

Anticipated Well Cost (AWC) Guidelines

Thoroddur Sigurdsson
Technical Consultant GRMF



MANNVIT

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Overview

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Introduction

- AWC vs non-AWC items
 - AWC items are standard drilling cost items such as well pad, casing, cementing, rig hire and other necessary services and consumables that have similar weight in drilling projects.
 - Non-AWC items are eligible goods and services that tend to vary more between projects such as specialist services like underbalanced drilling, coring and well testing services.
 - The total well cost is the sum of the cost of AWC and non-AWC items and a more complete list of AWC and non-AWC items can be found in the F2A-D Cost estimate template.
- Objective of AWC guidelines
 - Ensure that the total cost for the AWC items does not exceed the indicated maximum.
 - Ensure cost of individual AWC items are within the indicated maximum for each item.
 - Ensure that cost estimates for all projects are made up of the same cost items and in turn become more easy to compare and evaluate.

Introduction

- Design & Management
 - In order to be able to estimate cost to the detail required by the guidelines, proper design is needed.
 - Beyond helping with cost estimates detailed design helps to prevent drilling problems and delays.
 - Having enough consumables like casing, cement, drill bits, etc. on-site is key - Delays are costly!
 - One person should be in charge of scheduling and inventory to assure all material arrive in time.
 - Anticipate excess usage of material to account for unexpected drilling conditions.
 - Design a well that is appropriate for the project and specify equipment that is appropriate for the envisaged drilling plan and design.
 - All design decisions shall be justified in the application.

Well Sizes

- Well Sizes
 - Choose an appropriate well size for the project.
 - Is directional drilling necessary for an exploration well?
 - Can a slim well provide enough information for reservoir confirmation?
 - Provide justification for large diameter well and thus higher costs.

Well Type	Definition	Hole Diameter (Prod. section)	Liner Size	AWC Cost* [m USD]
Slim	< 5"	6"	4-1/2"	2.9
Standard	< 9-5/8"	8-1/2"	7"	4.8
Large	> 9-5/8"	12-1/4"	9-5/8"	6.1

*Cost applies to vertical, 2500 m (TD) wells and include mobilization

Slim Hole Wells

Hole Diameter	Casing	Drilled depth	Cased Depth
17-1/2"	13-3/8" / 68 ppf	0 -100 (150) m	0 - 100 (150) m
12-1/4"	9-5/8" / 47 ppf	100 (150) - 400 (600) m	0 - 400 (600) m
8-1/2"	7" / 23 ppf	400 (600) - 700 (1000) m	0 - 700 (1000) m
6"	4-1/2" liner	700 (1000) - 2500 m	700 (1000) - 2500 m

Slim Hole – Vertical (~ 2.9 m USD)

		SLIM Hole - VERTICAL					
		Bottom of conductor pipe to 450 m		450 m to 1500 m		1500 m to beyond	
Item	Description	Maximum allowa- ble percentage to total AWC cost	Maximum allow- able total AWC cost per metre drilled	Maximum allowable percentage to total AWC cost	Maximum allowable total AWC cost per me- tre drilled	Maximum allowable percentage to total AWC cost	Maximum allowable total AWC cost per me- tre drilled
	Rig move in	Maximum 10%					
A	Site Preparation including Conductor Pipe	8%	\$650,00	NA	\$900,00	NA	\$1.100,00
B	Consultancy / Management	3%		3%		3%	
C	Cementing	10%		9%		10%	
D	Directional Drilling	NA		NA		NA	
E	Drilling Fluids, Compressors	4%		5%		6%	
F	Drilling Tools Rental	4%		4%		4%	
G	Bits	6%		6%		6%	
H	BOP and Rotating Head	2%		2%		2%	
I	Well Logging	5%		5%		5%	
J	Casing	14%		14%		14%	
K	Casing Accessories and Liner Adapter	1%		1%		1%	
L	Surface Logging - Mud Logging	4%		4%		4%	
M	Fuels and Oils	8%		8%		8%	
N	Water Supply Pumps Rental and Water	5%		5%		5%	
O	Wellhead and Valves	2%		2%		2%	
P	Rig Operating Day Rate	30%		30%		30%	
Q	Camp Day Rate including Telecommunication	4%		4%		4%	
R	Welding and X-Ray Services	1%		1%		1%	
S	Pipe Inspection and Hardbanding Services	1%		1%		1%	
T	Support Services, Wellsite Security, Transport of Personnel	4%		4%		4%	
U	Documentation and reports	1%		1%		1%	
V	Contingency on long lead items	5%		5%		5%	
W	Contingency on services	5%		5%		5%	
X	Other contingencies	5%		5%		5%	
	Rig move out	maximum 10%					

Slim Hole – Deviated (~ 3.3 mUSD)

		SLIM Hole - DEVIATED: KOP=450 m					
		Bottom of conductor pipe to 450 m		450 m to 1500 m		1500 m to beyond	
		Maximum allowa- ble percentage to total AWC cost	Maximum allowa- ble total AWC cost per metre drilled	Maximum allowable percentage to total AWC cost	Maximum allowable total AWC cost per me- tre drilled	Maximum allowable percentage to total AWC cost	Maximum allowable total AWC cost per me- tre drilled
Item	Description						
	Rig move in	Maximum 10%					
A	Site Preparation including Conductor Pipe	8%	\$750,00	NA	\$1.050,00	NA	\$1.200,00
B	Consultancy / Management	3%		3%		3%	
C	Cementing	10%		9%		10%	
D	Directional Drilling	4%		4%		4%	
E	Drilling Fluids, Compressors	4%		5%		6%	
F	Drilling Tools Rental	4%		4%		4%	
G	Bits	6%		6%		6%	
H	BOP and Rotating Head	2%		2%		2%	
I	Well Logging	5%		5%		5%	
J	Casing	14%		14%		14%	
K	Casing Accessories and Liner Adapter	1%		1%		1%	
L	Surface Logging - Mud Logging	4%		4%		4%	
M	Fuels and Oils	8%		8%		8%	
N	Water Supply Pumps Rental and Water	5%		5%		5%	
O	Wellhead and Valves	2%		2%		2%	
P	Rig Operating Day Rate	30%		30%		30%	
Q	Camp Day Rate including Telecommunication	4%		4%		4%	
R	Welding and X-Ray Services	1%		1%		1%	
S	Pipe Inspection and Hardbanding Services	1%		1%		1%	
T	Support Services, Wellsite Security, Transport of Personnel	4%		4%		4%	
U	Documentation and reports	1%		1%		1%	
V	Contingency on long lead items	5%		5%		5%	
W	Contingency on services	5%		5%		5%	
X	Other contingencies	5%		5%		5%	
	Rig move out	Maximum 10%					

Standard Size Wells

Hole Diameter	Casing	Drilled depth	Cased Depth
26"	20" / 94 ppf	0 -100 (150) m	0 -100 (150) m
17-1/2"	13-3/8" / 68 ppf	100 (150) - 400 (600) m	0 - 400 (600) m
12-1/4"	9-5/8" / 47 ppf	400 (600) - 700 (1000) m	0 - 700 (1000) m
8-1/2"	7" / 23 ppf liner	700 (1000) - 2500 m	700 (1000) m – 2500 m

Standard Size – Vertical (~ 4.8 mUSD)

		Standard Size - VERTICAL					
		Bottom of conductor pipe to 450 m		450 m to 1500 m		1500 m to beyond	
		Maximum allowa- ble percentage to total AWC cost	Maximum allow- able total AWC cost per metre drilled	Maximum allowable percentage to total AWC cost	Maximum allowable total AWC cost per me- tre drilled	Maximum allowable percentage to total AWC cost	Maximum allowable total AWC cost per me- tre drilled
Item	Description						
	Rig move in	Maximum 11%					
A	Site Preparation including Conductor Pipe	10%	\$1.250,00	NA	\$1.400,00	NA	\$1.700,00
B	Consultancy / Management	3%		3%		3%	
C	Cementing	10%		9%		10%	
D	Directional Drilling	NA		NA		NA	
E	Drilling Fluids, Compressors	4%		5%		6%	
F	Drilling Tools Rental	4%		4%		4%	
G	Bits	6%		6%		6%	
H	BOP and Rotating Head	2%		2%		2%	
I	Well Logging	5%		5%		5%	
J	Casing	14%		14%		14%	
K	Casing Accessories and Liner Adapter	1%		1%		1%	
L	Surface Logging - Mud Logging	4%		4%		4%	
M	Fuels and Oils	8%		8%		8%	
N	Water Supply Pumps Rental and Water	5%		5%		5%	
O	Wellhead and Valves	2%		2%		2%	
P	Rig Operating Day Rate	32%		32%		32%	
Q	Camp Day Rate including Telecommunication	4%		4%		4%	
R	Welding and X-Ray Services	1%		1%		1%	
S	Pipe Inspection and Hardbanding Services	1%		1%		1%	
T	Support Services, Wellsite Security, Transport of Personnel	4%		4%		4%	
U	Documentation and reports	1%		1%		1%	
V	Contingency on long lead items	5%		5%		5%	
W	Contingency on services	5%		5%		5%	
X	Other contingencies	5%		5%		5%	
	Rig move out	Maximum 11%					

Standard Size – Deviated (~ 5.8 mUSD)

		Standard Size - DEVIATED: KOP=450 m					
		Bottom of conductor pipe to 450 m		450 m to 1500 m		1500 m to beyond	
		Maximum allowa- ble percentage to total AWC cost	Maximum allow- able total AWC cost per metre drilled	Maximum allowable percentage to total AWC cost	Maximum allowable total AWC cost per me- tre drilled	Maximum allowable percentage to total AWC cost	Maximum allowable total AWC cost per me- tre drilled
Item	Description						
	Rig move in	Maximum 11%					
A	Site Preparation including Conductor Pipe	10%	\$1.250,00	NA	\$1.800,00	NA	\$2.100,00
B	Consultancy / Management	3%		3%		3%	
C	Cementing	10%		9%		10%	
D	Directional Drilling	4%		4%		4%	
E	Drilling Fluids, Compressors	4%		5%		6%	
F	Drilling Tools Rental	4%		4%		4%	
G	Bits	6%		6%		6%	
H	BOP and Rotating Head	2%		2%		2%	
I	Well Logging	5%		5%		5%	
J	Casing	14%		14%		14%	
K	Casing Accessories and Liner Adapter	1%		1%		1%	
L	Surface Logging - Mud Logging	4%		4%		4%	
M	Fuels and Oils	8%		8%		8%	
N	Water Supply Pumps Rental and Water	5%		5%		5%	
O	Wellhead and Valves	2%		2%		2%	
P	Rig Operating Day Rate	32%		32%		32%	
Q	Camp Day Rate including Telecommunication	4%		4%		4%	
R	Welding and X-Ray Services	1%		1%		1%	
S	Pipe Inspection and Hardbanding Services	1%		1%		1%	
T	Support Services, Wellsite Security, Transport of Personnel	4%		4%		4%	
U	Documentation and reports	1%		1%		1%	
V	Contingency on long lead items	5%		5%		5%	
W	Contingency on services	5%		5%		5%	
X	Other contingencies	5%		5%		5%	
	Rig move out	Maximum 11%					

Large Diameter Well

Hole Diameter	Casing	Drilled depth	Cased Depth
32"	26" / 0.5" WT	100 m	0 - 100 m
24"	18-5/8" / 87.5 ppf	100 - 350 m	0 - 350 m
17-1/2"	13-3/8" / 68 ppf	350 - 1000 m	0 - 1000 m
12-1/4"	9-5/8" / 47 ppf liner	1000 - 2500 m	1000 - 2500 m

Large Diameter Well – Vertical (6.1 mUSD)

Item	Description	LARGE Diameter - VERTICAL					
		Bottom of conductor pipe to 450 m		450 m to 1500 m		1500 m to beyond	
		Maximum allowable percentage to total AWC cost	Maximum allowable total AWC cost per metre drilled	Maximum allowable percentage to total AWC cost	Maximum allowable total AWC cost per metre drilled	Maximum allowable percentage to total AWC cost	Maximum allowable total AWC cost per metre drilled
	Rig move in			Maximum 11%			
A	Site Preparation including Conductor Pipe	10%	\$1.500,00	NA	\$1.800,00	NA	\$2.200,00
B	Consultancy / Management	3%		3%		3%	
C	Cementing	10%		9%		10%	
D	Directional Drilling	NA		NA		NA	
E	Drilling Fluids, Compressors	4%		5%		6%	
F	Drilling Tools Rental	4%		4%		4%	
G	Bits	6%		6%		6%	
H	BOP and Rotating Head	2%		2%		2%	
I	Well Logging	5%		5%		5%	
J	Casing	14%		14%		14%	
K	Casing Accessories and Liner Adapter	1%		1%		1%	
L	Surface Logging - Mud Logging	4%		4%		4%	
M	Fuels and Oils	8%		8%		8%	
N	Water Supply Pumps Rental and Water	5%		5%		5%	
O	Wellhead and Valves	2%		2%		2%	
P	Rig Operating Day Rate	32%		32%		32%	
Q	Camp Day Rate including Telecommunication	4%		4%		4%	
R	Welding and X-Ray Services	1%		1%		1%	
S	Pipe Inspection and Hardbanding Services	1%		1%		1%	
T	Support Services, Wellsite Security, Transport of Personnel	4%		4%		4%	
U	Documentation and reports	1%		1%		1%	
V	Contingency on long lead items	5%		5%		5%	
W	Contingency on services	5%		5%		5%	
X	Other contingencies	5%		5%		5%	
	Rig move out			Maximum 11%			

Large Diameter Well – Deviated (7.0 mUSD)

		LARGE Diameter - DEVIATED: KOP=450 m					
		Bottom of conductor pipe to 450 m		450 m to 1500 m		1500 m to beyond	
Item	Description	Maximum allowable percentage to total AWC cost	Maximum allowable total AWC cost per metre drilled	Maximum allowable percentage to total AWC cost	Maximum allowable total AWC cost per metre drilled	Maximum allowable percentage to total AWC cost	Maximum allowable total AWC cost per metre drilled
	Rig move in	Maximum 11%					
A	Site Preparation including Conductor Pipe	10%	\$1.500,00	NA	\$2.200,00	NA	\$2.500,00
B	Consultancy / Management	3%		3%		3%	
C	Cementing	10%		9%		10%	
D	Directional Drilling	4%		4%		4%	
E	Drilling Fluids, Compressors	4%		5%		6%	
F	Drilling Tools Rental	4%		4%		4%	
G	Bits	6%		6%		6%	
H	BOP and Rotating Head	2%		2%		2%	
I	Well Logging	5%		5%		5%	
J	Casing	14%		14%		14%	
K	Casing Accessories and Liner Adapter	1%		1%		1%	
L	Surface Logging - Mud Logging	4%		4%		4%	
M	Fuels and Oils	8%		8%		8%	
N	Water Supply Pumps Rental and Water	5%		5%		5%	
O	Wellhead and Valves	2%		2%		2%	
P	Rig Operating Day Rate	32%		32%		32%	
Q	Camp Day Rate including Telecommunication	4%		4%		4%	
R	Welding and X-Ray Services	1%		1%		1%	
S	Pipe Inspection and Hardbanding Services	1%		1%		1%	
T	Support Services, Wellsite Security, Transport of Personnel	4%		4%		4%	
U	Documentation and reports	1%		1%		1%	
V	Contingency on long lead items	5%		5%		5%	
W	Contingency on services	5%		5%		5%	
X	Other contingencies	5%		5%		5%	
	Rig move out	Maximum 11%					

Non-AWC items

H₂S monitoring
Underbalanced drilling
Rig geology
Rig petrology
Rig-on testing
Production testing
Interference testing
Post-drilling downhole surveys
Pump hire / provision costs
Pumping power supply
Reservoir engineering
Chemical Stimulation
Hydraulic Stimulation
Sampling
Fishing tools and services
Analyses
Coring
Health, Environmental and Safety training
Environmentally acceptable disposal of waste including hazardous material
Mandatory insurances as per GCC Clause 9.1
Customs fees
Public fees
miscellaneous (please specify in project plan)

Need to be justified and
priced separately

Non-Eligible Cost

- All costs in excess of the amount stated in the grant contract,
- Concession (and other permit/licence related) fees,
- Developer overheads (e.g. office costs, legal costs),
- Costs of permanent abandonment of well(s),
- Third party liability and claims, including claims by the drilling contractor and environmental damage or clean-up costs,
- Debts and provisions for losses or debts,
- Interest and project developer financial obligations owed,
- Financial fees,
- Items already financed by other parties (e.g. governments, donors),
- Purchases of land, buildings or vehicles,
- Currency exchange losses,
- Taxes, including VAT,
- Cost of preparing applications or cost incurred during negotiations of the grant contract,
- Costs for participation at meetings and workshops,
- Training and capacity building,
- Costs incurred prior to grant award (such as costs for studies, concessions and concession related items such as rental payments etc.), except for “early contracting”².

General Advice & Conclusions

- Advice
 - Check if the total AWC item cost is within the maximum allowed costs as per the guidelines.
 - If the cost estimates exceed the maximums of the AWC guidelines and is based on solid experience submit it as is and include relevant justifications.
 - Cost should be justified by attached quotes / experience from previous projects.
 - Check that all information is provided and correct.
- Conclusions
 - Have a detailed design to prevent drilling problems and delays.
 - Have enough consumables and anticipate excess usage of material.
 - Plan a well that is appropriate for the project and give good justification for all design choices - in particular selection of as large diameter or deviated wells.

Questions?

Project funded by:



BMZ



Bundesministerium für
wirtschaftliche Zusammenarbeit
und Entwicklung

KFW



TECHNICAL CONSULTANT

Rödl & Partner



MANNVIT