Acquisition Due Diligence: Is it as good as it seems?

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How to get the most from the process: Frame it

Ensure the opportunity is of interest and decide what you need to know

Carefully frame the assignment

- Does the opportunity meet your corporate strategy / targets?
  - Production, remaining costs, cash flow profile, corporate image, risk profile
  - Sovereign reliability and risk?
  - Operatorship or non-operator?

- What will effect your decision to bid and amount apart from economics
  - Operator and JV capability, reputation, synergies?
  - Reputation: gas flaring, discharge at sea, HSE record and management processes, greenhouse gas emissions?
  - Phased payment with milestones?

- What deliverables do you require from due diligence?
  - Annual, monthly, well-by-well forecasts?
  - Low, base and high case forecasts? By field or portfolio?

- Who is delivering what?
  - Often separate technical, legal, accounting, finance teams
  - Who is doing economics?
  - Who is looking at potential legal or contractual liabilities / claims?
  - Who is looking at contracts?

Ensure the opportunity is of interest and decide what you need to know

If it doesn’t fit your strategy why evaluate it

If it won’t effect your bid why review it?

However, you may not be able to go back to get additional deliverables

A low case outcome on every field is highly unlikely and cannot be the basis of a competitive bid. Will a low case on key field(s) suffice?
How to get the most from the process: Prepare

Optimise the process

- Can due diligence be broken into phases with go / no-go decision points
  - Initial red flag review (from VDR or Public Domain data)
  - Physical data room visit. Second visit if required
  - Site visit, Legal DD

- Which parts /characteristics of the acquisition are most important?
  - Hydrocarbon production?
  - Facility integrity and risk?
  - Operator reputation, HSE record and management processes?
  - Exploration upside?
  - The low case, mid case or potential high case outcome?

- Ensure the DD team know what the deliverables are

Focus on the more important aspect

- Typically 20% of the assets provide 80% of the value.
  - Do you need to look at the remaining 80%?
  - Analyse the sellers Information Memorandum forecasts to identify and rank focus areas. Identify what does not need review.

- Get information before you start
  - Review company and JV annual reports, press releases, investor presentations
  - Have reserves been reviewed or certified
  - Are papers or presentations on the asset available?

Prepare and optimise the process

Full DD is expensive. Can we break it down into phases with exit points?

The required deliverables are unlikely if they are not defined

A good review of key assets is better than a cursory review of all

Time is limited, maximise knowledge before you start

Cooper Basin 2P Oil Portfolio:
- 2P Reserves in 60 fields
- 27% in 3 fields, 50% in 7 fields

Cooper Basin 2P Oil

- Jackson Field
- McKinlay Field
- Zeus Field
- Tirrawarra Field
- Charo Field
- Jena Field
- Merrimela Field
- Tickalarra Field
- Biala Field
- Ulandi Field
- Watkins Field
- Gidgealpa Field
- Moomba South
- Irtalie Field
- Moorari Field
- Minos Field
- Iliad Field
- Cocinero
- Cook
- 41 other fields
The most effective evaluation method depends upon the life-cycle stage of the development.

Exploration opportunities will have limited data, no well, productivity or hydrocarbon composition data:
- Regional analogues are the best source of information
- Resource uncertainty will be wide

Discovered but unappraised resources will have limited data:
- Regional analogues remain important
- Logs, welltest, wireline pressure and fluid sample data important
- Resources based on static volume (G&G) and RF estimates

Appraised opportunities under development will have detailed analysis but no supporting production, cost history:
- Static volumes supported by detailed evaluation
- Resource volumes supported by detailed dynamic modelling

Producing assets are supported by production history, historic costs, forecast history:
- Most effectively evaluated by Decline Curve and Material Balance analysis
- Review of historic and forecast profiles for production, costs, resources

Beware: DETAIL ≠ ACCURACY
How to get the most from the process: Wireline pressure data

Wireline pressure data is often used to estimate the hydrocarbon-water contact. However, it can show a number of key reservoir characteristics:

- Multi-well pressure data showing a good straight line indicates reasonable productivity reservoir and initial hydraulic equilibrium both vertically and laterally between wells.
- Discontinuities, within a vertical well show limited vertical connectivity
- Discontinuities between wells show limited lateral connectivity / compartmentalisation
- A significant gap between hydrocarbon points and water points may indicate the water points are from a different reservoir interval which is not in communication with the hydrocarbon interval
- **Equilibration over geological time does not guarantee connectivity over production time!**

**Learnings:**

- Where important get into the detail
- Check the pressure gradients against the expected fluid gradient from lab fluid compositions
- Compare water line with regional analogues
- Review all available data, rank-it and understand discrepancies
  - It’s human nature to discard data that doesn’t fit
  - **Don’t ignore inconsistent data, understand it!**
- Don’t underestimate uncertainty

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Key factor in estimation in-place volumes

Low productivity reservoirs often give scattered supercharged points

Ensure the water line is valid

Don’t ignore data because it doesn’t fit your model

The model is probably wrong
How to get the most from the process: Static Volume Evaluation

Static volume evaluation and reservoir connectivity are critical in undeveloped fields with no supporting production history

- Doubles due diligence effort and cost

Structural Interpretation:
- Have all the key uncertainties been incorporated?
  - Fluid contact uncertainty, pick uncertainty, velocity model uncertainty
- Is the GRV uncertainty range consistent with project maturity, analogue fields?

Reservoir properties:
- Does the model match the wells?
- Are the model averages consistent with the well averages? Or is there a legitimate reason why not?
- Could a different geological model fit the data?
- Conduct an independent check of in-place volumes
- Has potential compartmentalization been captured?
  - Consistent with wireline pressure data?
  - Consistent with welltest and production data?
  - Consistent with analogues

Prepare the right team:
- Do you need specialists in structural interpretation, fractured reservoirs, specialist petrophysics?
- What are the key risks and opportunities?

Parameter ranges and hence resource uncertainty are consistently under-estimated

THINK OUTSIDE THE BOX

The one thing you know about a single model is it’s WRONG.

Work with uncertainty ranges

RISC’s grey hair and extensive hands-on experience will help
How to get the most from the process: Dynamic Evaluation

For mature assets the Operator is likely to present a complex, sophisticated model that has considered numerous uncertainties and options; millions of grid blocks, automated history matching, experimental design

- The supporting audit trail is often inadequate and a full review not possible due to data or time limits
- However, in mature fields basic analysis can be used effectively to audit the production forecasts:
  - Production Decline Curve Analysis will support the range of developed oil reserve estimates
  - Flowing or static (P/Z) material balance plots will support the range of GIIP estimates
  - Creaming curves will show the (diminishing) value of infill drilling
- Decline curve example:

Beware: DETAIL ≠ ACCURACY

If the next well planned is forecast to be the best well in the field don’t believe it

- Base production is supported by DCA
- The forecast production from a planned infill wells looks optimistic compared to the last infill?
  - Or can better performance be supported?
- Various wellwork (stimulation, re-perforating) is forecast to provide incremental production
  - Has wellwork not being conducted in the past 3 years?
    - If so it’s benefit is included in the DCA
    - If not why not?
How to get the most from the process: Reserves and Resource History

What does the resource history show

- We expect a wide resource range initially, narrowing as additional data and production becomes available
- A recent increase in resources may indicate a selling perspective
- Understand the reason behind historic changes
  - Phase-2 development added?
  - Move to sale mode?

Are difference sources of resource estimates the same?

- Annual reserves statement vs IM?
- Operator vs Seller?
- Government submissions?
  - Some authorities thoroughly review and challenge development plans and resource estimates
- Any independent resource certification?
How to get the most from the process: Conclusions

- Frame the opportunity:
  - Does it fit your corporate objectives?
  - What will affect your decision to bid and bid price?

- Be prepared:
  - Review the IM economics and value drivers
  - Where to focus, what can be left unaudited?
  - Review public domain data
  - Confirm required deliverables and who does what

- Select the best evaluation methodology:
  - Basin review for undrilled exploration
  - Key basic data for immature discoveries
  - Thorough G&G review for undeveloped fields
  - Historic production/cost review for mature assets

- Challenge the key results
  - Dig into the key parameters and interpretation
    - Seismic interpretation?
    - Independently verify in-place volumes and RF
    - Production/cost history
  - Are sophisticated forecasts consistent with basic analysis? (of all data)
  - What are the key risks/opportunities and have they been adequately captured?

  - What confidence do you assign? Seller bias, independent confirmation?
  - Examine the reserve/resource history; understand changes?
  - Is the seller overselling it?

RISC’s grey hair and extensive hands-on experience will help?