



Alberta Oil & Gas Company¹

Daphne Jackson, operations manager for Alberta Oil & Gas Company (AOGC) hangs up the phone in her home. Her boss, Will Russell, has phoned from Calgary International Airport to ask her to take his place tomorrow morning in the negotiations for “unitizing” AOGC’s interest in the Waptaman oil field. Ordinarily, Will would lead such negotiations himself, but he has been called away to urgent business in the company’s Latin American operations. As she sits down and opens her briefcase she starts thinking about the business issues, and how she can prepare to negotiate effectively.

As is common in the energy industry, AOGC and several other companies (Excelsior Corp., Capital Energy and Williams Oil) possess assets such as mineral rights, wells, and underground oil reserves beneath various parcels of land in the Waptaman field. (Waptaman is the name of the underground geologic structure that contains the extractable oil, or “pay”.) Now that the field has been partially developed, there are substantial efficiencies to be had by combining forces with the three other companies operating in the area, and continuing development jointly. The four companies intend to combine their assets into a single “unit” (hence “unitize”) which will then be operated by a single organization, maximizing oil production while reducing expense and environmental impacts.

Oilfield exploration and development

An underground deposit of oil is commonly covered by a patchwork of several parcels of land. Energy companies purchase mineral rights through a bidding process known as a lease sale

¹This case study was written for classroom discussion by Professor Thomas. A. Grossman Jr. of the Faculty of Management, University of Calgary. ©1998, all rights reserved.

before the reserves (i.e., size) and distribution (i.e., location) of the field are adequately understood. With mineral rights in hand, companies undertake exploration activity, which typically includes significant expenses associated with geophysical surveying, and drilling an exploration well. If the exploration well proves successful, additional geological and reservoir engineering studies are performed, usually including drilling costly wells to delineate the size, distribution and producibility of the field.

Once the field and its geology are understood, full-scale development can be undertaken. Development requires substantial investments in petroleum engineering, well drilling, facilities and road construction, and environmental mitigation.

The various land parcels that might cover an oil field relate to each other in a way that can result in excessive wells, roads, expenses and (at worst) can encourage companies to drain their neighbors' land by drilling close to land boundaries. This results in inefficient exploitation of the resource, reducing profits to the oil companies, royalties to the landowners, taxes to the government, and causing unnecessary environmental impacts.

Therefore, at some point it behooves all the stakeholders to cooperate in developing and depleting the field. This is generally done by designating a single organization (typically the firm with the largest investment) to serve as the "operator". The operator makes all short- and long-term decisions regarding the number and location of production wells, whether and how to locate and operate injection wells, manages petroleum engineering activity, develops pipelines, facilities and roads, and controls various attendant operations. The operator is reimbursed for the costs of operating the field, and all cash flows (positive or negative) are shared in direct proportion to each players' "working interest".

The working interest negotiation

The centerpiece of the unitization process is the negotiation regarding the percentage "working interest" (and hence percentage of revenue) each firm will receive in the unitized field. (As one would expect, the working interests for all the players must sum to 100%.) This

negotiation is typically based around what each player brings to the negotiating table (i.e., the value and utility of the assets that they provide).

Issues to be considered in the negotiation can include a player's producing wells, the history of their wells in producing oil, and the geologists' and engineers' estimate of recoverable reserves contained beneath each land parcel. Will and the senior managers in the other three companies agreed this afternoon that the working interests would be based on a single set of weights to be assigned to each company's relative contribution to three "key factors": 1) usable well bores, 2) cumulative production to date, and 3) barrels of underlying reserves.

A 'usable well bore' is a well that is producing oil. Since wells typically cost in excess of \$1m (often much more), and sometimes are "dry holes" which do not produce oil, these are particularly valuable assets. The 'cumulative production to date' is a measure of the producibility of oil and the effectiveness of a player's wells. The 'barrels of underlying reserves' represents the amount of extractable oil believed to be under each player's land position, and is a measure of the amount of oil they would expect to recover if they developed their portion of the field alone.

To compute a player's working interest, one first computes the percentage of each key factor that the player brings to the unit. This percentage is multiplied by the corresponding weight for that key factor, and the working interest is the sum of the weighted key factor percentages.

The senior managers have also agreed that reasonable ranges for these weights are 35-61% for usable well bores and barrels of reserves, and 10-50% for cumulative production. Daphne's responsibility tomorrow will be to negotiate the final values of these weights.

Daphne is pleased that she happened to bring home the report that summarizes the history of the Waptaman field. She turns to Table 1, which indicates each company's contribution to the three key factors, and says to herself, "I need to figure out what's important in this negotiation, and understand what these weights do to our working interest".

	Usable Well Bores <i>number</i>	Cumulative Production <i>thousands of barrels</i>	Reserves underlying parcel <i>millions of barrels</i>
AOGC	2	95	2.17
Excelsior Corp.	2	122	4.65
Capital Energy	1	98	1.61
Williams Oil	1	145	11.72
Total	6	460	20.15

Table 1: Contribution to Key Factors