



07IND INDIGO SEISMIC SURVEY

SEISMIC SURVEY REPORT

ATP 818P – QUEENSLAND

Blue Energy Limited
A.C.N. 054 800 378
Suite 15A
Central Brunswick
421 Brunswick Street
Fortitude Valley QLD 4006

September 2009

TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	LOCATION.....	1
3.0	GEOLOGY.....	1
3.1	SURAT BASIN SETTING.....	1
4.0	ATP 818P	5
4.1	PREVIOUS SURVEYS	5
5.0	OPERATIONS	5
5.1	ACQUISITION	5
5.2	PROCESSING.....	6
5.3	INTERPRETATION	6
6.0	PROSPECTS AND LEADS.....	7
7.0	REFERENCES.....	11
	APPENDIX 1 OPERATIONS REPORT DYNAMIC SATELITE SURVEYS.....	- 1 -
	APPENDIX 2 OPERATIONS REPORT TERREX SEISMIC.....	- 2 -
	APPENDIX 3 DATA PROCESSING REPORT VELSEIS PROCESSING.....	- 3 -
	APPENDIX 4 INTERPRETED SEISMIC SECTIONS	- 4 -

1.0 INTRODUCTION

During the period from the 17th of November to the 24th of November in 2007 Terrex Seismic of Bibra Lake WA acquired 106.59km of seismic data consisting of six lines. The data was recorded using a 15m station interval and 260 live channels. Vibroseis was used as the data source and these conducted sweeps between the pegs creating 130 fold data. This seismic was the initial seismic acquired by Blue Energy Limited in AtP 818P.

Surveying, chaining and pegging was conducted by Dynamic Satellite Surveys of Yeppoon Qld between the 17th and 27th of November.

The survey was processed by Velseis Processing of Sumner Park Qld between December 2007 and March 2008.

2.0 LOCATION

The survey is located in the southern portion of ATP 818P centred around a location 30km east of Goondiwindi in southern Queensland. The survey covers an area of the Chinchilla Goondiwindi Slope (Scott et al 2004) of the Surat Basin where it extends southward into New South Wales. The area lies east of the Goondiwindi Mooni Fault and west of the Kumbarilla Ridge.

3.0 GEOLOGY

The 07IND seismic survey was conducted in the eastern Surat Basin where the target formation was the Walloon Coal Measures. The Surat Basin sequence unconformably overlies the Texas High basement sequence.

3.1 SURAT BASIN SETTING

The Surat Basin is a large intracratonic basin of Mesozoic age covering approximately 300,000km² of southeastern Queensland and northern New South Wales. The basin forms part of the larger Great Australian Basin (Green et al, 1997), and interfingers westward across the Nebine Ridge with the Eromanga Basin, and eastward across the Kumbarilla Ridge with the Clarence-Moreton Basin (Exon, 1976). Basement blocks consisting of the Central West Fold Belt and the New England Fold Belt limit the basin to the south, while in the north the basin has been eroded and unconformably overlies Triassic and Permian sediments of the Bowen Basin.

The Surat Basin contains up to 2,500m of sedimentary rocks deposited during the Latest Triassic to

Early Cretaceous periods. The succession consists of five fining-upwards sedimentary cycles dominated by fluvio-lacustrine deposits (Exon, 1976; Exon and Burger, 1981; Day et al, 1983). The lower part of each cycle typically comprises coarse-grained mature sandstone, grading up into more labile sandstone and siltstone, with mostly siltstone, mudstone and coal in the upper part. In the Cretaceous, inundation of the land through an increase in sea level led to deposition of predominantly coastal plain and shallow marine sediments in two cycles.

Structurally, the Surat Basin is relatively simple with the area of maximum deposition, the Mimosa Syncline, overlying the thickest Permian-Triassic rocks in the Taroom Trough of the underlying Bowen Basin (Day et al., 1983). Major faulting within the basin predominantly mirrors basinal boundary faults of the underlying Bowen Basin. There is substantial folding across the basin, which is due to compaction and draping, as well as some rejuvenation of older pre-Jurassic structures and faults. Formations outcrop along the northern erosional boundary and dip gently to the south and southwest at less than 5°

3.1.1 Walloon Coal Measures

Spursequence K includes the Walloon Coal Measures including the Eurombah Formation and the underlying Hutton Sandstone. The Middle Jurassic Walloon Coal Measures (WCM) forms part of the Injune Creek Group and is developed throughout the Surat Basin, ranging in thickness from less than 50m to greater than 700m Scott et al. (2004). In the northeast Surat Basin, the formation was raised by Jones and Patrick (1981) to subgroup status and, in stratigraphic order, was divided into the Taroom Coal Measures, Tangalooma Sandstone and Juandah Coal Measures.

Hoffman et al 2009 picked a seismic sequence boundary S40 at the top of the Walloons and S30 at the base of the Hutton sandstone. A further seismic sequence boundary S35 was picked at the base of the Walloon Coal Measures. The S35 horizon reflection was variable from weak to strong due to rapid lateral facies changes.

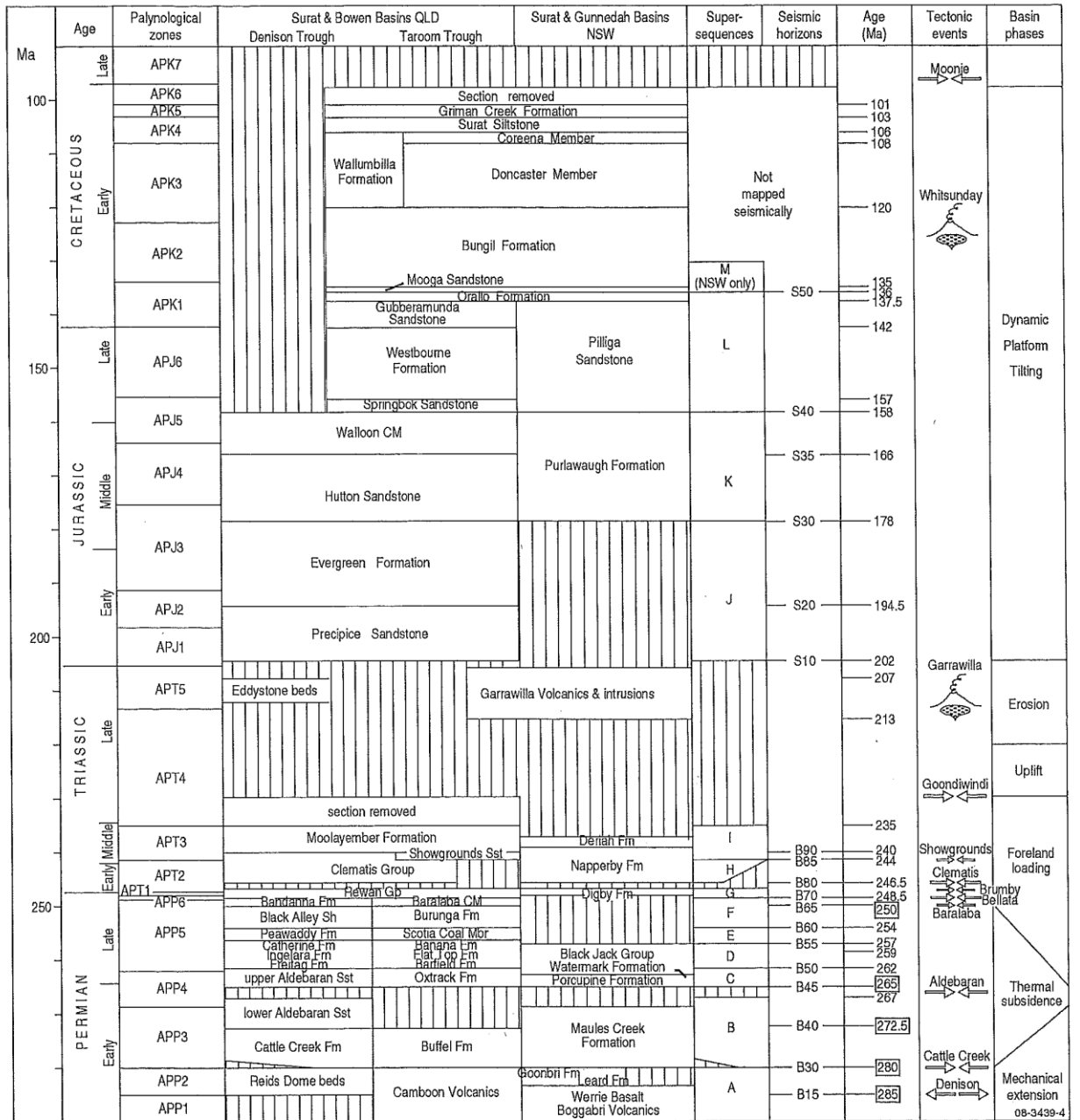


Figure 1 – Stratigraphy of the Surat and Bowen Basins (Korsch & Totterdell 2009)

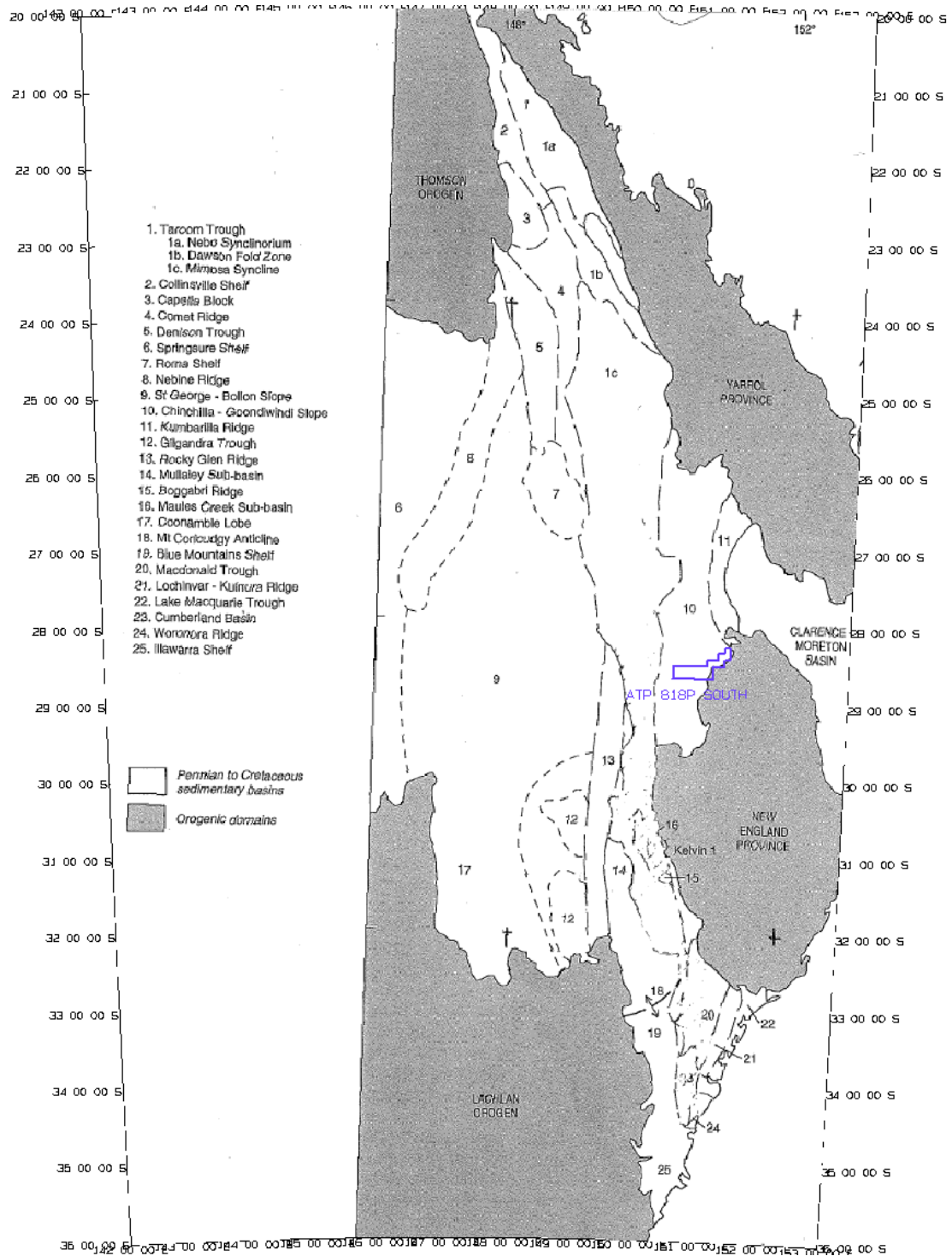


Figure 2 - Structural elements of the Surat, Bowen, Gunnedah and Sydney Basins (after Krassay et al 2009)

4.0 ATP 818P

4.1 PREVIOUS SURVEYS

The survey lies east of the Goondiwindi Moonie Fault which delineates the more prospective zone for conventional hydrocarbon discoveries to the west of this. Because of this there has been very little recent Seismic Survey activity in this region.

The only nearby survey is the P06 survey recorded by Pangaea to the south of this Survey in New South Wales. This survey is 7km away at its closest point. This Pangaea survey overlaps the Eastern Star E01 survey to the west.

4.2 WELL CORRELATION

WPC Commoron 1 was drilled to 852m depth and intersected the basement metamorphic at 837m. This well was drilled as a conventional petroleum exploration well. A sonic log was run from 122 m to near total depth. This well was not positioned on any available seismic.

WPC Moogoon 1 was drilled to 989m depth and intersected the basement metamorphic at 978m. This well was drilled as a conventional petroleum exploration well. A sonic log was run from 119 m to near total depth. This well was not positioned on any available seismic.

BUL Indigo 2A was drilled to 658m depth to intersect the Walloon Coal Measures. This well was drilled as a coal bed methane exploration well. A sonic log was run from surface to 646m depth. This well is situated near station 1428 on line 07IND-02.

5.0 OPERATIONS

5.1 ACQUISITION

The data was acquired between the 17th and 24th of November 2007 by Terrex Seismic of Bibra Lake WA. They have provided an operations report which is included as an appendix.

Line	Start VP	End VP	Km	Days
07IND01	200	555	5.325	23 rd - 24 th
07IND02	200	1955	26.325	17 th – 19 th
07IND03	200	1273	16.095	20 th – 21 st
07IND04	140	1020	13.20	19 th – 20 th
07IND05	200	992	11.88	24 th
07IND07	2700	450	33.75	21 st – 23 rd
TOTAL			106.575	

Table 1 line statistics

5.2 PROCESSING

The data was processed between December 2007 and March 2008 by Velseis Processing of Sumner Park Qld. They have provided a processing report which is included as an appendix.

Velseis provided examples of field records in order to select parameters for spherical divergence, airblast attenuation and prestack FK filter. Stacked sections were provided to select parameters for deconvolution, nmo mute, cdp trim, AGC, migration velocity, bandpass filter tests and eigenvector filter

Velseis provided a 1st pass residual static stack on all lines as well as a final, bandpass filtered and unfiltered stack, and a migrated final section, also bandpass filtered and unfiltered.

5.3 INTERPRETATION

Static shifts were calculated for processing the data using a datum elevation of 250m with a replacement velocity of 2500m/sec.

The sonic log of BUL Indigo 2A was integrated to give a time depth curve from surface. This can then be corrected to a zero time at sea level datum once well data is matched to seismic data.

The Surat basin sediments has been divided into a series of fining upward supersequences. The top of the Walloon Coal Measures represents a supersequence boundary where it has a sharp sometimes scoured boundary with the Springbok Sandstone. This boundary is represented on seismic as a boundary between strong parallel to bifurcating reflections caused by coal seams within the Walloon Coal Measures, and the base of a package of discontinuous reflections that may have some strong reflections near the base representing coal within the base of the Springbok Sandstone. This is the S40 reflector of Hoffmann et al 2009 who noted some onlap can occur.

The seismic data was shifted such that the top Walloon Coal Measures in the well BUL Indigo 2A was matched to the S40 or top Walloon Coal Measure pick on the seismic data of the 07IND survey. This resulted in a 180msec lift in the seismic data.

Below the strong parallel and bifurcating reflectors representing the coal measure sequences of the Walloons is a zone of weak reflectors. Within this zone lies the Hutton Sandstone and the base of the Walloon Coal Measures. This boundary is indistinct as there is a gradual change from the overlying Eurombah Formation and the lower coal measure sequences. The top of the Hutton Sandstone has been picked as the top of the weak reflection zone. This pick needs to be correlated from drill holes. In this case it was correlated from the Goondiwindi-1 well using E01 seismic shot by Eastern Star Gas.

The base of the Hutton or top of the Evergreen represents another supersequence boundary and this horizon is marked by a strong reflector.

Another reflector easily picked was the base of the Surat Basin sequence

6.0 PROSPECTS AND LEADS

The survey is based on Coal Bed Methane exploration requirements where potential closures with potential for free flowing gas are not the targets. What is required is to determine the structural nature of the top coal surface.

The coal dips more steeply toward the north west over the south eastern half of the survey area until it reaches around 500m depth. Over the remainder of the area there is much less dip with a slight ridge along the western margin.

In this region the Evergreen Formation is deposited on basement. The Hutton Walloon supersequence (supersequence K of Hoffmann et al 2009) is the first complete fining upward cycle. The coal measures sequence appear to be within the window for coalbed methane extraction (200-600m).

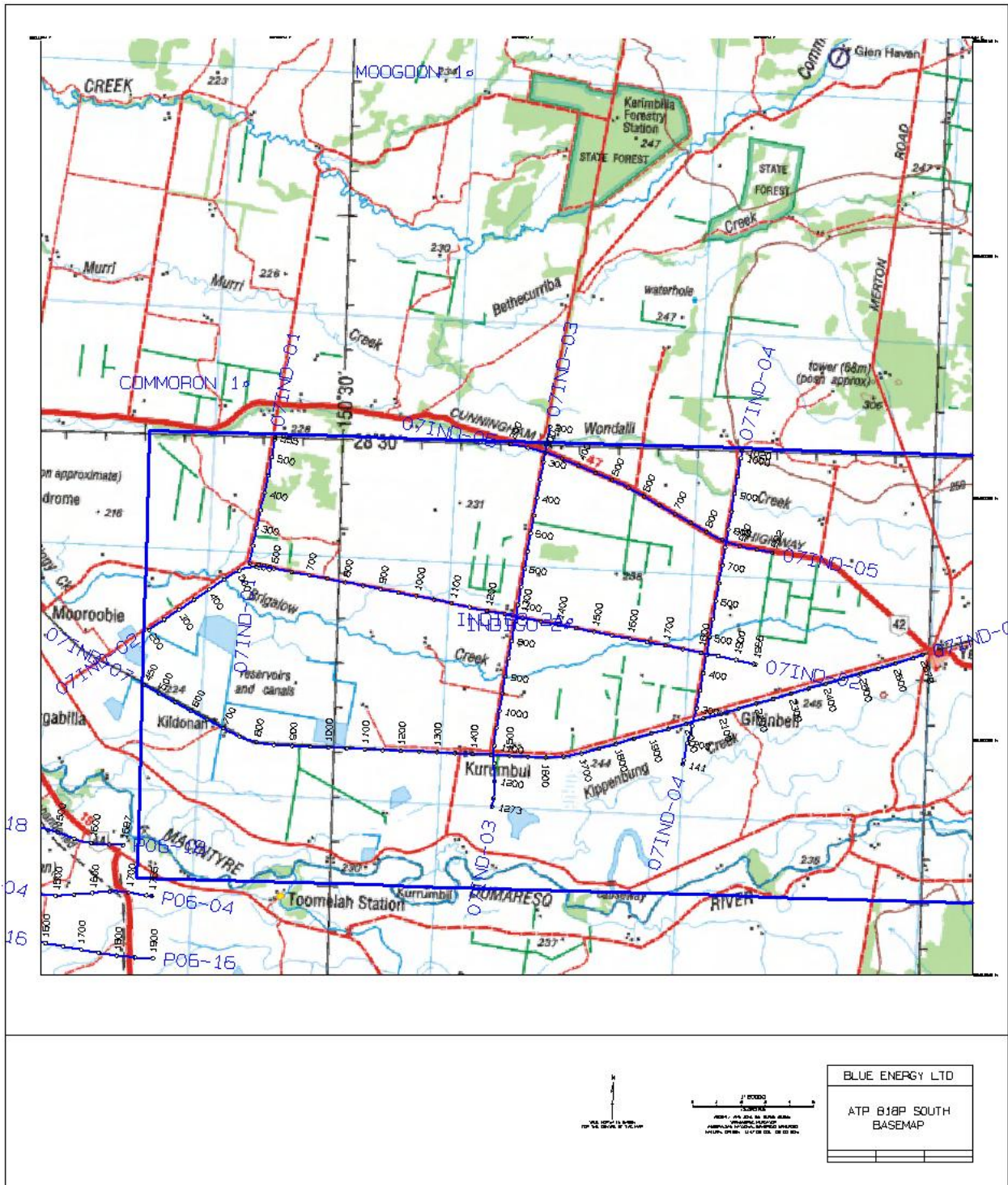


Figure3 shotpoint base map 07IND survey

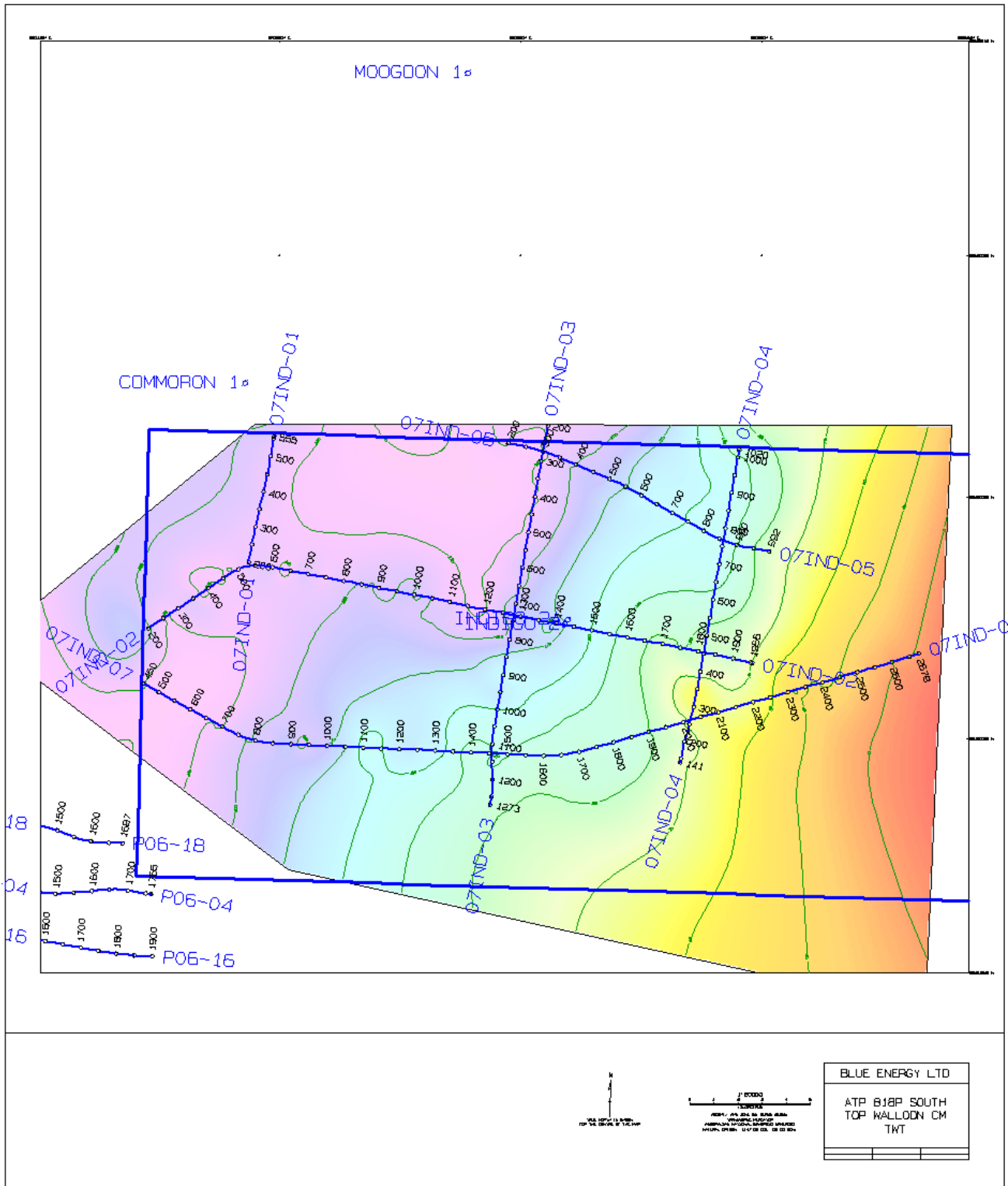


Figure 4 Near top Walloon Coal Measures TWT

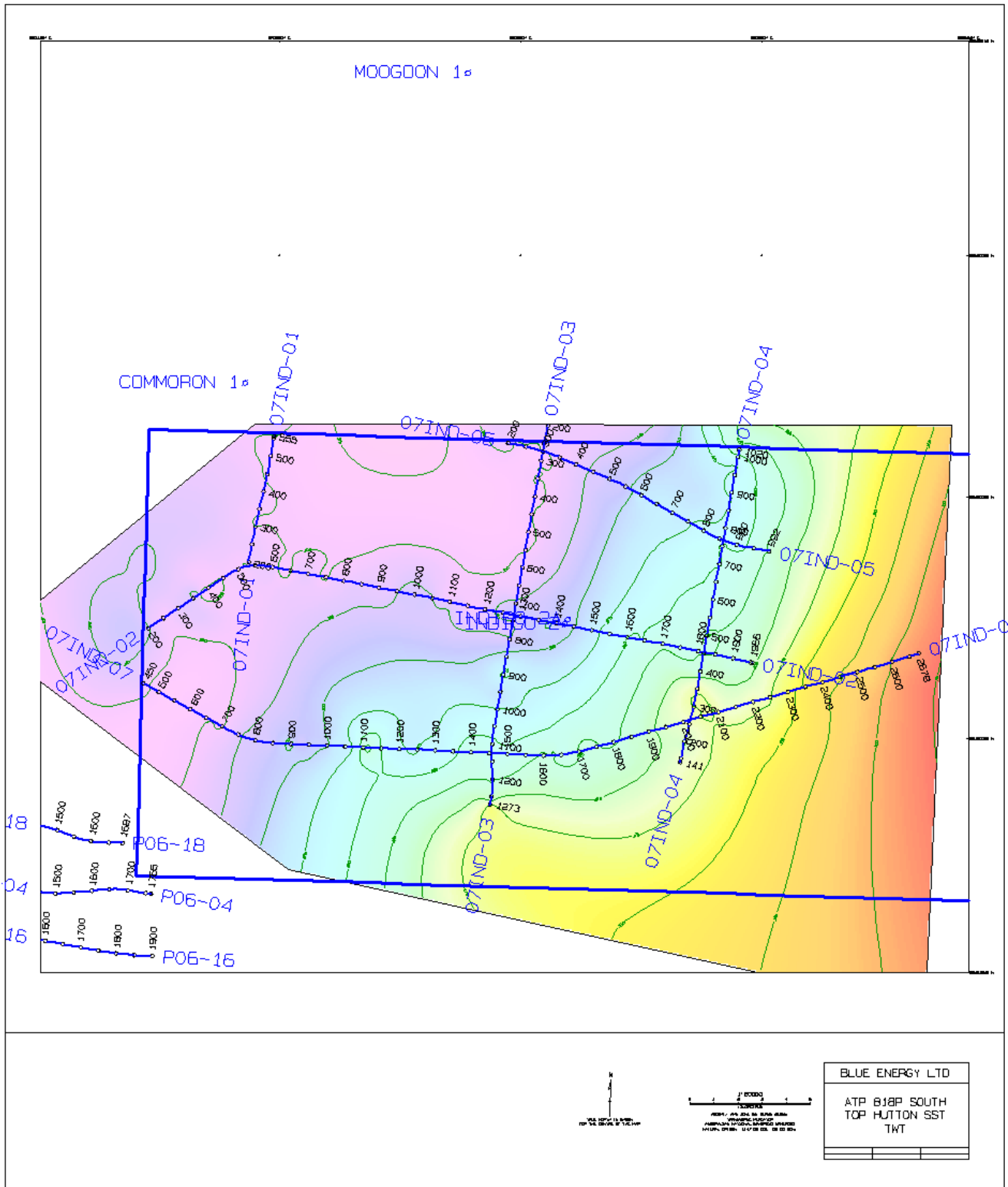


Figure 5 Near top Hutton Sandstone TWT

7.0 REFERENCES

- DAY, R.W., WHITAKER, W.G., MURRAY, C.G., WILSON, I.H., AND GRIMES, K.G., 1983: Queensland Geology. *Geological Survey of Queensland Publication*, **383**.
- EXON, N.F., 1976: Geology of the Surat Basin, Queensland. *Bureau of Mineral Resources, Geology and Geophysics, Bulletin*, **166**.
- EXON, N.F. AND BURGER, D., 1981, Sedimentary cycles in the Surat Basin and global changes of sea level. *BMR Journal of Australian Geology and Geophysics*, **6**, 153-159.
- JONES, G.D. AND PATRICK, R.B., 1981: Stratigraphy and coal exploration geology of the northeast Surat Basin. *Coal Geology, Journal of the Coal Geology Group, Geological Society of Australia*, **1 (4)**, 153-163.
- GREEN, P.M., HOFFMANN, K.L., BRAIN, T.J., AND GRAY, A.R.G., 1997: Project aims and activities, exploration history and geological investigations in the Bowen and overlying Surat Basins, Queensland. *In: Green, P.M. (Editor.), 1977: The Surat and Bowen Basins, south-east Queensland. Queensland Minerals and Energy Review Series*, Queensland Department of Mines and Energy, 1-11.
- HOFFMANN, K.L., TOTTERDELL, J.M., DIXON, O., SIMPSON, G.A., BRAKEL, A.T., WELLS, A.T. & MCKELLAR, J.L., 2009: Sequence stratigraphy of the Jurassic strata in the lower Surat Basin succession, Queensland: *Australian Journal of Earth Science*, **56**, 461-476.
- KORSCH, R.J. & TOTTERDELL, J.M., 2009: SUBSIDENCE HISTORY AND BASIN PHASES OF THE BOWEN GUNNEDAH AND Surat Basins, eastern Australia. *Australian Journal of Earth Science*, **56**, 335-353.
- KRASSEY, A.A. KORSCH, R.J. & DRUMMOND, B.J., 2009: Meandarra Gravity Ridge: symmetry elements of the gravity anomaly and its relationship to the Bowen-Gunnedah-Sydney basin system. *Australian Journal of Earth Science*, **56**, 355-380.
- SCOTT, S., ANDERSON, B., CROSDALE P., DINGWALL J. AND LEBLANG G., 2004: Revised geology and coal seam gas characteristics of the Walloon Subgroup – Surat Basin, Queensland. *In: Boulton, P.J., Johns, D.R. and Lang, S.C. (Eds), Eastern Australasian Basins Symposium II, Petroleum Exploration Society of Australia, Special Publication*, 345-355.
- SWARBRICK, C.F.J., 1973: Stratigraphy and economic potential of the Injune Creek Group in the Surat Basin. *Geological Survey of Queensland, Report* **79**.



APPENDIX 1 OPERATIONS REPORT DYNAMIC SATELITE SURVEYS



APPENDIX 2 OPERATIONS REPORT TERREX SEISMIC



APPENDIX 3 DATA PROCESSING REPORT VELSEIS PROCESSING



APPENDIX 4 INTERPRETED SEISMIC SECTIONS