Exercise for Class Discussion

WILDCAT DYNAMICS CO. (Part A)

Wildcat Dynamics is an oil exploration company, founded in 1960. The company has been successful in bringing in Wildcat wells in various parts of the United States and Canada. By 1989 the company has reasonable financial reserves of its own, but also occasionally entered into partnership with a group of investors in Calgary. Hence, the firm usually does not have great difficulty in raising funds for a reasonably good wildcat prospect.

It has been Wildcat Dynamic's policy to sell off the rights to produce the oil once a well was brought in. Activities were confined to locating possible sites, arranging for appropriate leases, and contracting for drilling operations. In June of 1989 the company is trying to decide whether to drill on a parcel of land taken in Alberta. The lease had been taken out in 1987 but the company had been busy elsewhere until now. The lease would expire soon and the company had to decide whether or not to drill.

The cost of drilling at the site would be $700,000. This would be all lost if the well were dry. If the well were successful, the value would depend upon the extent of the reserves uncovered. For simplicity, management generally considered only two alternatives, described humorously as either a "wet" well or a "soaking" well. The revenue associated with selling the rights to a wet well were $2.2M – $1.5M in excess of the drilling cost. For a soaking well, revenues were expected to be $6.7M – $6M above the drilling cost.

William Cooper, the company geologist, was consulted about the chances of actually finding oil. He said that the chances depended upon whether or not a particular structure lay underneath the proposed drilling site. If the underlying lime-shale formation rose into a flat dome shape where Wildcat proposed to drill, then there were substantially better chances of finding oil than if no such dome structure existed. Mr. Cooper said that he estimated that there were roughly 6 chances in 10 of such a dome structure underneath the Wildcat site. He based this estimate upon experiences of other drillers in the area and his own accumulated knowledge of geology. Cooper also gave the following estimates of finding oil, given the existence of dome:

	Probabilities of Oil	
Drilling Result	Dome Structure Underlying	No Dome Structure Underlying
Dry Well	.60	.85
Wet Well	.25	.125
Soaking Well	.15	.025
	1.00	1.00

Mr. Cooper noted that these estimates represented his best judgement about the results of drilling. He indicated that another expert might come up with a different set of estimates and that in fact, there were no such things as "right" probability estimates in this business.

Seismic Test Possibility

Cooper also suggested that Wildcat might consider the possibility of taking a seismic test on the site before drilling. This test would cost $100,000. The seismic test would give an indication of the existence or non-existence of the dome structure. Cooper emphasized that the seismic test was not foolproof. Sometimes intermediate layers of rock reflected the seismic soundings sufficiently to give the impression of a dome when none is there, and sometimes the soundings are misinterpreted to say that no dome exists when in fact it does. Cooper gave the following estimates of the reliability of the seismic test:

Probability (Seismic Soundings indicate Dome given that the Dome Actually Exists) = 0.9
Probability (Seismic Soundings indicate No Dome given that the Dome Actually Exists) = 0.1
Probability (Seismic Soundings indicate Dome given that No Dome is Present) = 0.2
Probability (Seismic Soundings indicate No Dome given that No Dome is Present) = 0.8

Queen's University School of Business

MBAS 861

Wildcat Dynamics Co. (Part B)

Fred Barnes, Wildcat's president, went over Cooper's beliefs with Nora Ponce, recent Queen's MBAst grad, and concluded that the probability assessments were reasonable. However, he expressed to Nora some reservations about the different risks inherent in doing the seismic test versus not testing. Nora suggested that if Fred were to respond to some questions, she might be able to incorporate Fred's attitudes to risk in the analysis. Her questions, and Fred's responses, are shown below:

Nora: Suppose you owned a business opportunity for which you assessed a 50-50 chance for either a loss of $1 million or a gain of $6 million. What is the lowest sure amount you would accept from someone who offered to buy this opportunity from you?

Fred: I would say a price of $1.5 million would do the trick. Any less and I'd prefer to take my chances, but if the price were higher than this, I'd prefer the cash.

Nora: Now, what about a venture with 50-50 probabilities for a profit of $1.5 million or $6 million?

Fred: Id' say about $3.5 million.

Nora: Finally, what about a 50-50 chance for a loss of $1 million or a gain of $1.5 million?

Fred: Well, this is an unattractive option to think about. I would give this away.... in fact, I'd even pay someone to take it off my hands. Maybe as much as $200,000.

What should Fred do in view of his attitudes to risk, as stated to Nora? What is Fred's risk premium for the Alberta parcel?