Reining In the Data Junkies
~ Having the Guts Not to Appraise ~

Patrick Burdett and Bill Haskett
7 Nov 2012
Value of Information Analysis

Information can be valued based on its ability to change decisions and the impact of those paths.

Value comes from altering plans to either capture upside or to avoid downside.

There are several good papers on the method. Two of my favorites are:

Bratvold et al 2009, SPE 110378
and
Leach et al 2007, SPE 108175
Why Use Value of Information in Appraisal?

- Appraisal, like almost every early stage activity in O&G project development involves gathering information.
- Tremendous institutional appetite for information
- Decision focus is critical
- Focus stays on what is important
- Improved subsurface assessments
Challenges to Value of Information

• Unfamiliar

• No established workflow

• Requires probabilistic resource assessments

• Requires clear understanding of uncertainties and their associated probabilities.

• Dangers of Group Think and Individual Dominance
Woo-Hoo! Success!

Now What??
Well #1

- Uncertainty: Oil – Water Contact

- Decisions:
  - Go / No-Go
  - Well Count / Location
  - Facility Capacity
Well #1 - Oil Water Contact Scenarios

- **High OWC**
- **Low OWC**
- **OWC Uncertainty**

**Location**
- Seismic Indicator Edge
- Appraisal Well 1

**Future Injector**

**Discovery Well**

**Oil**

**Oil down to**
Well #1 - Oil Water Contact Scenarios

Earth models are adjusted or rebuilt to represent the scenarios cases.
Well #1 - VOI

• Subsurface team expectation: Information was valuable

• VOI conclusion: **NO VALUE**.

• Information does not change:
  • the Go / No-Go decision – shallow OWC still OK
  • capacity decision – value does not merit cost
  • injector well location – initial placement worked in both scenarios
Well #1 - Oil Water Contact Scenarios

- High OWC
- Low OWC
- Discovery Well
- Oil down to
- OWC Uncertainty
- Seismic Indicator Edge
- Future Injector
- Location Appraisal Well 1
Key Observations

1. Robust development plan carries advantage

2. Nature doesn’t change with information

3. All uncertainties should be included in the reference case

4. Signposting – carry out “what-ifs”
Subsurface Map of the Project
Well #2

- Uncertainty: Shadow zone Net-to-Gross

- Decisions:
  - Go / No-Go
  - Well Count / Location
  - Facility Capacity
Well #2 – “Shadow” zone

- Shallow Gas causing deeper seismic attenuation.
- Seismic “shadow” zone
- Amplitude effect.
Well #2 – VOI(p)

- Subsurface team expectation: *Information was valuable*
- VOI conclusion with perfect information: *Information was valuable*
- Information changes:
  - the Go / No-Go decision – Low NTG kills project

**But the information was not perfect!**
Imperfect Information

Increasing Project Results →

True Indicator  False Indicator

Increasing Indicator Results →

Indicator: Good
Project: Bad

Indicator: Good
Project Good

Indicator: Bad
Project: Bad

Indicator: Bad
Project: Good
Well #2 – Information Reliability

• Perfect information is the starting point

• Reliability assessment is critical, but subjective
  ➢ Good interviewing techniques are important

• Poor reliability degrades value dramatically

• Indifference Assessment is helpful
Well #2 – VOI(i)

- Subsurface team expectation: Information was valuable
- VOI conclusion: NO VALUE.
- Information does not change:
  - the Go / No-Go decision – NTG information not reliable enough
Key Observations

1. Robust development plan
2. Nature doesn’t change with information
3. All uncertainties should be included in the reference case
4. Signposting
5. Know your true walk-away point
Subsurface Map of the Project

- **Well #1**: Low OWC
- **Well #2**: High OWC
- **Well #3**: Structural High
- **Discovery Well**: Channel Fairway

Dips indicated by arrows.
Well #3

- Uncertainty: COS risk

- Decisions:
  - Well Count
  - Facility Capacity
Well #3 – East Prospect

Histogram for East Prospect

Probability

Successes

0% 10% 20% 30% 40% 50% 60%

0 1 2

Histogram bar heights indicate the probability of different number of successes.
Well #3 - VOI

- Subsurface team expectation: **Information was valuable**
- Conventional conclusion: **Information had no value.**
- VOI conclusion: **Information HAS VALUE**
- Information changes:
  - Well count decision – East would be included in development
Key Observations

1. Robust development plan
2. Nature doesn’t change with information
3. All uncertainties should be included in the reference case
4. Signposting
5. Know your true walk-away point
6. The sum can be greater than its parts.
Reining In the Data Junkies – Having the Guts Not to Appraise

Patrick Burdett and Bill Haskett

Decision Strategies
10333 Richmond, Suite 350
Houston, TX  77042
Telephone: 713.465.1110
www.decisionstrategies.com