.99	640
≥ 600	912
Rated volume = oil per day + (water per day ÷ 2)	

3. Prime Mover... electric motor.

Wellhead Assembly

Vertical ... threaded 2000 lbs.
 Horizontal ... flanged 2000 lbs.
 Dual wellhead for multizone completion.

Tubing and Rods

Vertical ... 2³/₈" tubing plain steel; 5/8" rod
 Horizontal ... 2⁷/₈" tubing plain steel; 3/4" rod
 Length ... depth of well for first tubing string
 ... depth of well minus 200 ft. for each additional tubing string

Building

n/a

Substitute Well Features: Kindersley Well Area- Heavy Crude Oil Wells

The resource production equipment required to operate a substitute oil well that performs the same function as the oil well being valued shall be determined in accordance with the following specifications:

Pumping Equipment

1. Vertical Wells
 - New wells ... 160 pumping unit
 - All other vertical well pumping units ... 160 pumping unit
 - Rated Volume = oil per day

2. Horizontal Wells
 - New wells ... PC-54 pumping unit
 - All other horizontal well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 180	PC-54
180 - 499	PC-64
> 499	PC-80
Rated volume = oil per day + (water per day ÷ 7)	

3. Prime Mover ... electric motor.

Facility Type	Prime Mover
Tank	Gas motor
Flow Line	Electric motor

Wellhead Assembly

Vertical ... flanged 2000 lbs.

Horizontal ... flanged 2000 lbs.

Dual wellhead for multizone completion.

Tubing and Rods

Vertical ... 2 7/8" tubing plain steel; 7/8" rod

Horizontal ... 3 1/2" tubing plain steel; 1" rod

Length ... depth of well for first tubing string

... depth of well minus 200 ft. for each additional tubing string

Building

Facility Type	Building	Rate (\$/unit)
Tank	64 sq.ft. pump shack	7,410
Flow Line	n/a	

Substitute Well Features: North Battleford (South) Well Area - Heavy Crude Oil Wells

The resource production equipment required to operate a substitute oil well that performs the same function as the oil well being valued shall be determined in accordance with the following specifications:

Pumping Equipment

1. Vertical Wells
 - New wells ... PC-15 pumping unit
 - All other vertical well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 30	PC-10
30 - 79.99	PC-15
80 - 119.99	PC-28
120 - 179.99	PC-54
≥ 180	PC-64
Rated volume = oil per day + (water per day ÷ 3)	

2. Horizontal Wells
 - New wells ... PC-54 pumping unit
 - All other horizontal well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 180	PC-54
180 - 499	PC-64
> 499	PC-80
Rated volume = oil per day + (water per day ÷ 7)	

3. Prime Mover... electric motor.

Facility Type	Prime Mover
Tank	Gas motor
Flow Line	Electric motor

Wellhead Assembly

Vertical ... flanged 2000 lbs.

Horizontal ... flanged 2000 lbs.

Dual wellhead for multizone completion.

Tubing and Rods

Vertical ... 3 ½" tubing plain steel; 1" rod

Horizontal ... 3 ½" tubing plain steel; 1" rod

Length ... depth of well for first tubing string

... depth of well minus 200 ft. for each additional tubing string

Building

Facility Type	Building	Rate (\$/unit)
Tank	64 sq.ft. pump shack	7,410
Flow Line	n/a	

Substitute Well Feature: North Battleford (North) Well Area - Heavy Crude Oil Wells

The resource production equipment required to operate a substitute oil well that performs the same function as the oil well being valued shall be determined in accordance with the following specifications:

Pumping Equipment

1. Vertical Wells
 - New wells ... PC-15 pumping unit
 - All other vertical well pumping units:

Rated Volume (barrels/day)	Depth (ft.)		
	<1000	1000-2000	>2000
< 9.0	40	80	PC-15
≥ 9.0	57	PC-15	PC-15
Rated volume = oil per day + (water per day ÷ 3)			

2. Horizontal Wells
 - New wells ... PC-54 pumping unit
 - All other horizontal well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 180	PC-54
180 - 499	PC-64
> 499	PC-80
Rated volume = oil per day + (water per day ÷ 7)	

3. Prime Mover ... electric motor.

Facility Type	Prime Mover
Tank	Gas motor
Flow Line	Electric motor

Wellhead Assembly

Vertical ... flanged 2000 lbs.

Horizontal ... flanged 2000 lbs.

Dual wellhead for multizone completion.

Tubing and Rods

Vertical ... 3 ½" tubing plain steel; 1" rod

Horizontal ... 3 ½" tubing plain steel; 1" rod

Length ... depth of well for first tubing string

... depth of well minus 200 ft. for each additional tubing string

Building

Facility Type	Building	Rate (\$/unit)
Tank	64 sq.ft. pump shack	7,410
Flow Line	n/a	

Substitute Well Features: Swift Current Well Area - Gas Wells

The resource production equipment required to operate a substitute gas well that performs the same function as the gas well being valued shall be determined in accordance with the following specifications:

Description	Specifications	
Tubing	<ul style="list-style-type: none"> 1" diameter, plastic Length: depth of well for first tubing string, depth of well minus 200 ft. for each additional tubing string 	
Wellhead assembly	<ul style="list-style-type: none"> Threaded, 1000 pound pressure. Dual wellhead for multi-zone completions. 	
Chemical Equipment	60% of Type 1	
Water handling buildings	100% of Type 1	
Water handling equipment	100% of Type 1	
Metering equipment	10% of Type 1	
Rated Volume = gas per day		
Total Rate (\$) (Except tubing and flow line)	Threaded, 1000 pound pressure	29,010
	Dual wellhead	30,800

Substitute Well Features: Kindersley Well Area - Gas Wells

The resource production equipment required to operate a substitute gas well that performs the same function as the gas well being valued shall be determined in accordance with the following specifications:

Description	Description	
Tubing	<ul style="list-style-type: none"> 2 3/8" diameter, plain steel Length: depth of well for first tubing string, depth of well minus 200 ft. for each additional tubing string 	
Wellhead assembly	<ul style="list-style-type: none"> Threaded, 2000 pound pressure Dual wellhead for multi-zone completions 	
Chemical equipment	None	
Water handling buildings and equipment	65% of Type 2	
Metering equipment	80% of Type 1	
Rated volume = gas per day		
Total Rate (\$) (Except tubing and flow line)	Threaded, 2000 pound pressure	92,530
	Dual wellhead	94,790

Substitute Well Features: North Battleford (South) Well Area - Gas Wells

The resource production equipment required to operate a substitute gas well that performs the same function as the gas well being valued shall be determined in accordance with the following specifications:

Description	Specifications	
Tubing	<ul style="list-style-type: none"> • 2³/₈" diameter, plain steel • Length: depth of well for first tubing string, depth of well minus 200 ft. for each additional tubing string 	
Wellhead assembly	<ul style="list-style-type: none"> • Threaded, 2000 pound pressure • Dual wellhead for multi-zone completions 	
Chemical equipment	Alcohol drip	
Water handling buildings and equipment	55% of Type 2	
Metering equipment	80% of Type 1	
Rated volume = gas per day		
Total Rate (\$) (Except tubing and flow line)	Threaded, 2000 pound pressure	84,440
	Dual wellhead	86,700

Substitute Well Features: North Battleford (North) Well Area - Gas Wells

The resource production equipment required to operate a substitute gas well that performs the same function as the gas well being valued shall be determined in accordance with the following specifications:

Description	Specifications	
Tubing	<ul style="list-style-type: none"> • 2³/₈" diameter, plain steel • Length: depth of well for first tubing string, depth of well minus 200 ft. for each additional tubing string 	
Wellhead assembly	<ul style="list-style-type: none"> • Flanged, 2000 pound pressure • Dual wellhead for multi-zone completions 	
Chemical equipment	Alcohol drip	
Water handling buildings and equipment	48% of Type 2	
Metering equipment	80% of Type 1	
Rated volume = gas per day		
Total Rate (\$) (Except tubing and flow line)	Flanged, 2000 pound pressure	79,450
	Dual wellhead	86,740

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Well Classification

Substitute Well Features: Air, Water and Gas Injection Wells

The resource production equipment required to operate a substitute air, water or gas injection well that performs the same function as the injection well being valued shall be determined in accordance with the following specifications:

Description	Specifications	
Tubing	<ul style="list-style-type: none"> • 2⁷/₈" tubing, plain steel • Length: depth of well for first tubing string, depth of well minus 200 ft. for each additional tubing string 	
Wellhead assembly	Threaded, 2000 pound pressure	
Metering equipment	1 - 2" floco meter	
Control valves	1 - 3" choke 1 - pressure control switch	
Well accessories	All wells east of the third meridian: Cathodic protection rectifier	
Building	20 sq.ft. fibreglass wellhead shelter	
Total Rate (\$) (Except tubing and flow line)	All wells east of the third meridian	54,640
	All wells west of the third meridian	40,860

Substitute Well Features: Continuous Steam Injection Wells

The resource production equipment required to operate a substitute continuous steam injection well that performs the same function as the injection well being valued shall be determined in accordance with the following specifications:

Description	Specifications	
Tubing	<ul style="list-style-type: none"> • 3¹/₂" tubing, lined • Length: depth of well for first tubing string, depth of well minus 200 ft. for each additional tubing string 	
Wellhead assembly	Flanged, 3000 pound pressure	
Metering equipment	1 - 3" turbine meter and totalizer	
Control valves	1 - 3" choke	
Total Rate (\$) (Except tubing)	63,400	

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Well Classification

Substitute Well Features: Cyclic Steam Injection Wells

The resource production equipment required to operate a substitute cyclic steam injection well that performs the same function as the injection well being valued shall be determined in accordance with the following specifications:

Description	Specifications
Tubing and rods	<ul style="list-style-type: none"> • 3½" tubing, lined; 1" rods • Length: depth of well for first tubing string, depth of well minus 200 ft. for each additional tubing string
Pumping equipment	67% of a conventional 160 pumping unit with electric motor
Wellhead assembly	Flanged, 3000 pound pressure
Metering equipment	3 - 3" turbine meters and totalizers
Control valves	1 - 3" choke
Total Rate (\$) (Except tubing and rods and flow line)	169,200

Substitute Well Features: Water Source Wells

The resource production equipment required to operate a substitute water source well that performs the same function as the injection well being valued shall be determined in accordance with the following specifications:

Tubeing and Rods

1. New Wells
 - 2⁷/₈" tubing, plain steel; 7⁸/₈" rod
 - Length: depth of well for first tubing string, depth of well minus 200 ft. for each additional tubing string
2. Rated volume <150,000 imp. gal./day
 - 2⁷/₈" tubing, plain steel; 7⁸/₈" rod
 - Length: depth of well for first tubing string, depth of well minus 200 ft. for each additional tubing string
3. Rated volume >150,000 imp. gal./day
 - 2⁷/₈" tubing plain steel
 - Length: depth of well for first tubing string, depth of well minus 200 ft. for each additional tubing string for depth of well

Description	Specifications		
	New Wells and Wells Rated Volume <150,000 imp. gal./day	Rated Volume ≥150,000 imp. gal./day	
Pumping equipment	<ul style="list-style-type: none"> • PC-15 pumping unit • 50% of 1 - variable frequency drive 	<ul style="list-style-type: none"> • Submersible pumping unit 400 series 100 stage • Submersible pump motor 456 series 80 hp • Switchboard 100 hp • Transformer 75 kva • Size 4 submersible pump cable x well depth x 1.05 • 50% of 1 - variable frequency drive 	
Wellhead assembly	Threaded, 2000 pound pressure	Threaded, 2000 pound pressure	
Metering equipment	None	None	
None	<ul style="list-style-type: none"> • 1 - 3" choke • 1 - pressure control switch 	<ul style="list-style-type: none"> • 1 - 3" choke • 1 - pressure control switch 	
Manifold	None	None	
Well Accessories: Cathodic Protection	All wells east of the third meridian	All wells east of the third meridian	
Building	None	20 sq.ft. fibreglass wellhead shelter with heat	
Total Rate (\$) (Except tubing, rod and cable and flow line)	All wells east of the third meridian	138,620	212,730
	All wells west of the third meridian	124,840	198,950

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Well Classification

Substitute Well Features: Heavy Crude Steam Assisted Gravity Drainage (SAGD) Oil Wells (entire Province)

The resource production equipment required to operate a substitute oil well that performs the same function as the oil well being valued shall be determined in accordance with the following specifications:

Pumping Equipment

1. Vertical SAGD Wells
 - New wells ... PC-15 pumping unit
 - All other vertical well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 30	PC-10
30 - 79.99	PC-15
80 - 119.99	PC-28
120 - 179.99	PC-54
≥ 180	PC-64
Rated volume = oil per day + (water per day ÷ 3)	

2. Horizontal SAGD Wells
 - New wells ... 456 pumping unit
 - All other horizontal well pumping units:

Rated Volume (barrels/day)	All Depths (ft.)
< 180	PC-54
180 - 499	PC-64
500 - 599	320
600 - 799	456
> 800	640
Rated volume = oil per day + (water per day ÷ 7)	

3. Prime Mover... electric motor.

Facility Type	Prime Mover
Tank	Gas motor
Flow Line	Electric motor

Wellhead Assembly

Vertical ... flanged 3000 lbs.
 Horizontal ... flanged 3000 lbs.
 Dual wellhead for multizone completion.

Tubing and Rods

Vertical ... 3 ½" tubing plain steel; 1" rod
 Horizontal ... 4 ½" tubing plain steel; 1" rod
 Length ... depth of well for first tubing string
 ... depth of well minus 200 ft. for each additional tubing string

Building

Facility Type	Building	Rate (\$)
Tank	64 sq.ft. pump shack	7,410
Flow Line	n/a	

Description

A typical well head assembly is made up of a casing head, tubing head and Christmas tree. The well head may be screwed onto the casing or it may be an assembly that is bolted together. These are called the threaded or flanged well heads respectively.

Rates

The rates for well head assembly are dollars per unit.

Type	Size			
	Series 400 W.P. ≤ 1000 psi	Series 600 W.P. 2000 psi	Series 900 W.P. 3000 psi	Series 1500 W.P. 5000 psi
Pumping Oil				
Single Flanged	14,780	17,120	17,810	29,070
Single Threaded	13,010	14,870	15,440	24,780
Dual Flanged	26,030	30,190	31,970	32,340
Dual Threaded	14,720	23,240	27,710	27,570
Flowing Oil & Gas				
Single Flanged	17,050	21,410	27,890	27,930
Single Threaded	13,640	19,600	25,240	25,470
Dual Flanged	23,660	28,700	33,820	33,840
Dual Threaded	15,430	21,870	24,560	24,620
Injection - Air, Gas or Water				
Flanged	17,120	21,410	28,390	28,400
Threaded	13,530	19,600	25,620	25,470
Dual Threaded	15,430	21,870	24,560	24,620
Injection - Steam				
Flanged	37,360	37,370	37,370	37,370
Steam Injection & Pumping				
Flanged	53,380	53,460	53,410	53,300
Tubingless (Casing Head)				
Flanged	13,520	14,920	14,780	15,060
Threaded	9,010	9,580	9,960	10,200

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Well Head Assembly

Conventional and Hydrabeam

This is the typical horsehead or grasshopper counterbalance unit. The rods are raised by carrier bar at the horsehead end of the waling beam. On the downstroke, the weight of the rod assembly is counterbalanced by large weights. The picot point of the assembly is in the middle of the walking beam.

Rates

The rates for conventional and hydrabeam pumping units are in dollars per unit.

Gear Box Torque Rating (x 1000) (lb.)	Without Prime Mover (2)	Electric Prime Mover (1)		Gas Prime Mover (1)	
		Rate	Range (hp)	Rate	Range (hp)
25	35,750	52,230	5	85,990	9 - 12
40	39,660	55,460	6	88,620	9 - 12
57	47,910	65,630	5 - 10	101,750	9 - 12
80	51,230	70,100	5 - 10	112,130	9 - 19
114	85,930	106,230	7.5 - 15	152,510	13 - 19
160	93,250	116,390	15 - 25	167,840	20 - 29
228	110,480	136,450	20 - 40	200,900	20 - 39
320	130,310	162,890	30 - 60	244,810	30 - 59
456	164,540	200,180	40 - 75	295,100	40 - 99
640	192,170	228,990	50 - 75	357,420	60 - 99
912	224,030	264,640	60 - 100	423,760	60 - 149
1280	366,150	407,710	70 - 125	568,950	100 - 199

Rates include:

- prime mover where noted
- belt
- rod rotator
- concrete base
- bottom hole pump
- frame extension and side rails
- polish rod
- beam chemical injector at 50%
- counter weights
- pressure switch
- stuffing box
- installation

NOTE: 1) Costs include:

- per electrified site - \$9,600
- per gas operated site - propane vessel and/or scrubber with self-feed gas at \$11,760

2) Cost without Prime Mover:

- electrical and propane vessel costs are not included and must be added if these rates are used.
- apply these rates to non-typical installations

3) Strap jacks and slant jacks:

- increase conventional pumping unit cost by 20%

Unitorque and Air- Balanced Beam

The entire walking beam for unitorque and air-balanced beam pumping units moves up and down with the pivot point at the end of the beam. Unitorque pumping units have a counterweight system similar to conventional pumping units. The air-balanced beam pumping units have no counterweights. The downstroke is cushioned by a very large air-supplied “shock absorber”. There will be a small compressor mounted on the pumping unit to feed the unit.

Rates

The rates for unitorque and air-balanced beam pumping units are dollars per unit.

Gear Box Torque Rating (x 1000) (lb.)	Without Prime Mover (2)	Electric Prime Mover (1)		Gas Prime Mover (1)	
		Rate	Range (hp)	Rate	Range (hp)
114	93,700	115,100	7.5 - 15	154,400	13 - 19
160	114,420	138,450	15 - 25	190,730	20 - 29
228	131,550	160,640	20 - 40	223,690	20 - 39
320	158,080	191,690	30 - 60	274,870	30 - 59
456	185,750	222,510	40 - 75	318,870	40 - 99
640	206,600	244,460	50 - 75	374,640	60 - 99
912	253,810	296,300	60 - 100	457,480	60 - 149
Rates include: <ul style="list-style-type: none"> - prime mover where noted - belt - rod rotator - concrete base - bottom hole pump - frame extension and side rails - polish rod - beam chemical injector at 50% - counter weights - pressure switch - stuffing box - installation 					
NOTE: 1) Costs include: <ul style="list-style-type: none"> - per electrified site - \$9,570 - per gas operated site - propane vessel and/or scrubber with self-feed gas at \$11,720 2) Cost without Prime Mover: <ul style="list-style-type: none"> - electrical and propane vessel costs are not included and must be added if these rates are used - apply these rates to non-typical installations 					

Submersible Pumping Equipment

Submersible pumps have the major working system suspended at the bottom of the well bore inside the tubing. This system is identified on the surface by heavy electric cable emerging from the top of the wellhead.

Motor Rates

The motor rates for submersible pumping equipment are in dollars per unit.

Rating (hp)	Rate		
	375 4½"	456 5½"	540 6⅝"
7.5	37,910	34,810	
10	44,630	37,270	
15	50,200	41,580	
19.5	53,850	45,850	
22.5	56,910	48,920	
25	64,210	50,790	
30		55,030	43,500
40		63,500	47,030
50		72,190	53,150
60		75,720	60,430
70		83,700	65,370
80		91,710	70,900
90		99,700	75,840
100		107,710	80,070
110		116,170	85,600
120		124,160	91,010
130			96,530
150			106,400
160			111,940
180			122,280
200			133,220
225			144,860

NOTE: 1) Series number refers to outside diameter size of motor or pump, eg. series 456 is 4.56 inches O.D.
 2) Motors and pumps can be stacked, eg. in 4½" casing, to achieve 100 hp, 4 - 25 hp motors are stacked.
 3) Generally, the pump is the value of the motor. This can be used as a guide if proper size information is not available.

Pump Rates

The pump rates for submersible pumping equipment are in dollars per unit.

Stages	Length (ft.)	Rate			
		338 400-1500 4½"	400 280-4000 5½"	540 2000-7000 6⅝"	540 10000 6⅝"
≤ 20	2.1	12,730	12,600	12,520	12,470
21 - 40	3.5	15,890	12,830	16,330	22,700
41 - 60	4.9	19,150	15,070	19,000	26,570
61 - 80	6.3	22,360	17,640	21,540	30,460
81 - 100	7.8	25,570	20,040	24,220	34,230
101 - 120	9.1	28,660	22,420	26,790	39,570
121 - 140	10.5	31,870	24,870	29,410	41,990
141 - 160	11.9	35,090	27,180	31,960	45,730
161 - 180	13.3	38,300	29,600	34,630	49,520
181 - 200	14.7	41,520	32,080	37,180	53,380
201 - 220	16.1		34,450	39,820	57,330
221 - 240	17.5		36,900	42,470	61,170
241 - 260	18.9			47,590	65,030
261 - 280	20.4			50,350	68,940
> 280	21.8			53,230	72,830

Switchboards

The switchboard rates for submersible pumping equipment are in dollars per unit.

Rating (hp)	Rate
25	13,600
50	15,280
100	17,650
200	26,860
1000	44,650
1500	45,860
2000	47,090

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Pumping Units

Transformers

The transformer rates for submersible pumping equipment are in dollars per unit.

Size (kVA)	Rate
50	11,120
75	11,730
100	15,430
125	16,670
150	20,380
200	29,020
250	31,490

Cable

The cable rates for submersible pumping equipment are in dollars per linear foot.

Size	Power (hp)	Rate
1	> 200	30.33
2	150 - 200	26.51
4	< 150	19.82

Progressive Cavity (PC)

Pump Rates

The pump rates for progressive cavity pumping equipment are in dollars per unit.

Size M ³ /100 rpm	Rate
10	67,740
12	69,390
15	71,600
28	75,160
54	81,150
64	88,080
80	91,010
95	92,900
120	110,440
Rates Include:	
<ul style="list-style-type: none"> - drive system (gas or electric prime mover, hydraulic or electric skid) - bottom hole pump (rotor, stator) - installation 	

Variable Frequency Drive

The rate for a variable frequency drive shall be \$50,020 per unit.

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Pumping Units

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Prime Movers

Description

Prime movers include electric and gas motors used to provide power to pumping units.

Triple-Rated Motors

The triple-rated motor prime mover rates are in dollars per unit.

Size		Controller Size	Rate
(hp)	(kw)		
10 / 7.5 / 5	7.5 / 5.6 / 3.7	1	7,840
15 / 10 / 7.5	11.2 / 7.5 / 5.6	2	10,380
20 / 15 / 10	14.9 / 11.2 / 7.5	2	11,630
25 / 20 / 15	18.6 / 14.9 / 11.2	2	13,390
30 / 22 / 15	22.4 / 18.6 / 11.2	3	14,920
40 / 30 / 20	29.8 / 22.4 / 14.9	3	18,460
50 / 40 / 30	37.3 / 29.8 / 22.4	3	21,160
60 / 50 / 40	44.8 / 37.3 / 29.8	4	24,600
75 / 60 / 50	56 / 44.8 / 37.3	4	26,840
100 / 75 / 60	74.6 / 56 / 44.8	4	30,680
125 / 100 / 75	93.3 / 74.6 / 56	4	32,400
Rates include:			
<ul style="list-style-type: none"> - 3 phase - 1200 RPM - fan-cooled motor - 60 Hz - class F insulation 		<ul style="list-style-type: none"> - controller - 460 volt - totally enclosed - installation 	

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Prime Movers

Single-Rated Motors

The single-rated motor prime mover rates are in dollars per unit.

Size (hp)	Rate
1 - 2	5,780
3 - 5	6,010
7.5 - 10	6,760
15 - 20	9,040
25 - 30	11,800
40	14,030
50	14,880
60	17,780
75	19,820
100	27,020
125	30,950
150	34,850
200	47,290
250	56,590

Rates include:

- 3 phase
- 1200 RPM
- fan-cooled motor
- 60 Hz
- class F insulation
- controller
- 460 volt
- totally enclosed
- installation

Gas Engines

The gas engine prime mover rates are in dollars per unit.

Group #	Size (hp)	Rate
1	9 - 12	36,340
2	13 - 19	45,560
3	20 - 29	61,240
4	30 - 39	76,710
5	40 - 59	100,160
6	60 - 99	115,480
7	100 - 149	183,280
8	150 - 199	188,410

NOTE: Deduct \$3,460 if no electric start in groups #1 to #4.

Rates include:

- twin-disk clutch
- condensing radiator with fan
- pressure lubrication
- combination gas-gasoline carburetor
- adjustable sub-base
- miscellaneous pipe fittings
- power take off
- heavy flywheel
- regulator
- air cleaner
- engine starter
- installation

Description

The bottom hole pump is suspended from the surface by a series of 20 foot steel or fibreglass rods that are threaded together. The most common size for the tubing is 2⁷/₈ inches (plain) in diameter and for the rod it is ⁷/₈ inches in diameter.

Rates

The rates for tubing and rods are dollars per lineal foot.

Tubing

Size (in.)	Steel		Plastic
	Plain	Lined	
≤ 1½	5.54		1.96
2	6.16		
2 ³ / ₈	6.68	7.45	
2 ⁷ / ₈	7.62	13.49	
3½	10.63	14.64	
4	14.25	18.32	
4½	19.19	23.53	

Rods

Size (in.)	Rate
⁵ / ₈	2.66
³ / ₄	3.32
⁷ / ₈	4.18
1	5.03

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Tubing and Rods

Description

A separator is a vertical, spherical or horizontal vessel through which the emulsion is passed to split liquids and gases. Centrifugal action created by baffles inside the unit causes the split to occur.

Vertical Two-Phase Separators

A treater is a vessel that heats the emulsion to finalize the field separation cycle.

The rates for separators are in dollars per unit.

Diameter (in.)	Height (ft.)			
	5	7.5	10	15
125-260 psi Working Pressure				
≤ 16	21,670	22,820	23,940	26,070
24	37,020	38,880	40,990	44,400
30	49,900	50,870	53,410	58,250
36	52,340	62,920	66,050	71,930
42	71,230	74,860	78,660	85,740
48	82,660	86,930	91,280	99,500
54	94,100	98,900	103,890	113,340
60	105,620	110,960	116,560	127,080
500-1000 psi Working Pressure				
≤ 16	25,500	26,840	28,160	30,770
24	42,510	46,200	48,480	52,850
30	59,700	60,810	63,950	69,530
36	71,770	75,330	79,080	86,210
42	85,660	89,920	94,330	102,880
48	111,150	104,430	109,670	119,560
54	113,410	119,020	140,170	136,220
60	127,000	133,480	145,660	152,920
1200-1440 psi Working Pressure				
≤ 16	27,500	28,940	30,400	33,120
24	23,210	50,470	53,060	57,900
30	63,440	66,110	70,040	76,460
36	77,010	80,940	85,030	94,900
42	94,250	99,060	104,000	113,460
48	109,690	115,240	121,010	131,960
54	125,050	131,430	137,970	150,570
60	140,440	147,630	155,070	169,090
Rates include: <ul style="list-style-type: none"> - 1 oil dump valve - 1 liquid level controller - 1 pilot gas supply regulator - 1 gauge glass assembly - 1 safety relief valve - 1 pressure guage 				

Vertical Three-Phase Separators

The rates for vertical three-phase separators are in dollars per unit.

Diameter (in.)	Height (ft.)			
	5	7.5	10	15
125-260 psi Working Pressure				
≤ 16	36,460	41,290	46,090	55,540
20	40,100	46,510	52,760	65,330
24	50,030	52,920	54,080	63,300
30	52,170	60,280	61,810	64,610
36	53,250	61,940	63,120	65,330
42	75,120	82,820	84,560	87,310
500-1000 psi Working Pressure				
≤ 16	44,190	45,320	46,690	48,970
20	50,150	51,490	53,000	55,660
24	51,690	55,300	60,740	70,820
30	58,790	60,750	76,340	105,700
36	60,800	70,360	87,650	122,180
42	81,260	99,190	123,630	172,220
1200-1440 psi Working Pressure				
≤ 16	45,180	47,120	49,190	53,150
20	56,420	59,680	63,090	69,630
24	60,210	62,170	64,350	78,580
30	63,990	67,280	81,350	109,400
36	75,230	84,240	93,380	111,320
42	103,620	116,050	128,750	153,480
Rates include: <ul style="list-style-type: none"> - 2 oil and water dump valves - 1 oil level controller - 1 pilot gas supply regulator - 1 gauge glass assembly - 1 safety relief valve - 1 pressure gauge - 1 water level controller 				

Horizontal Two-Phase Separators

The rates for horizontal two-phase separators are in dollars per unit.

Diameter (in.)	Length (ft.)		
	8	10	15
125-260 lb. Working Pressure			
≤ 16	34,670	35,530	37,280
20	37,450	38,350	40,320
24	42,660	43,640	46,010
30	42,780	46,350	48,840
36	51,800	53,060	55,870
42	56,490	57,830	60,990
48	61,530	62,990	66,300
54	66,450	68,130	71,960
60	71,490	73,290	77,380
500-1000 lb. Working Pressure			
≤ 16	35,750	36,700	38,840
20	37,730	40,700	42,870
24	45,240	46,350	48,840
30	48,520	49,760	52,380
36	57,430	58,700	61,860
42	62,820	64,230	67,720
48	68,910	70,590	74,440
54	75,120	76,930	81,140
60	81,330	83,290	87,770
1200-1440 lb. Working Pressure			
≤ 16	42,940	43,880	45,680
20	53,680	54,730	56,910
24	54,270	55,360	57,800
30	63,180	64,420	67,120
36	81,460	83,080	86,590
42	88,510	90,300	94,130
48	99,040	101,050	105,390
54	109,580	111,810	116,480
60	120,130	122,580	127,760
Rates include:			
- 1 oil dump valve		- 1 gauge glass assembly	
- 1 liquid level controller		- 1 safety relief valve	
- 1 pilot gas supply regulator		- 1 pressure gauge	

Horizontal Three-Phase Separators

The rates for horizontal three-phase separators are in dollars per unit.

Diameter (in.)	Length (ft.)		
	8	10	15
125-260 lb. Working Pressure			
≤ 16	37,600	41,510	50,600
20	42,800	47,080	57,550
24	50,130	55,180	67,400
30	30,280	58,850	71,930
36	60,530	66,600	81,400
42	73,230	80,740	98,770
48	78,550	86,510	105,790
54	86,270	94,860	116,020
60	93,910	103,330	126,370
500-1000 lb. Working Pressure			
≤ 16	37,000	40,730	49,740
20	47,170	51,840	63,430
24	52,020	57,190	69,970
30	57,580	63,250	77,350
36	66,660	73,290	89,670
42	85,690	97,600	119,280
48	93,510	102,760	125,900
54	104,270	114,390	139,940
60	114,580	126,070	154,100
1200-1440 lb. Working Pressure			
≤ 16	48,000	43,810	52,720
20	60,940	66,980	81,870
24	61,120	67,290	82,350
30	71,290	78,430	95,790
36	90,490	99,560	116,980
42	102,740	113,090	143,630
48	113,380	124,730	152,560
54	125,690	138,240	169,100
60	137,990	151,860	185,590
Rates include:			
- 2 oil and water dump valves		- 1 gauge glass assembly	
- 1 oil level controller		- 1 safety relief valve	
- 1 pilot gas supply regulator		- 1 pressure gauge	
- 1 water level controller			

Spherical Separators

The rates for spherical separators are in dollars per unit.

Working Pressure (lb.)	Diameter (in.)	Rate
125	36	30,780
	42	34,370
260	36	34,540
	42	38,490
	48	45,600

Rollo Metering Separators

The rates for rollo metering separators are in dollars per unit.

Rollo Metering - Vertical: 125 lb. working pressure		
Size (in. x ft.)	Rate Without Automatic Sampler	Rate With Automatic Sampler
24 x 6	24,300	26,390
30 x 6	28,280	30,800
36 x 6	32,410	35,370
48 x 6	37,740	41,450
Rates include:		
- separator		
- meter		
- recorder		
- installation		
Pounds (force) per sq.in. x 6.894757 = kpa rating		

Treater Accessories

The rates for treater accessories are in dollars per unit.

Ignition System

Type	Rate
Automatic	19,140
Manual	3,200

Desand System

Length (ft.)	Rate	
	Automatic	Manual
≤ 25	83,950	12,000
23 - 35	108,930	39,610
36 - 45	133,930	66,730
≥ 46	158,960	

Burner

The rate for a burner shall be \$58,490 per unit.

Atmospheric Treater - Coalescer Wash Tank

The rates for atmospheric treaters – coalescer wash tanks are in dollars per unit.

Size (barrels)	Rate
≤ 400	112,470
750	149,940
900	162,450
1,000	168,710
1,500	218,650
2,000	231,170
2,500	268,710
3,000	293,740
3,500	312,400
4,000	324,910
≥ 5,000	343,800
Rates include: <ul style="list-style-type: none"> - burn and heating equipment including 2 firetubes - lining - gas regulators and scrubbers - fittings - cone bottoms - stacks - flame arrestors - all piping - valves and meters - baffles and all necessary materials - installation 	

Horizontal Mechanical Coalescer Treater

The rates for horizontal mechanical coalescer treaters are in dollars per unit.

Diameter (in.)	Length (ft.)			
	4	6	8	10
15-50 lb. Working Pressure				
15.5	205,170	226,240	283,930	283,930
20	243,710	243,710	322,960	323,080
22	251,140	313,410	331,100	350,730
25	262,860	262,860	340,670	418,960
30	281,780	281,780	381,130	500,720
75 lb. Working Pressure				
20		250,060	330,860	474,370
22		339,480	339,480	482,760
25		349,540	349,540	495,450
30		392,380	392,140	513,960
44		448,890	448,890	565,240
45		479,530	479,530	581,520
50		509,690	508,650	598,990
Rates include: - single firetube - fuel gas system c/w burning equipment - ladder and crownsnest - thermometer - water and oil outlet valve - relief valve - flame arrestor and stack anodes - insulation - water siphon - pressure gauge and gauge glass - gas back pressure valve - water meter - installation - scrubber				

Vertical Treater

The rates for vertical treaters are in dollars per unit.

Diameter (in.)	Length (ft.)				
	3	4	6	8	10
50 lb. Working Pressure					
20	119,380	139,480	149,530	187,570	218,190
24	121,010	142,660	154,790	197,610	230,390
28	122,130	145,940	160,050	206,230	240,920
30	123,120	148,090	162,200	210,820	247,370
75 lb. Working Pressure					
20	118,830	142,110	158,020	203,950	238,770
24	139,480	148,570	166,510	215,550	252,640
28	154,310	154,310	172,740	225,490	264,710
30	157,420	157,420	176,560	230,870	271,070
Rates include:					
<ul style="list-style-type: none"> - single firetube - fuel gas system c/w burning equipment - ladder and crownsnest - thermometer - water and oil outlet valve - relief valve - flame arrestor and stack anodes - insulation - water siphon - pressure gauge and gauge glass - gas back pressure valve - water meter - installation - scrubber 					

Horizontal Electrostatic Coalescer Treater

The rates for horizontal electrostatic coalescer treaters are in dollars per unit.

Diameter (in.)	Length (ft.)		
	6	8	10
50 lb. Working Pressure			
20	328,910	424,520	520,610
25	376,590	493,610	576,070
30	424,520	528,160	631,810
40	520,610	637,140	742,830
50	616,710	740,780	853,180
75 lb. Working Pressure			
20	336,940	435,230	600,170
25	386,810	507,230	625,950
30	435,230	542,030	648,580
40	534,590	622,720	710,850
50	633,000	692,610	752,210
Rates include: <ul style="list-style-type: none"> - single firetube, flame arrestor & stack - gas out scrubber dome - high temperature shutdown - 1 oil and 1 gas outlet valve - instrument air manifold c/w regulators - water meter - pressure gauge and thermometer - gauge glasses - pre-piping to skid edge c/w valves - ladder and transformer platformer - fuel gas manifold c/w burning equipment - low level shutdown - oil and water level controller - 2 water outlet valves - relief valve - scrubber - transformer circuit breaker - skid - anodes - insulation - installation 			

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Separators and Treaters

Description

Dehydrators remove liquid from the gas to prevent corrosion or plugging of the flow.

Glycol Absorber Tower (600# ANSI Rating)

The rates for glycol absorber towers are in dollars per unit.

Size Diameter (in.) x Length (ft.)	Rate		
	Standard Unit	Including 2-Phase Inlet Scrubber	Including 3-Phase Inlet Scrubber
1400 #DWP			
12 x 12	26,950	40,480	47,650
12 x 14	28,010	41,140	48,630
12 x 16	29,050	42,720	50,000
12 x 18	29,980	43,730	50,950
12 x 20	31,030	44,740	51,910
12 x 30	35,640	48,930	57,500
1420 #DWP			
16 x 12	32,660	48,000	57,470
16 x 14	34,280	49,340	58,790
16 x 16	35,620	50,600	60,430
16 x 18	37,230	51,910	61,690
16 x 20	38,490	53,490	63,370
16 x 30	44,610	61,090	71,160
1400 #DWP			
20 x 12	41,810	59,750	69,870
20 x 14	43,730	61,690	71,810
20 x 16	45,720	63,670	73,790
20 x 18	47,650	65,580	76,080
20 x 20	50,000	67,640	78,050
20 x 30	59,450	76,940	87,880
1380 #DWP			
24 x 12	51,910	78,050	90,240
24 x 14	56,470	82,270	94,330
24 x 16	60,720	86,570	98,920
24 x 18	64,990	90,740	102,840
24 x 20	69,200	95,290	107,430
24 x 30	89,720	115,630	127,800

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Dehydrators

Size Diameter (in.) x Length (ft.)	Rate		
	Standard Unit	Including 2-Phase Inlet Scrubber	Including 3-Phase Inlet Scrubber
1400 #DWP			
30 x 12	87,360	129,180	144,800
30 x 14	93,460	135,250	150,870
30 x 16	99,640	141,400	157,340
30 x 18	106,050	147,820	163,470
30 x 20	111,490	154,060	169,260
30 x 30	140,680	183,580	198,630
36 x 12	113,510	164,510	181,160
36 x 14	121,030	172,370	188,960
36 x 16	128,430	179,790	196,420
36 x 18	130,980	187,620	203,930
36 x 20	144,110	195,100	211,540
36 x 30	180,230	231,510	247,770
42 x 20	176,680	228,880	244,300
42 x 30	212,830	264,070	280,390
<p>Rates include:</p> <ul style="list-style-type: none"> - knitted 304 stainless wire mesh mist extractor - glycol gas heat exchanger in upper section - liquid level controller with supply gas regulator - diaphragm operated liquid discharge valve with shut-off ball valve - fuel gas shut-off valve - reflex gauge column assembly with safety cocks - thermometer with thermowell - pressure gauge with isolating valve - ASME safety relief valve 1" threaded - skid and building - gas outlet line to skid edge 			
<p>Integral scrubber includes:</p> <ul style="list-style-type: none"> - liquid level controller with supply gas regulator (2 or 3 phase) - diaphragm operated liquid discharge valve with shut-off ball valve (2 or 3 phase) - gauge column assembly with safety cocks (reflex) - cold weather coil - phase drain valve (Apollo) 			
<p>NOTE: DWP refers to design working pressure</p>			

Standard Glycol Reconcentrator Units

The rates for standard glycol reconcentrator units are in dollars per unit.

Heat Output (BTU/hr.)	Reboiler Size Diameter(in.) x Length (ft.)	Surge Tank Size Diameter(in.) x Length (ft.)	Rate
100,000	18 x 3.5	18 x 3	65,980
155,000	18 x 5.5	18 x 3.5	73,600
235,000	18 x 5.5	18 x 3.5	86,370
375,000	24 x 6.5	24 x 6	122,690
545,000	30 x 6.5	30 x 6	155,810
750,000	30 x 15	30 x 12.5	177,210
1,000,000	50 x 15	30 x 15	211,570
1,250,000	50 x 17.5	30 x 15	260,960
Rates include: <ul style="list-style-type: none"> - glycol pump - flame arrestor - glycol filter - gas firing accessories - thermostats - still column - equipment mounted on structural steel skid - installation Rates do not include: <ul style="list-style-type: none"> - ladders - gas or electric pumps - stand-by pumps - gas sparging or stripping accessories for high concentration glycol 			

Accessories (Lump Sum)

Description	Rate
Skid	
8' x 16'	9,000
9' x 22'	13,760
Ladder	5,790
Gas sparging or stripping accessories	5,970

CaCl Rollo Units

Tower Size Diameter (in.) x Length (ft.)	Rate
22 x 15	65,100
24 x 15	71,230
26 x 15	73,580
22 x 17	70,400
24 x 17	74,470
26 x 17	78,550
24 x 24	82,920
30 x 24	98,340
Rates include: <ul style="list-style-type: none"> - pipes - valves - fittings - installation Rates do not include meters and chemical injectors	

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Dehydrators

Description

A gas boot is a vapour recovery system that draws gases that are being released in storage tanks.

Rates

The rates for gas boots are in dollars per unit.

Size Diameter (in.) x Length (ft.)	Rate
16 x 5	8,030
16 x 10	11,270
16 x 20	17,660
16 x 40	33,150
16 x 50	34,840
24 x 10	25,370
24 x 20	27,780
24 x 40	33,100
24 x 50	36,420
30 x 20	49,510
30 x 40	67,490
30 x 50	76,460
36 x 35	67,160
36 x 50	84,780
NOTE: For 30 in. or 36 in. diameter no ladder or platform included with rates - add \$12,110 if present	
Rates include:	
<ul style="list-style-type: none"> - miscellaneous pipe - valves - fittings - installation 	

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Gas Boots

Description

A flare stack is used to burn off excess gas.

Rates

The rates for flare stacks are in dollars per stack.

Height (ft.)	Rate (Diameter) (in.)		
	4	6	8
30 - 60	18,520	22,600	28,340
70 - 100	20,010	24,540	31,110

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Flare Stacks

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Flare, Drain and Market Lines

Description

These are lines of pipe used to flare gas, or transport oil and gas products from a well site to a battery or gas handling site or from a battery or gas handling site to a pipeline or truck depot.

Rates

Flare, drain and market lines are valued at \$6,310 per line.

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Flare, Drain and Market Lines

Description

The gas passes through this vessel to remove liquids. It functions as a small scale separator.

Fuel Gas Scrubber

The rate for fuel gas scrubbers is in dollars per unit.

	Rate
All sizes	4,800
Rates include: <ul style="list-style-type: none">- shut-off valve- pressure gauge- relief valve- installation	

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Gas Scrubbers

Description

Heaters and heat exchangers are used to prevent line and equipment from freezing.

Heaters

The rates for direct and indirect heaters are in dollars per unit.

Output Range (BTU)	Rate	
	Indirect	Direct
50,000 - 170,000	43,800	38,230
171,000 - 375,000	44,740	39,530
376,000 - 625,000	48,020	41,510
626,000 - 875,000	54,460	44,740
876,000 - 1,250,000	64,180	54,480
1,251,000 - 1,750,000	76,080	66,360
1,751,000 - 2,500,000	89,050	69,610
2,501,000 - 3,500,000	108,460	102,000
3,501,000 - 4,500,000	134,360	105,620
Rates include: <ul style="list-style-type: none"> - fire tube - thief hatch - skid - temperature control and high temperature shut down - flame arrestor and stack - expansion pot c/w instruments - soil (not included with direct) - fuel gas manifold c/w burning - installation 		

Tubular and Rectangular Plate Heat Exchangers

The rates for tubular and rectangular plate heat exchangers are in dollars per cubic foot.

Face Area (sq.ft.)	Rate (\$/cu.ft.)
≤ 2	2,275
3	2,184
4	2,122
6	1,964
8	1,806
10	1,659
12	1,552
14	1,349
Rates include:	
<ul style="list-style-type: none"> - standard unit stainless steel plates - installation 	
Sample Calculation:	
Face Area = 3 ft. x 4 ft. Length = 8 ft. Area = 3 ft. x 4 ft. x 8 ft. = 96 cu.ft. Rate = \$1,552 /cu.ft. Value = Area x Rate = 96 cu.ft. x \$1,552/cu.ft. = \$148,992	

Description

Meters are used to calibrate the pressure and volume of gas flowing through a flow line or at a gas well.

Dry Flow Meters

The rates for dry flow meters are in dollars per unit.

Type	Rate
Gas, Dry Flow Recorder Chart 100" (\leq 1000 psi)	
1 or 2 pen	6,060
3 pen	7,670

Orifice Fittings and Meter Runs

The rates for orifice fittings and meter runs are in dollars per unit.

Size (in.)	Rate
Senior Quick Change (100 - 600 psi)	
2	8,210
3	9,570
4	11,430
6	14,490
8	17,580
10	20,670
Simplex (150 - 600 psi)	
2	2,420
3	3,050
4	3,650
6	5,600
8	7,040
10	8,630
Rates include:	
<ul style="list-style-type: none"> - orifice fittings - regulator - pipes - valves and fitting for meter run - installation 	

Net Oil Computer and Micro Motion Meter

Inlet Size (in.)	Rate
2	42,460
3	45,640
4	49,060
Rates include:	
<ul style="list-style-type: none"> - capacitance probe - indicator - installation 	

Positive Displacement Meter

The rates for positive displacement meters are in dollars per unit.

Line Size (in.)	Rate
Floco Meter	
≤ 2	5,690
3 to 4	8,390
Sampler	3,210
Sales Meter	
≤ 2	13,370
3 to 6	43,960
≥ 8	74,550
Ticket printer	3,310
Temperature	3,700
Brine Meters	
≤ 2 Low (pressure)	2,870
2 High (pressure)	4,200
3 Low (pressure)	4,700
3 High (pressure)	5,090
Digital Meter	
1	6,850
2 w/cubic meter readout	9,330

Turbine Meters and Totalizer

The rates for turbine meters and totalizers are in dollars per unit.

Size (in.)	Rate
≤ 2	12,640
3	13,910
Rates include:	
- meter	- fittings
- pipes	- miscellaneous valves
- totalizer	- installation

Vortex Liquid Gas or Steam Meters

The rates for vortex liquid gas or steam meters are in dollars per unit.

Size (in.)	Rate
2	5,710
6	9,790
8	15,550
Rates include:	
- meter	- analog amplifier or enhancer
- meter run	- miscellaneous valves
- fittings	- installation

Transmitters

The rates for transmitters are in dollars per unit.

Type	Rate
Pressure or flow transmitter	9,790
Temperature transmitter	5,870

Additives

Type	Rate per Readout
Computer Assist	1,180

Weighmatic

The rate for weighmatic is in dollars per unit.

Description	Rate
Weighmatic - crude oil production rate test system Complete unit	126,980
Rates include: <ul style="list-style-type: none"> - separator - valves and fittings - computer related equipment - installation Rates do not include gas metering equipment.	

Cabinet Type Meter Housing

The rate for a meter cabinet is in dollars per unit.

Type	Rate
Meter Cabinet	19,110
Includes: <ul style="list-style-type: none"> - 1-2 pen dry flow recorder - 2 door shed - small separator and associated equipment - lines, valves, meters, gauges, etc - installation - freight 	

Description

A valve is a device used to control the rate of flow in a line, to open or shut off a line completely, or to serve as an automatic or semi-automatic safety device.

Valves

The rates for valves are in dollars per unit.

Gate Valves

Size (in.)	Rate	
	1500 Working Pressure (lb.)	
2	9,110	
3	12,240	
4	14,920	

Ball Valves

Size (in.)	Rate	
	Working Pressure (lb.)	
	< 2000	≥ 2000
2	4,810	5,960
3	6,350	7,740
4	8,190	11,940
6	11,590	16,230
8	21,050	30,220

Water Check Valves

Size (in.)	Rate		
	Working Pressure (lb.)		
	150	300	600
< 4	1,550	1,910	2,230
6 - 8	2,750	3,770	5,650
10	5,130	6,590	9,840
12	6,960	8,170	12,190

Check Valves

Size	Rate
< 4	2,460
6	8,320
8	14,100

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Valves and Controls

Desurgers

Size (in.)	Rate
≤ 2	8,000
3	10,850
4	13,370

Pneumatic and Electric

Size (in.)	Rate	
	2-Way	3-Way
Pneumatic		
≤ 2	6,260	9,390
3	8,570	13,470
4	11,190	16,080
6	18,120	
Electric		
≤ 2	9,060	9,680
3	11,350	12,180
Rates include: - valve - actuator - installation		
NOTE: High-low pressure shutdown, rate at \$1,920. Intermittent (time cycle control), rate at \$2,580.		

Surface Safety Valves

Type	Typical Model	Rate
Self actuating	Willis B-15 & B-20	11,110
	Willis C-15	11,110
Hydr/Elect. actuating	Willis HYG 20 3000#	16,720
	Willis HYG 30 3000#	16,720
	Willis HYG 40 3000#	16,720
Pneumatic actuating	Willis PG 20 3000#	25,210
	Willis PG 30 3000#	25,210
	Willis PG 40 3000#	25,210
Rates include: - valve - actuator and fittings - installation		

Pressure Control Switch

Type	Rate
Presco, Murphy	1,250

Choke

The rates for chokes are in dollars per unit.

Type	Size (in.)	Rate
Low pressure and low volume	≤ 2	1,430
High pressure and high volume	3 - 6	12,120

Lease Automatic Custody Transfer Unit

The rates for lease automatic custody transfer units are in dollars per unit.

Size (in.)	Rate	
	150 & 300 ANSI	600 ANSI
2	109,640	119,950
3	131,390	143,790
4	163,670	190,630
6	218,040	262,610
8	270,930	346,260

Rates include:

- meter
- sampler
- valves
- strainer
- pressure indicator
- pipe fittings
- BS&W monitor
- skid
- installation

Rates do not include booster and shipping pumps.

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Valves and Controls

Description

A pump is used to increase the pressure on a fluid in order to move the fluid through a pipe.

Rates

The rates for pumps are in dollars per unit.

Centrifugal Pump

Inlet Size (in.)	Rate
1	4,410
2	5,180
3	5,840
4	6,230
5	7,290
6	8,660

Gear Pump

Inlet Size (in.)	Rate
2	4,530
3	5,660
4	9,800
6	10,830

Progressive Cavity

Inlet Size (in.)	Rate
1	4,440
2	6,390
3	8,220
4	12,490
6	14,600
8	19,310
<p>NOTE:</p> <ol style="list-style-type: none"> 1) Add for prime movers 2) The rates above are for 1 stage pumps. Increase rate by 12% per stage for 2 and 3 stage pumps 	
<p>Rate include:</p> <ul style="list-style-type: none"> - pump - base - valves and fittings - installation 	

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Pumps

Reciprocating (Plunger) Pumps

Input (hp)	Rate			
	Simplex	Duplex	Triplex	Quintuplex
3	28,120	36,660		
5	31,060	37,380		
10	39,490	41,200		
< 21			44,440	53,000
21 - 40			56,170	67,040
41 - 70			81,160	131,270
71 - 100			118,760	142,950
101 - 150			145,990	215,890
151 - 250			202,280	222,840
> 250			362,110	364,430
Rates include: - pump - base - prime mover - installation				

Transformer and Injection Pumps

Size (hp)	Rate
10	89,730
20	94,790
30	99,960
50	110,010
100	135,340
250	211,690
500	338,530
750	465,430
1000	592,500
Rates include: - motor - thrust chamber - intake section - pump - shutdown switches - skid - installation	

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Chemical Injectors

Description

Chemical injectors are used to add chemicals to prevent freezing, plugging or corrosion or to assist in whatever process is being carried out in the treatment or other cycle.

Rates

The rates for chemical injectors are in dollars per unit.

Description	Size (hp)	Rate
Electric motor driven (add for tanks > 60 imp. gal.)	≤ 2	7,760
	3 and 5	19,690
Multiple head proportioning pump		8,050
Air/gas driven		4,530
Alcohol drip (9 imp. gal. tank)		1,600

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Chemical Injectors

Description

Compressors are used to supply air pressure to operate valves, fire flood wells and to transport gas in a flow line.

Utility Air Compressors

The rates for utility air compressors are in dollars per unit.

Size		Rate
(hp)	(KW)	
½ - 1	0.37	8,060
1½ - 3	2.20	14,180
5	3.70	17,130
Rates include: - air receiver - motor - installation		

Instrument Air Compressors

The rates for instrument air compressors are in dollars per unit.

Size		Rate
(hp)	(KW)	
< 10	0.37	34,570
11 - 15	7.46 - 11.19	47,590
16 - 20		64,610
> 20		70,100
Rates include: - air receiver - explosion-proof motor - dryer and after cooler - installation		

Injection Air Compressors

The rates for injection air compressors are in dollars per unit.

Size (hp)	Rate
400	1,126,710
550	1,443,450
1000	2,299,510
2000	2,606,360
3000	3,097,200
4000	3,653,320
Rates include:	
- air intake, coolers	- valves
- fittings and equipment	- concrete base
- engine or electric motor	- installation
- miscellaneous pipes	
- metering and controls	

Natural Gas Compressors

The rates for natural gas compressors are in dollars per horsepower unit.

Description	Rate
Turbine engine/centrifugal (gas plant)	8,020
Reciprocating engine (gas plants)	5,670
Reciprocating or electric (field gathering)	3,760
Rates include:	
- building	
- gauge board	
- filters	
- electrical equipment	
- atmospheric-type jacket water cooler	
- free air and exhaust duct	
- scrubber	
- supports	
- electrical substation	
- skid or concrete base	
- suction or discharge bottles	
- compressor	
- conductors and conduit	
- central panel	
- pumps	
- intake or exhaust silencer	
- main switchboard	
- installation	

Description

Cathodic protection uses a rectifier with a network of wires and anodes installed to create an electric field around flow lines and casing in corrosion prevention.

Rates

The rates for cathodic protection rectifiers are in dollars per unit.

Size (amperage)	Rate
Single well (12 - 16)	13,780
Field system (17 - 25)	20,650
Rates include: <ul style="list-style-type: none"> - rectifier - conduit and fittings - 2" x 60" steel anodes - cadwelds and handicap - cables - splice kits and connectors - installation 	

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Cathodic Protection Rectifiers

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Control Panels

Description

Control panels are switches and other devices used to start, stop, measure, monitor or signal the operation of equipment.

Rates

The rates for control panels are in dollars per unit.

Power Rating		Rate
(hp)	(KW)	
≤ 50	< 38	30,970
51 - 450	38 - 336	68,980
451 - 850	337 - 634	120,270
851 - 1500	635 - 1119	205,950
1501 - 2500	1120 - 1865	275,610
2501 - 4000	1866 - 2984	343,770
Rates include: - relays - control circuit gauges - installation		

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Control Panels

Description

Steam generators are used to inject steam to the producing formation for enhanced oil recovery systems.

Rates

The rates for steam generators are in dollars per unit.

Description	Rate
10,000,000 BTU/hr. unit	
Generator	1,083,880
Water softener and filter	85,890
Trailer	120,200
Building (on trailer)	81,480
Total for Unit	1,371,450
18,500,000 BTU/hr. unit	
Generator	1,093,750
Water softener and filter	85,970
2 Trailers (soft and gen)	188,530
2 Buildings (on trailer)	140,450
Total for unit	1,508,700
22,000,000 BTU/hr. unit	
Generator	1,110,820
Water softener and filter	96,120
2 Trailers (soft and gen)	222,700
2 Buildings (on trailer)	147,400
Total for unit	1,577,040
25,000,000 BTU/hr. unit	
Generator	1,268,380
Water softener and filter	103,070
1 Trailers	188,520
1 Buildings	85,980
Total for unit	1,645,950
50,000,000 BTU/hr. unit schedule 80 to 160	
1,750 to 2,400 psi	
Base, installation, tie-in	2,350,440
Generator	2,400,000
Water softeners and filters	200,000
Materials and accessories	381,460
Total for Unit	5,331,900

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Steam Generators

Description	Rate
≥ 100,000,000 BTU/hr. unit schedule 80 to 160	
1,750 to 2,400 psi	
Base, installation, tie-in	2,579,130
Generator	3,238,000
Water softeners and filters	275,000
Materials and accessories	381,460
Total for Unit	6,473,590
Rates include: <ul style="list-style-type: none"> - softeners - filters - accessories - installation 	

Description

Filters are used for cleaning water.

Sand Filter

The rates for sand filters are in dollars per tank unit.

Tank Size (in.)	Imp. Gal. per Minute	Pipe Size (in.)	Rate
20 x 54	30	1½	17,010
24 x 54	40	1½	19,730
30 x 60	60	2	26,900
36 x 60	90	2½	35,330
42 x 60	120	3	54,770
48 x 60	150	3	66,440
60 x 60	250	4	97,420
72 x 60	420	6	148,440
84 x 60	580	6	197,400

Carbon Filter

The rates for carbon filters are in dollars per tank unit.

Tank Size (in.)	Imp. Gal. per Minute	Pipe Size (in.)	Rate
20 x 54	10	1½	15,640
24 x 54	15	1½	18,470
30 x 60	25	2	22,670
36 x 60	35	2	30,350
42 x 60	50	2½	43,860
48 x 60	65	2½	52,040
60 x 60	100	3	71,100

Rates include:

- concrete base
- miscellaneous pipes
- values and fittings
- installation

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Filters

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Industrial Water Softeners

Description

Water softeners are used to soften the water for steam generators.

Rates

The rates for industrial water softeners are in dollars per tank unit.

Single Unit

Softener Tank Width (in.) x Height (in.)	Brine Tank Width (in.) x Height (in.)	Imp. Gal. per Minute	Pipe Size (in.)	Rate	
				Single Units	Duplex Units
20 x 54	24 x 80	55	2	24,060	48,160
24 x 54	30 x 48	75	2½	28,280	56,600
30 x 60	38 x 48	125	3	38,530	77,060
36 x 60	42 x 48	175	4	51,110	102,280
48 x 60	48 x 60	150	3	59,130	118,170
54 x 60	54 x 60	275	4	69,540	139,040
60 x 60	60 x 60	400	4	78,790	157,620
72 x 60	72 x 60	560	6	120,760	241,500
84 x 60	84 x 60	760	6	160,740	321,570

Rates include:

- time clock control
- specific gravity meter
- injectors
- valves and fittings
- liquid level control
- hardness monitor
- concrete base
- water meters
- chemical
- miscellaneous pipes
- installation

Rates do not include pumps and motors.

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Industrial Water Softeners

Description

A flow line is a line of pipe used to transport or conduct oil or gas from a well site to a tank, battery, satellite, gas plant, compressor station, or other facility at which the oil or gas is prepared for pipeline transport.

A service line is a line of pipe used to transport water from a water source well, or to transport water, steam, air, oxygen, acid or carbon dioxide to enhance the recovery of oil from an oil well.

Oil, Gas, Water and Air Lines

The rates for oil, gas, water and air lines are in dollars per lineal foot.

Line Size (in.)	Rate		
	Plastic (L)	Steel (N)	Fibreglass (F)
1	8.05	18.96	
2	9.45	20.86	19.01
3	12.97	25.11	24.71
4	17.05	28.85	33.15
6	28.96	39.36	58.59
8		53.29	91.69
10		71.80	111.70
12		87.06	136.69
14		94.44	161.68
Rates include: - construction contract - land right-of-way - pipe - exterior coating - damages and pre-staking - engineering - radiographic inspection - legal survey			

Internal Coated Pipes

The rates for internal coated pipes are in dollars per lineal foot.

Pipe Size (in.)	Rate (C)
2	49.67
3	61.50
4	74.90
6	110.73
8	146.50

Steel Pipe with Polyethylene Liner

The rates for steel pipe with polyethylene liner are in dollars per lineal foot.

Pipe Size (in.)	Rate
2	44.70
3	50.26
4	57.00
6	78.06
8	97.15
10	121.30
12	153.48
14	182.40

Steam Service Lines

The rates for steam service lines are in dollars per lineal foot.

Pipe Size (in.)	Rate
1	64.71
2	73.54
3	75.62
4	79.06
6	102.52
8	123.62

Description

Manifolds are above ground connections where flow lines can be tapped for measurement.

Rates

The rates for manifolds are in dollars per manifold.

Production

Size (in.)	Rate	
	Manual	Automatic
1	2,950	10,260
2	7,320	13,690
3	10,550	20,300
4	14,460	25,490
6	20,890	32,280

Injection

Size (in.)	Rate		
	Water	Air & Gas	Steam
2	8,620	9,350	11,110
3	12,020	12,910	15,470
4	15,670	16,700	19,980
Rates include: - pipe - fittings - valves - installation			

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Manifolds

Description

Scraper traps are used to insert scrapers to clean out the flow lines and service lines.

Rates

The rates for scraper traps are in dollars per trap or injection unit.

Receiving and Launching Traps

Line Size (in.)	Rate	
	With Bypass	Without Bypass
2	10,890	4,920
3	13,160	6,030
4	15,290	6,990
6	22,650	
8	29,220	
10	41,920	
12	53,120	

Automatic Pig Injection

Line Size (in.)	Rate
2	15,130
3	24,500
4	40,150
Rates include:	
<ul style="list-style-type: none"> - valves - miscellaneous pipe and fittings - installation 	

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Scraper Traps

Description

In heavy oil areas, oil is often trucked to the battery where it is measured by weight and dumped into a receiving pit.

Rates

Balance scales are the typical platform-type scale that allow the complete vehicle to be weighed. Load cell scales weigh one set of axles at a time. The rates for scales are in dollars per unit.

Type	Rate
Balance scale	197,730
Load cell scale	150,200

Section: Oil & Gas Well Resource Production Equipment

Resource Production Equipment

Subject: Truck Scales

Summary

This section describes the formulas, rules and principles for determining the assessed value of mine resource production equipment.

Definitions

Mine resource production equipment is the fixtures, machinery, tools, railroad spur tracks, and other appliances used to extract and produce the ore but does not include equipment used to process or refine the ore.

Shaft linings, safety equipment, shop tools for maintenance service, spare parts, and surplus equipment are not resource production equipment by which a mine is operated.

Formulas, Rules and Principles

The assessed value of mine resource production equipment shall be determined by the replacement cost method established in this section. The replacement cost new shall be determined using the unit-in-place method or the trended original cost method.

The replacement cost of continuous belt conveyors over 1,000 feet in length, and solution mining resource production equipment shall be determined by the unit-in-place method. The unit-in-place base rates account for all direct and indirect costs. No additional adjustments shall be made to the base rates.

The unit-in-place base rates for solution mining resource production equipment shall be determined in accordance with the rates schedules in Chapter 4 – Resource Production Equipment, Section 4.1 – Oil and Gas Well Resource Production Equipment.

The trended original cost shall include all direct and indirect costs. Direct costs include materials, labour, supervision, equipment rentals, and utilities. Indirect costs include architectural and engineering fees, building permits, title and legal fees, insurance, interest and fees on construction loans, taxes incurred during construction, advertising and sales expense, and overhead and profit. Trended original costs shall be determined FOB the mine site as of January 1, 2015.

Depreciation shall be determined by calculating the amount of physical deterioration using the lifetime depreciation method. Functional and economic obsolescence shall not be accounted for in the calculation of depreciation. No additional allowance shall be made for depreciation except as may be accounted for in the downtime allowance factor.

The downtime allowance and the downtime allowance factor for mine resource production equipment shall be determined by the schedule of rates method. The downtime allowance and the downtime allowance factor shall account for all the loss in value due to under-utilization of the resource production equipment. This includes any loss in value due to differences in replacement cost and difference in the amount of depreciation, that have not been taken into account using the procedures in this manual.

Replacement Cost New

The following mine resource production equipment shall be valued:

- Head frame and head house including mechanical and electrical equipment;
- Service and production hoists c/w cages, skips, pulleys, cables, guide ropes and rails, skip load and dump facilities;
- Water control – pipes, pumps, motors;
- Compressed – air service – piping, compressors, motors, controls;
- Personnel and service vehicles;
- Mobile and overhead cranes, forklifts;
- Ventilation systems, fans, ducts;
- Heating and cooling facilities;
- Warning system;
- Production equipment – miners, drag lines, loaders, loading shovels, front-end loaders, ore trucks, ore haulers, scoop trams, conveyor systems and numerous ancillary and auxiliary equipment;
- Drills and blasting equipment;
- Feeders and crushers;
- Roof and floor maintenance equipment, rock bolters, graders, scraper haulers;
- Crawler and wheel tractors c/w dozers and/or buckets;
- Electrical wiring and equipment required to operate plant and equipment; and
- Any other equipment used in the mining operation that is not listed as an exclusion.

The following mine resource production equipment shall not be valued:

- Shaft linings – concrete, steel, wood, etc. (tubing and cribbing);
- Safety equipment – fire, personal, etc.;
- Sharp tools for maintenance and service;
- Spare parts; and
- Surplus equipment.

Unit-In-Place Method

The replacement cost of new conveyors and solution mining resource production equipment shall be determined as follows:

1. Determine the type of resource production equipment using the rating guide.
2. Determine the features requiring unit-in-place adjustment.
3. Calculate the replacement cost of the resource production equipment by adjusting the base rate by the unit-in-place adjustments.

Trended Original Cost Method

The replacement cost new shall be determined as follows:

1. Determine the original construction cost of all the resource production equipment at the facility.
2. Determine the direct and indirect costs requiring an adjustment.
3. Determine the comparative cost index for mine resource production equipment required to adjust construction costs to January 1, 2015.
4. Calculate the construction cost of all the resource production equipment at the facility by adjusting the original construction cost for any direct or indirect costs requiring adjustment and multiplying the adjusted original construction cost by the comparative cost index.
5. Determine replacement cost of conveyors and solution mining resource production equipment that is valued by the unit-in-place method.
6. Calculate the replacement cost new of the resource production equipment by subtracting the replacement cost new of conveyors and solution mining resource production equipment from the construction cost of all the resource production equipment in the facility.

Physical Deterioration

Lifetime Depreciation Method

The amount of physical deterioration shall be 40 percent. When calculating replacement cost less depreciation no additional allowance shall be made for depreciation.

Downtime Allowance

Schedule of Rates Method

The downtime allowance for all mine resource production equipment shall be 10 percent.

Downtime Allowance Factor

Schedule of Rates Method

The downtime allowance factor shall be determined for mine resources production equipment that is not used for 30 days or more in the 12 month period preceding January 1st of the year to which the assessment roll relates.

Periods of time less than 7 consecutive days during which mine resource production equipment is not used shall not be included in the calculation of the number of down days.

The downtime adjustment factor shall be determined by application of the following formula:

$$DAF = 1 - \frac{DD - 30}{365}$$

where: DAF = downtime adjustment factor
DD = number of down days

Section: Mine Resource Production Equipment

Resource Production Equipment

Subject: General Rules

Calculation Procedure

Description	Document No.	Page No.
a) Conveyor Base Rate	4.2.3	1
b) Unit-in-Place Resource Production Equipment	4.2.1	2
c) Trended Original Cost Resource Production Equipment	4.2.1	3
d) Replacement Cost New = (a + b + c)		
e) RCN less Physical Deterioration and Downtime Allowance = $d \times (1 - (e_1 + e_2))$		
e ₁ . Physical Deterioration	4.2.1	3
e ₂ . Downtime Allowance	4.2.1	3
f) Downtime Allowance Factor	4.2.1	3
g) Assessed Value (e x f)		

Section: Mine Resource Production Equipment

Resource Production Equipment

Subject: Comparative Cost Factor

Description

The comparative cost factors are used to determine the replacement cost new of mine resource production equipment valued by the trended original cost method.

Application

The trended original cost method shall be used when the individual components of resource production equipment cannot be determined or estimated. The trended original cost method shall not be used to determine the replacement cost of conveyors or solution mining resource production equipment.

Comparative Cost Factor

The comparative cost factor shall be used to calculate the replacement cost new of resource production equipment as of January 1, 2015.

Factors

Year	Comparative Cost Factor
1940 and older	
1941	
1942	
1943	
1944	
1945	
1946	
1947	
1948	
1949	
1950	
1951	
1952	
1953	
1954	
1955	
1956	
1957	
1958	
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1973	
1974	

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Section: Mine Resource Production Equipment

Resource Production Equipment

Subject: Comparative Cost Factor

Year	Comparative Cost Factor
1975	
1976	
1977	
1978	
1979	
1980	
1981	
1982	
1983	
1984	
1985	
1986	
1987	
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2007	
2008	
2009	
2010	
2011	
2012	
2013	
2014 and newer	

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Section: Mine Resource Production Equipment

Resource Production Equipment

Subject: Conveyors

Description

Conveyors are used to transport ore within a mine facility.

Application

The rate schedule shall be applied to continuous belt conveyors over 1,000 feet in length. Continuous belt conveyors less than 1,000 feet in length and all special design, tripper automatic loading and unloading, extensible, mobile bridge and bridge conveyors shall be valued by the trended original cost method.

Continuous Belt Conveyor

The rates for conveyors are in dollars per lineal foot.

Belt Width (in.)	Rate
24	214
30	252
36	294
42	317
48	395
54	444
60	475
72	565
Rates include: - belting - drives - structure - hardware	

Section: Mine Resource Production Equipment

Resource Production Equipment

Subject: Conveyors
