

DEFINITIONS AND TERMINOLOGY

Definitions.

You should recognize the following terms and understand how they relate to evaluation of petroleum resources, projects, and associated topics. Many of these terms are closely related to each other; take care to understand the distinctions and interrelationships. In the case of any conflict on definitions among sources, take the definitions in the *Petroleum Resources Management System* (2007) as authoritative:

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| 1. Petroleum-initially-in-place (PIIP) | 10. Unconventional resources |
| 2. Estimated Ultimate Recovery (EUR) | 11. Economic limit |
| 3. Proved reserves | 12. Discount rate |
| 4. Probable reserves | 13. Monte Carlo analysis |
| 5. Possible reserves | 14. Sensitivity analysis |
| 6. Contingent resources | 15. Scenario analysis |
| 7. Prospective resources | 16. Diversifiable risk |
| 8. Production (as a resource class) | 17. Non-diversifiable risk |
| 9. Unrecoverable petroleum | 18. Henry Hub |

Common acronyms.

You should recognized the following acronyms which frequently are employed in discussions of petroleum project evaluation, you should know the full term designated by the acronym, and you should be able to describe the connection to petroleum project evaluation:

19. DCF
20. EIA
21. NPV
22. NYMEX
23. OPEC
24. SPE
25. SPEE
26. WTI

DISCOUNTED CASH FLOW ANALYSIS

A simple discounted cash flow analysis will be presented. You will be asked several brief questions providing you the opportunity to show that you understand the basic functioning of a discounted cash flow analysis and some of the limitations of the analysis.

DISCUSSION TOPICS

Required topics – ANSWER BOTH OF THE FOLLOWING QUESTIONS

- EIA, "Is U.S. natural gas production increasing?" In their analysis, the EIA concludes that domestic natural gas production is increasing, with more than half of the increase from 1Q 2007 to 1Q 2008 coming from Texas. What factors are driving the current increase in domestic gas production? Does the EIA expect production to continue to increase for the next few years? Why or why not?
- Hamilton, "Understanding Oil Prices." Hamilton's discussion of "Returns to Storage" addresses a common economic argument – sometimes called "storage arbitrage" – linking current and expected prices. Explain why storage arbitrage should tend to keep current prices from being much higher or much lower than prices that are expected to prevail six months from now.

Discussion topics – ANSWER ONE OF THE FOLLOWING QUESTIONS

- Adelman, "The Real Oil Problem." Adelman says the real oil problem isn't that oil is running out, but that OPEC tries to act as an oil monopolist. Why does Adelman think that OPEC trying to act like a monopolist would increase the *volatility* of world oil prices? Do you agree or disagree with Adelman on this point? Why?
- Brown, "Natural Gas Pricing-Do Oil Prices Still Matter?" Brown said, "oil prices do still matter for natural gas prices, but the old rules of thumb relating natural gas prices to those for oil are of limited usefulness." Why do oil prices matter for natural gas? What are the "old rules of thumb" relating the two prices? The U.S. natural gas market has changed since Brown's article was published in the Summer of 2005. Do current oil and gas market conditions require any changes to the conclusions that Brown reaches?
- Bailey et al., "Taking a calculated risk." Bailey and co-authors call discounted cash flow analysis the "the most widely used investment appraisal tool in the oil industry," but they go on to explain that it is limited in certain respects. What specifically does Bailey et al. say limits the usefulness of DCF, and what techniques can be used to overcome the limits?
- Smith, "Petroleum project evaluation" Smith describes discounted cash flow analysis as "versatile but not without limitations." What are the limitations that Smith identifies? How does the "options" approach help overcome these limits, according to Smith? What is the "essence of the options approach"?