# **Stuart Wright Pte Ltd**

Safe & Reliable Wells







# **About Stuart Wright**



Stuart Wright Pte Ltd is an independent well engineering specialist based in Singapore and Australia. We harness our collective experience to provide our clients with dedicated well engineering services - to date we have advised on over 100 well projects worldwide.

Through our particular focus on barrier validation (RTBC), well engineering, well integrity, well control, HPHT & deepwater and decommissioning we are committed to providing specialist, high value support to help our clients ensure the efficiency, safety and reliability of their well activities.

### **Our Core Services**

|                  | 1. Consulting | 2. Intelligent Risk Solutions | 3. Training |
|------------------|---------------|-------------------------------|-------------|
| Well Engineering | ✓             | ✓                             | ✓           |
| Well Integrity   | ✓             | ✓                             | ✓           |
| Well Control     | ✓             | ✓                             | ✓           |
| HPHT & Deepwater | ✓             | ✓                             | ✓           |
| Decommissioning  | ✓             | ✓                             |             |

# 1.1 Well Engineering Services



### Conventional

### **Unconventional**

### **Drilling Wells**

### **Production Wells**

### **Geothermal Wells**

- Basis of design review
- Casing design assurance review
- Tubing stress analysis
- Subsurface HAZOP risk assessment
- Complex well management system review
- Competency assessment
- Offset well review

- Rig capability audit
- Well control assurance review
- Drilling program review
- Legislation compliance checks
- Corporate operations manual review
- BOCP/ BCP review
- WAiT© process
- Incident investigation

- Well examination
- Corporate operations manual review e.g. WIMS, WIOMP
- WAiT© process
- Well database integrity checks
- Production efficiency audit
- Reservoir performance review

- Casing design assurance review
- Casing design manual review
- Well drilling survey review
- Well Control assurance review
- Workover programme assurance review
- Geothermal well engineering mgmt system development
- WIMS development and rollout
- SCADA concept study for remote annular monitoring

### **Software Applications**

- SW RTBC
- SW WAiT<sup>©</sup>
- SW BHPM

- WELLCAT
- CASING WEAR
- WELLPLAN

- Stresscheck
- COMPASS Trajectory
- ECE5

- WELL CONTROL
- PRESMOD

# **1.2 Well Integrity Management**



We help our clients to assess, monitor and maintain well integrity through a number of procedures which can be tailored to meet the individual client's needs.

| Assess Well Integrity Documentation    | Establish Management expectations  |
|--|--|
| Assess Well Integrity Field Operations | <ul> <li>Establish current implementation</li> <li>Perform WAiT© analysis on selected wells</li> <li>Train production operators in basic site specific well integrity methods</li> </ul> |
| Cold Eyes Review / Gap Analysis        | Identify improvement opportunities     Final report with recommendations   |
| WIMS/ICE Performance Standards         | Develop agreed Well Integrity Management System/Performance Standards  |
| WIMS Roll Out                          | Training, implementation and tracking  |
| Due Diligence                          | Review of well integrity for M&A using WAiT© methodology (pre and post deal)   |

# 1.3 Well Control Engineering



We have a deep knowledge and understanding of well control including incident prevention, blowout contingency planning and control response. Our team have experience working on a wide range of well control incidents and have harnessed this experience in our well control support and training.

| Planning   | Execution  | After Action Review   |
|--|--|---|
| Well Control Planning  • Conduct corporate well control management system audit  • Rig capability audit  • Blowout contingency planning  • Well control manual review  • Risk assessment | Operation Support • Remote well barrier integrity monitoring   | After Action Review  • Lessons learned reporting  • After Action Review  • Compare well control document update |
| Training Programme  • Blowout contingency planning  • Advanced well integrity management   | Remote Emergency Well Control Response  On call 24 hour emergency response Remote consultancy support  |   |
|  | Well Control Engineering Support  • Well control incident recovery support  • Incident root cause investigation  • Recovery operations risk assessment  • WAiT© analysis |   |
|  | Rigsite Emergency Well Control Response  • Rigsite well control support  |   |

### 1.4 - 1.5 Loss of Control Investigation and Expert Witness



Other consulting services provided include acting as an independent expert or witness into well control incidents.

We have worked with a range of government organisations in various countries to help understand the root cause of well control incidents.

### 1.4 Loss of Control Investigation

- Root cause investigation (on-site or remote)
- Independent technical review of evidence
- Deliver technical report and expert witness statement for litigation cases
- Court appearance of expert advisor

### **1.5 Expert Witness**

- Expert witness services for government regulators, operators and drilling contractors
- Montara Blowout Investigator for Australian government
- Expert technical guidance for NZ government



# 1.6 HPHT & Deepwater Services



Stuart Wright provide a range of services to support clients through the planning, execution and review of HPHT and Deepwater wells.

| Planning   | Design  | Operation preparation  | Execution  | After Action<br>Review  |
|--|---|--|--|---|
| Campaign preparation  Offset well review Identify subsurface hazards & mitigation Blowout contingency planning | Casing design  • Detailed well design (WELLCAT)  • Casing Design Assurance Review (WELLCAT) | Documentation  Prepare well and rig specific manual Bridging document Well control manual review   | Remote integrity monitoring (pre-HPHT)  Review drilling reports Track HPHT preparations on rig   | After Action Review • End of well P&A after action reviews • Lessons learnt |
|  |   | Rig Readiness • Rig capability survey – GAP Assessment   | Rig Coach • Training and guidance • Implement procedures   |   |
|  |   | <ul> <li>Engineering Support</li> <li>Ad hoc support – attending<br/>DWOP, HAZOP, risk<br/>assessments</li> <li>Drilling programme review</li> </ul> | Rig site support  Onboard engineers  24 hr BHP management, hydraulics, finger printing, thermal simulation, kick simulation, swab and surge limits |   |
|  |   | Training • Onshore HPHT training – entire crew over 4 sessions (1- 3 days per session)   |  |   |



# 1.7 Decommissioning Services



Stuart Wright provide a range of consulting and intelligent risk solution services to support clients through the planning, execution and review of decommissioning projects.

| Planning  | Design  | Operation preparation  | Execution  | After Action<br>Review                              |
|---|---|--|--|---|
| Campaign preparation  Technical Studies  Review and preparation of corporate abandonment manual                 | Well P&A design  Third Party peer review of well P&A design | Rig Readiness • Rig upgrades assessment for well abandonment • Rigless Option Analysis   | P&A integrity monitoring and assurance • Create accurate as built wellbore diagrams with critical barrier integrity validation information | • End of well after action reviews • Lessons learnt |
| Risk Assessment  Risk Assessment of P&A Well Programme  Well Integrity Assessment using our RTBC System process |   | <ul> <li>Engineering Support</li> <li>Ad hoc support – attending HAZOP, risk assessments</li> <li>Well P&amp;A programme review</li> </ul> | <ul> <li>Generation of Daily<br/>Integrity Reports (DIR)<br/>captured in a secured cloud<br/>database</li> </ul>                           |   |

# 2. Intelligent Risk Solutions

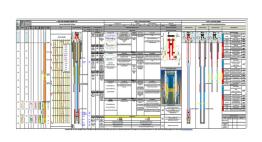




At Stuart Wright we like to think of taking Intelligent Risks and we have spent many man years of effort creating a range of oil and gas software solutions which all promote this mindset. The use of smart software can help companies to ensure they have accurate and available data to allow for well informed and responsive decisions.

Our Intelligent Risk division offers the following products in addition to a range of technologies currently under development:









2.1 Well Drilling Barrier
Monitoring Software

2.2 Well Assessment Integrity Tool

**2.3 Rig Site HPHT Monitoring Tool** 

2.4 Wellbore Visualisation
Software

# **Proper Barrier Rules Implementation i.e. RTBC**



RTBC is a unique **CLOUD BASED well barrier validation and monitoring solution** that helps to protect:

People



**Assets** 



**Environment** 



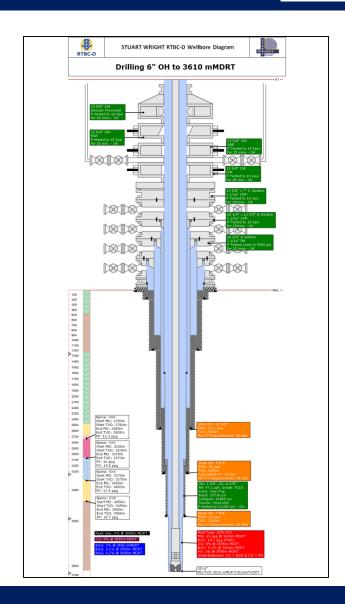
### **Introduction to RTBC**



RTBC is a software **Barrier Validation System**, which ensures corporate Barrier Rules are verifiably applied during well construction

### **Significant benefits:**

- Instantly available accurate wellbore diagrams via cloud connectivity
- Evidentiary compliance with the company barrier rules
- Barrier validation evidence during well construction
- Secure cloud database storage for all critical barrier validation information
- **Scalable wellbore diagram** giving accurate representation of the entire wellbore system including :
  - ✓ casing, cement, formation, wellhead, BOP's configuration, MPD
    network
- Provides the onshore management team with the same accurate wellbore status information as on the drilling rig



### **Introduction to RTBC**

### **Development Drivers**



The RTBC development drivers already discussed were complimented by findings derived from various blowout or loss of control **investigations performed by Stuart Wright** Pte Ltd

### Common themes for Blowout root causes:

MOC system not enforced

Management

Failure to learn

**System** 

Lack of as-built accurate wellbore diagrams/data

<u>System</u>

Bypass of barrier policy

**Organisation** 

Biased decisionmaking

Human & Organisational

Data overload and interpretation gap

System & Human Factors



# 3. Training



**Stuart Wright Training Academy** conducts **Continuing Professional Development** training courses on well engineering design, planning and operations throughout the year.

Courses can be conducted by our experienced trainers at our offices in Singapore and Perth, Australia or at the client site.

Public courses are open to qualified professionals. We aim to reinforce theoretical knowledge with comprehensive materials, case studies and practical exercises. Candidates are also assessed for progress tracking.

Please contact us at <a href="mailto:training@stuartwright.com.sg">training@stuartwright.com.sg</a> / +65 9025 7248

| Well Engineering           | Well Integrity                                       | Well Control  | HPHT & Deepwater   |
|----------------------------|--|---|--------------------|
| 3.1 Well Engineering I     | 3.5 Advanced Well Integrity Management               | 3.7 Rig Site Training Wellbore Monitoring & Control | 3.8 HPHT Awareness |
| 3.2 Well Engineering II    | 3.6 Well Integrity Course for<br>National Regulators |   | 3.9 HPHT Rig Coach |
| 3.3 Advanced Casing Design |  |   |                    |

3.4 Graduate Training Program

### 4. Our Clients



Stuart Wright are trusted by a wide range of clients including independents, international operators, national oil companies and government regulators.

#### **Conventional**

- Apache Energy Limited
- Asset Energy
- Beach Energy
- BHP Billiton Limited
- BOEMRE
- BP Caspian Sea Limited
- BP Exploration & Production Inc.
- Brunei Operator Petroleum
- Bunga Mas International Company
- Cairn Energy PLC
- Carigali HESS Malaysia
- Chevron Australia
- Conoco Phillips
- Cooper Energy
- Eaglewood Energy Inc.
- ENI Australia Ltd
- Geodynamics Limited
- HESS Exploration Australia
- INPEX Corporation
- InterOil
- JVPC Vietnam
- Jx Nippon
- Keppel FELS Pte Ltd
- Kumal Petroleum

- Maersk Oil North Sea
- Mont D'Or Petroleum
- NOPSA
- Oil Search Limited
- Origin
- Pan American Energy
- Petronas Carigali Sdn Bhd
- PetroVietnam Drilling
- Premium Drilling
- PTTEP
- Quadrant
- Repsol YPF
- Santos Limited
- Shell Australia
- Strike Energy
- Talisman Energy Inc.
- TOTAL Indonesia E&P
- TOTAL Australia Pty Ltd
- TOTAL Denmark
- Todd Energy
- Thang Long Joint Op. Company
- Twinza Oil Limited
- UMW Oil & Gas Sdn Bhd
- Woodside
- YPFB Andina / YPFB Chaco

#### **Unconventional**

- Geodynamics Ltd (Geothermal)
- Santos Limited (Coal Seam Gas)
- Queensland Gas Company
- Star Energy
- KS Orka

### **Regulators**

- BSEE
- Dept of State Development (DSD)
- Department of Industry, Tourism and Trade (NT, Australia)
- NOPSEMA
- Worksafe
- DNRME

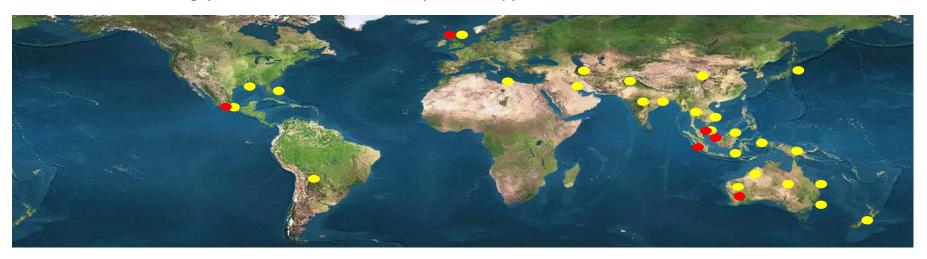
#### **Assurance**

- Aon Singapore Pte Ltd
- Brookes Bell
- Munich RE
- Gallagher

## 6. Our Offices



From our offices in Singapore and AU, we are able to provide support and services to clients worldwide.



Stuart Wright office / representationProject experience



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