GROUP BREAK OUT SESSIONS

BRIEF

| Question/Challenge | Outcome sought? | Champion |
|---|---|---|
| **1. Equipment**<br>Orifice / Helical / Hybrid – Which is the better design?<br><br>**Value**<br>Design and modelling<br>* L horizontal or multilateral<br><br>**Future**<br>Should standards be developed? API<br><br>Where would you not run ICDs – fire there ad applications | Optimum solution per application<br><br>Guidelines? | Barry Goodin |
| **2. Diagnostics**<br>Procedures and tools for diagnostics<br><br>Lessons learnt<br><br>What other equipment is re quired<br><br>Active or passive? | | Gonzalo Garcia |
| **3 . Deployment / procedures**<br>Mud conditioning<br>Displacement to low-solid o/f<br>Immediate clean-up<br>Bean up strategy | What is required / most effective to avoid screen plugging? | Kam Sing Chooi |

**GROUP ONE: GUIDELINE FOR DETERMINING VALUE: (BARRY GOODIN)**

**Design & Modelling;**
**Horizontal v Multilateral,**
**Where would you not run ICDs?**

**VALUE**

Dynamic – overall value

- Appropriate complexity
    - Geology
    - Reservoir
    - Equipment
- Model ICDs if possible / necessary
- Multiple wells
    - Spacing / length
- Multiple ICD configuration,
- Future adjustability
    - Post implementation review

**STATIC**

NWB

- OK for now
- Simple
- Netool vs others

**ICD's**

- Heterogenity / frictional pressure drop insignificant
- Length of interval
- Compartmentalisation

**GROUP TWO: DIAGNOSTICS: (GONZALO GARCIA)**

**Procedures & Tools for Diagnostics**

**DIAGNOSTIC**

1. Commence base line per ICD
    a. Fluid proportions
    b. Measure DP, DT, acoustic
    c. Flow performance characteristics

2. Completion
    a. Completion type
    b. Accessibility (intervention)
    c. Monitor (permanent or not)
    d. Measurement (real time PLT)
        i. Tracer
        ii. DTS
        iii. Acoustic
3. Diagnostic methodology
    a. KP / or failure criteria
    b. Equipment or reservoir performance
    c. Well or reservoir level
    d. Trigger solutions
    e. Direct or indirect measurements
    f. Depend on ICD type

**GROUP THREE: DEPLOYMENT & PROCEDURES (KAM SING CHOOI)**

**What is required/ most effective to avoid screen plugging?**
**Mud Conditioning**
**Displacement to low solid DIF**
**Immediate clean up**
**Bean up strategy**

1) **Mud conditioning:**
   a) DIF design and testing (prepare early!)
   b) Mud conditioning from start of drilling the reservoir section
   c) PST * regardless of mud conditioning
   d) Mud losses

2) **Displacement to LSDIF / SFDIF 30kg/$m^3$ or 10lb/bbl or lower**
   a) Same phase – to avoid byrite settling
   b) Standard practice for most operators
   c) Risk of ICD housing plugging
   d) SFDIF in open hole but same density condition mud in cased hole
   e) No losses issue

3) **Immediate Clean Up**
   a) No sufficient data for need of immediate clean-up for better clean-up
   b) DIF test is critical. Contingency for last minute change
   c) Much solid?/emulsion? Returns if not clean-up immediately (even displaced to LSDIF)

4) **Gradual Bean-Up**
   a) Slow bean-up – general consensus