

## *Case 3*

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# *Wildcat Oil in Kasakstan*

*by*

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Wildcat Oil has recently discovered a new 500 million barrel crude oil reservoir in Kasakstan. Reservoir engineers predict recovery of about 300 million barrels with current technology. The firm needs a preliminary cost estimate for a feasibility study of a facility to produce the oil and prepare it for pipeline transmission. Wildcat has paid the Kasakstan government \$400M in up-front lease costs. Additionally, the Kasakstan government will receive 10% of the net revenues (value/barrel [bbl] *minus* operating costs *minus* transportation costs). After 100 million barrels have been produced, all facilities and the remaining oil will belong to the Kasakstan government.

The feasibility study should optimize the trade-off between capital investment and production capacity in barrels/day (bbl/day). Engineering on a generic 36,000 bbl/day facility identified the major equipment items. Vendors have provided equipment costs for the five classes of major equipment (see Table 3-1) for this size facility. The factor estimates shown in Table 3-1 for all equipment, piping, and controls linked with each class of major equipment have been compiled from Wildcat's database based on past experience. For example, the total cost linked with the turbines is 2.5 times the \$33.2 million (including the turbine cost).

Wildcat Oil uses a price of \$19.50/bbl for oil of this quality delivered to the Kasakstan tanker facility. Facility operating costs are estimated at \$4.50/bbl, and transportation to the tanker facility is estimated at \$1.25/bbl. Production of all oil fields follows a decline curve;

however, negotiations between the government and Wildcat Oil have sized the facility so that production is basically constant through the period of Wildcat's ownership of the facility.

For estimating the cost of different size facilities, the production facility can be classed as a large refinery (with a power sizing or capacity exponent or Lang factor of .67).

**Table 3-1      Cost Estimation Basis**

<u>Item</u>	<u>Cost (Millions of \$)</u>	<u>Factor Estimates</u>
Turbines	33.2	2.5
Compressors	24.8	2.8
Vessels & tanks	25.6	2.7
Valves	7.2	3.8
Switchgear	4.8	2.4

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### **Suggestions for the Student:**

1. What point of view should you take for analyzing this project?
2. How much should be budgeted for the 36,000 bbl/day production facility?
3. What additional costs and benefit(s), if any, are there to be derived from resizing the facility to process an additional 5,000 bbl/day?

### **Options:**

1. What is the present worth of this project with a 36,000-bbl/day facility? An interest rate of 15% per year is appropriate for this type of investment.
2. Is the larger facility a wise investment?