








-  Property Boundary
-  Santos Production Permit
-  Santos Exploration Permit
-  Gas Pipeline
-  Oil Pipeline
-  Water Pipeline

**Santos**

PL 4 - Queensland

## Proposed Pine Ridge 24



0 2  
Kilometres Scale 1:100 000

July 2010, File No. QLDGEN 371 A

# PINE RIDGE 24

## WELL PROPOSAL

DREW COWARD  
CSG DEVELOPMENT WELL  
ROMA, QUEENSLAND  
PL 4





Licensed & Engineering Surveyors

Land & Property Development

Project Management

Geographic Information Management

Petroleum Infrastructure Survey & Design

**FYFE ALLIANCE.**

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email john.morrow@mjhg.com.au

**WELL PEGGING ADVICE**

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Jim Goodwin	<a href="mailto:jim.goodwin@mjhg.com.au">jim.goodwin@mjhg.com.au</a>		

**WELL NAME** Pine Ridge 24 Rev 2

**PEGGED LOCATION**

Geographic Co ordinates (GDA 94)

Latitude - 26 ° 27 ' 59.21 "

Longitude 148 ° 59 ' 10.41 "

Grid Co ordinates (MGA 94)

Easting 698 009.4

Northing 7 071 128.4

Location Pegged 262 ° 00 ' for

547m from original scout position

Date Pegged 02/07/2010

Field Services representative present during pegging

yes  no

Name:

Additional Field Services Survey Requirements

yes  no

Description: Picket lease fence corners and determine cut/fill volumes for pad design

Well Location SA  QLD

Scout Number PR - 23/24

Purchase Order N<sup>o</sup> 800487-2013

MJHG Instruction N<sup>o</sup> 18059-18-1

Constructed Lease level ~~will~~ / ~~will not~~ vary from existing natural surface level by more than 300mm

**GROUND ELEVATION AT PEGGED LOCATION**

360.17 metres (AHD)

Authority PR 22 BM 2 RL 357.512 metres (AHD)

Interpolated natural surface elevation at well location from seismic database N/A metres (AHD)

Sump reference line pegged at 278 degrees

~~Magnetic~~ / Grid bearing from pegged well location. TBA

Preliminary flowline route to exit lease at degrees Grid bearing.

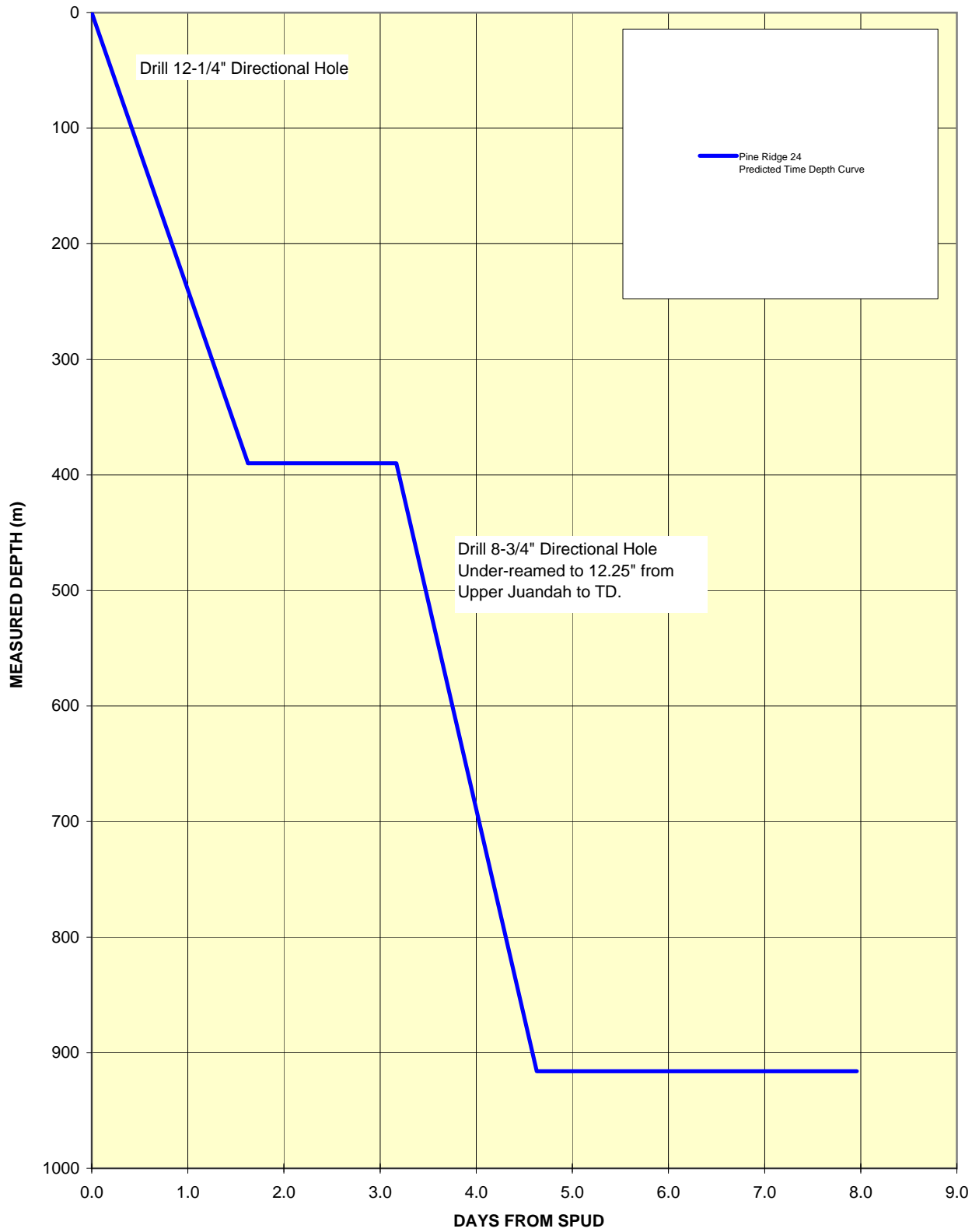
Surveyor Tony Jackson



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### Pine Ridge 24 Predicted Time Depth Curve



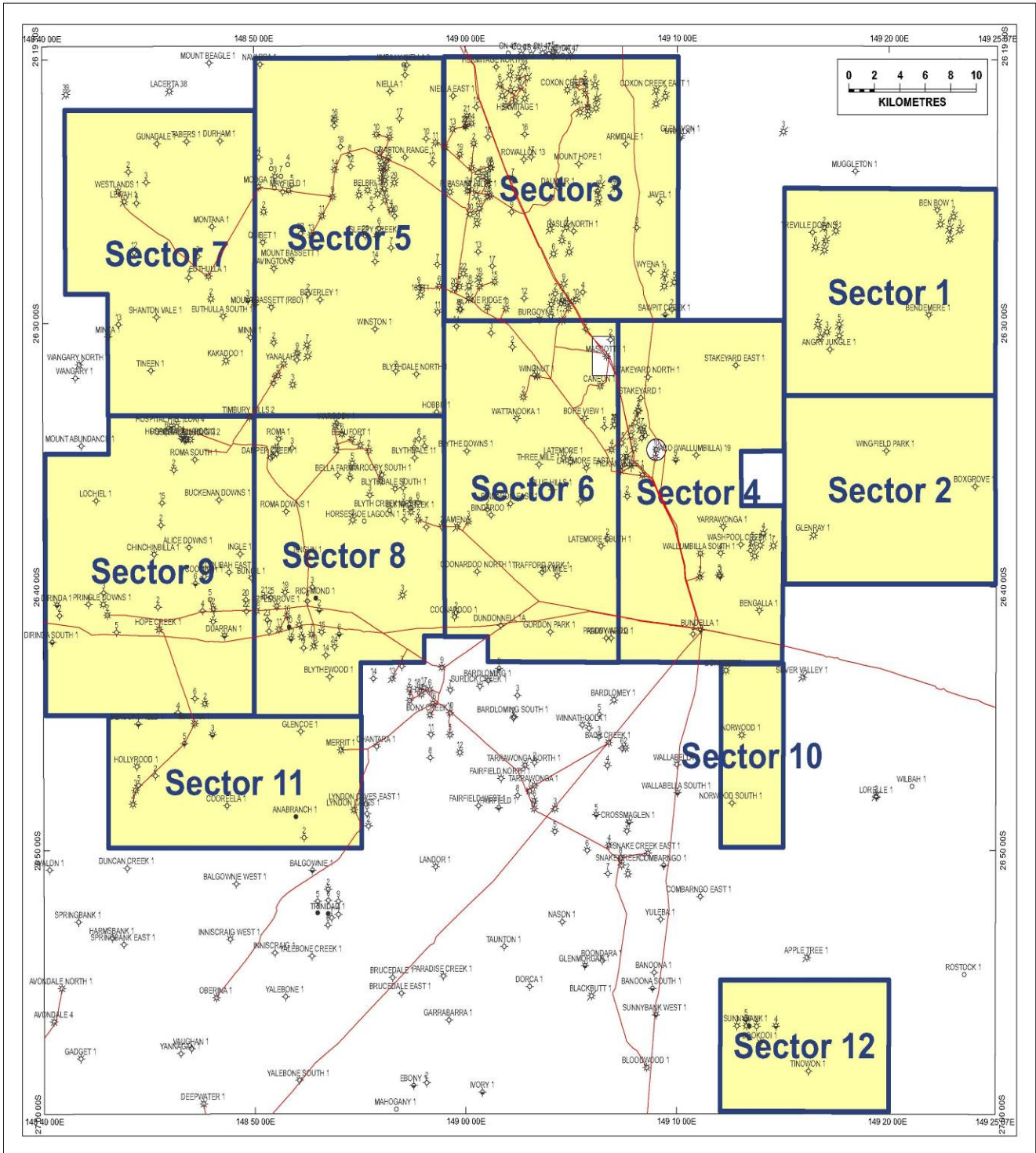
**PRIMARY OBJECTIVE**

Drill and complete 2 well pad at Pine Ridge aimed at trialling high dog leg severity (DLS) directional drilling in line with the 2010 Roma Field Development Plan (FDP).

**JUSTIFICATION**

Evaluation of high dog leg directional drilling as a contingency to slant drilling is fundamental to the FDP and delivery of GLNG.

**Sector 3 in Roma Area**





Pine Ridge 23-24 Pad Well Topography Map

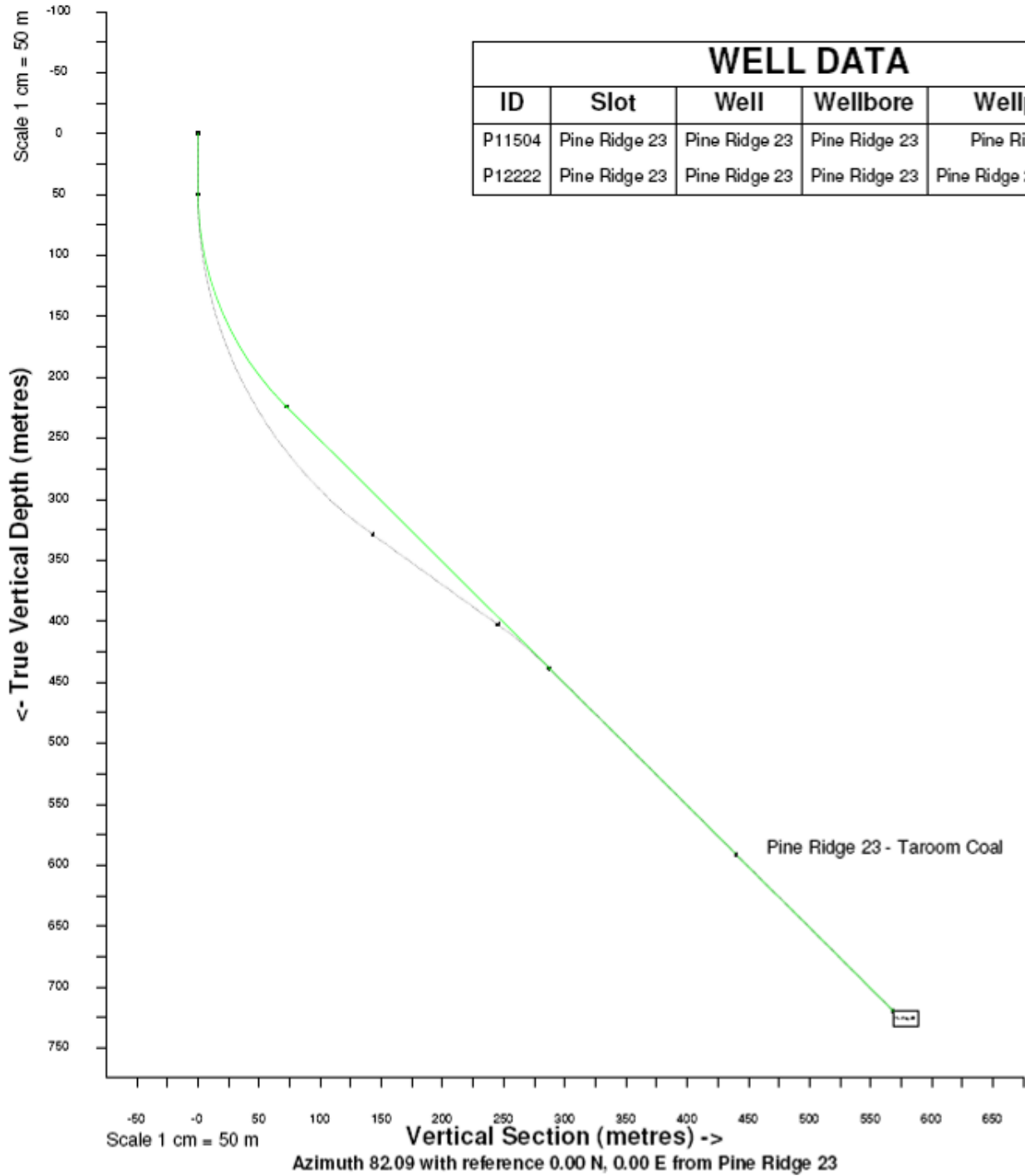


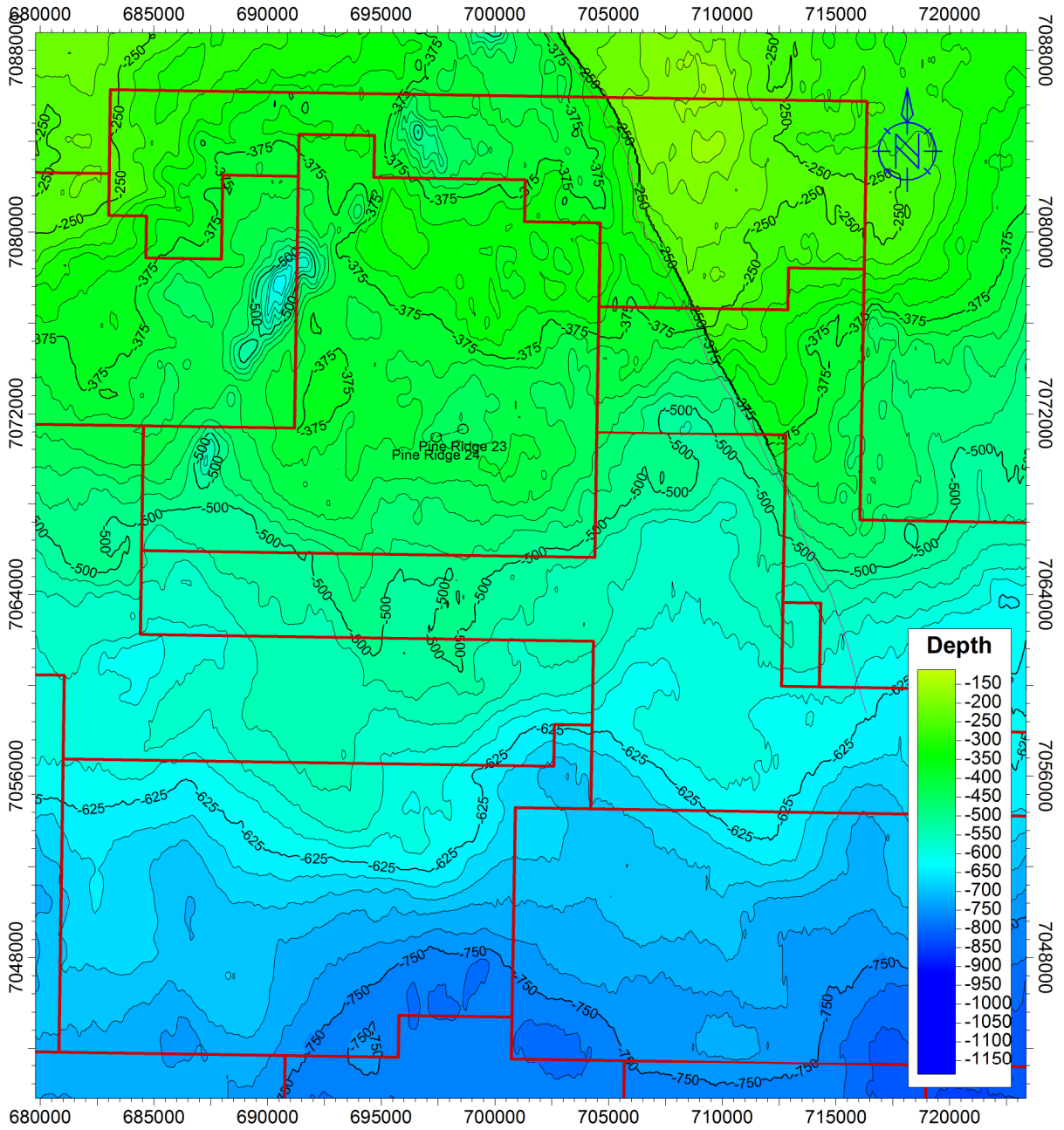
**Figure 3: Technology Concepts Trial Summary Table**

	<u>Well Design</u>	<u>Techniques</u>	<u>Completion</u>	<u>Stimulation</u>	<u>ALS</u>
<u>Roma</u>					
1	<u>Slant – Build / Drop</u>	<u>Under-ream / Mud Drilling</u>	<u>Slotted Liner</u>	<u>n/a</u>	<u>PCP</u>
2	<u>Vertical</u>	<u>Under-ream / Mud Drilling</u>	<u>Slotted Liner</u>	<u>n/a</u>	<u>PCP</u>
3	<u>Vertical</u>		<u>Cased / Perforate</u>	<u>Frac Vert</u>	<u>PCP</u>
4	<u>Slant – Build / Drop</u>	<u>Mud Drilling</u>		<u>Frac 45</u>	<u>PCP</u>
5	<u>Deviated High DLS – Build / Drop</u>	<u>Mud Drilling</u>	<u>Cased / Perforate</u>	<u>n/a</u>	<u>PCP (corod)</u>
		<u>Mud Drilling</u>	<u>Slotted Liner</u>		
<u>Fairview</u>					
6	<u>Deviated – Low DLS (S/J)</u>	<u>Mud Drilling</u>	<u>Cased / Perforate</u>	<u>Frac 75 deg</u>	<u>PCP</u>
7	<u>Deviated – Low DLS (S/J)</u>	<u>Under-ream / Mud Drilling</u>	<u>Slotted Liner</u>	<u>Cavitate</u>	<u>PCP</u>
8	<u>Horizontal</u>	<u>Mud Drilling</u>	<u>FRP Liner</u>	<u>n/a</u>	<u>PCP</u>
9	<u>Vertical</u>	<u>Mud Drilling</u>	<u>Cased / Perforate</u>	<u>Frac Vertical</u>	<u>PCP</u>
10	<u>Deviated Low DLS</u>	<u>Air Drilling</u>		<u>n/a</u>	<u>n/a</u>
11	<u>Deviated Low DLS</u>	<u>Underream / Mud Drilling</u>	<u>Slotted Liner</u>		<u>PCP</u>
12	<u>Slant</u>		<u>Barefoot</u>	<u>Cavitate</u>	<u>PCP</u>
13	<u>Deviated Low DLS</u>	<u>Mud Drilling</u>	<u>Cased / Perforate</u>	<u>Frac 45</u>	<u>PCP</u>
		<u>Mud Drilling</u>	<u>Swell Packers</u>	<u>Frac 75</u>	
<u>Arcadia</u>					
14	<u>Slant – Build / Drop</u>	<u>Mud Drilling</u>	<u>Cased / Perforate</u>	<u>Frac 75 deg</u>	<u>PCP</u>
15	<u>Deviated – Low DLS (S/J)</u>	<u>Mud Drilling</u>	<u>Cased / Perforate</u>	<u>Frac 75 deg</u>	<u>PCP</u>
16	<u>Deviated High DLS</u>	<u>Mud Drilling</u>	<u>Cased / Perforate</u>	<u>Frac 75 deg</u>	<u>PCP</u>



### Pine Ridge 23 24 Trajectories





0 2.5 5km  
1:290282