



Northern
Territory
Government

NORTHERN TERRITORY GEOLOGICAL SURVEY

AGES2015

ANNUAL GEOSCIENCE EXPLORATION SEMINAR
17–18 March 2015, Alice Springs Convention Centre, Northern Territory

RECORD OF ABSTRACTS



CREATING OPPORTUNITIES FOR RESOURCE EXPLORATION IN THE NORTHERN TERRITORY

AUSTRALIA'S
Northern Territory

RECORD 2015-002

Geophysical interpretation of the Chandler Salt Deposit, Amadeus Basin

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The Tellus Holdings Ltd (Tellus) Chandler Project is located within the Amadeus Basin, approximately 120km south of Alice Springs (Figure 1).

The rock salt mineralisation within the project area is hosted in the Precambrian Gillen Member and the Cambrian Chandler Formation, separated and overlain mainly by sand, siltstones and dolomites. Due to its depth below 1200 m, the Gillen Member rock salt is not considered to be mineable via conventional underground mining. The Chandler Formation rock salt section ranges in thickness and depth between 220–261m and 710–825 m respectively.

Petroleum exploration activities within the area started in the early 1960s and continued in the 1980s, and included geological mapping, gravity surveys, magnetic surveys, exploration drilling and 2D seismic surveys. The historical wells *Bluebush-1*, *Magee-1*, and *Charlotte-1* were drilled in 1983, 1992 and 1965 respectively by different exploration

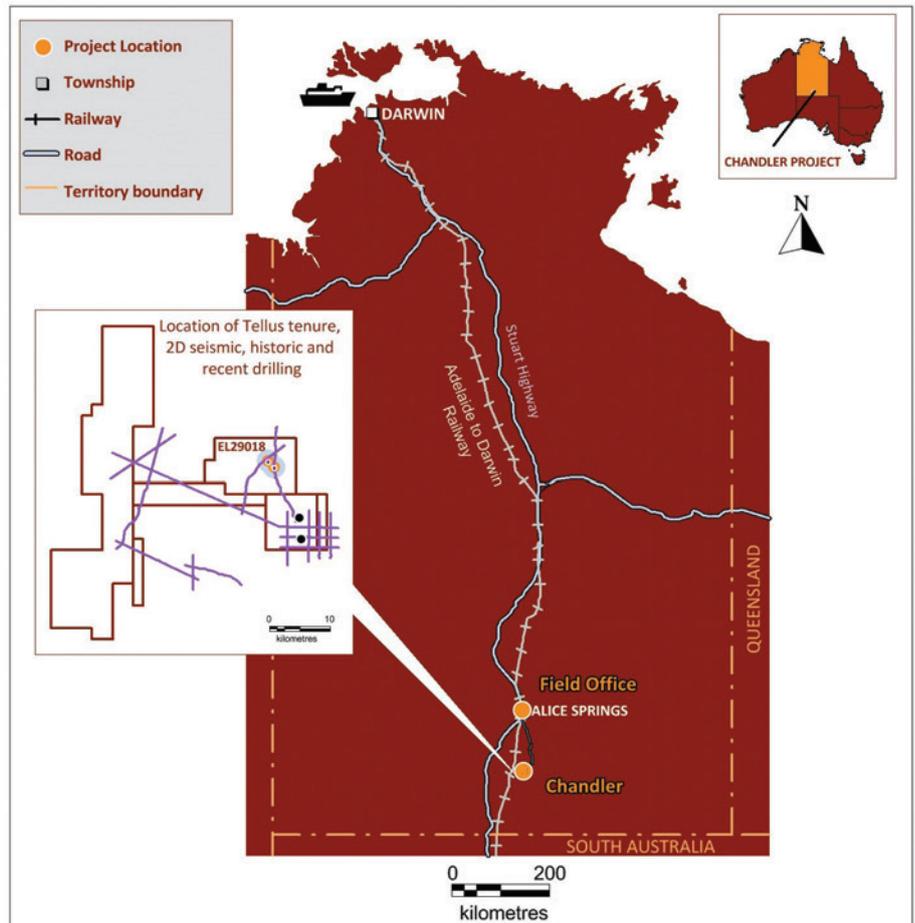
companies. The stratigraphy and correlation between wells has been well described by Young (Young and Ambrose 2007) with Figure 2 outlining the correlation of the Chandler Formation salt across the southern Amadeus Basin.

Tellus completed a diamond drilling program in January 2014 targeting the Chandler Formation. Two drillholes were completed: *CH003* intersected the top of salt at 772 metres, and *CH001A*, at 825 metres. Excellent salt core recovery was achieved (Figure 3). The formation can be described as consisting of mainly halite (coarse crystalline) with very rare occurrences of gypsum and anhydrite. Assaying from recent drillholes has given a composition range of 62–98% for halite. The current JORC compliant measured mineral resource is 309 Mt sodium chloride (NaCl) (Tellus, 2014).

Wireline logging was completed for CH001A, with the salt unit clearly defined by low gamma values. Formation tops correlate well across the project area. The full wave sonic data was used to tie the drillhole to the seismic line and allow the seismic model to be updated and refined. Figure 4 shows the extent of the Chandler Formation in relation to 2D seismic lines and drillholes.

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Figure 1. Location of Tellus tenure, 2D seismic lines, historic and recent drillholes.



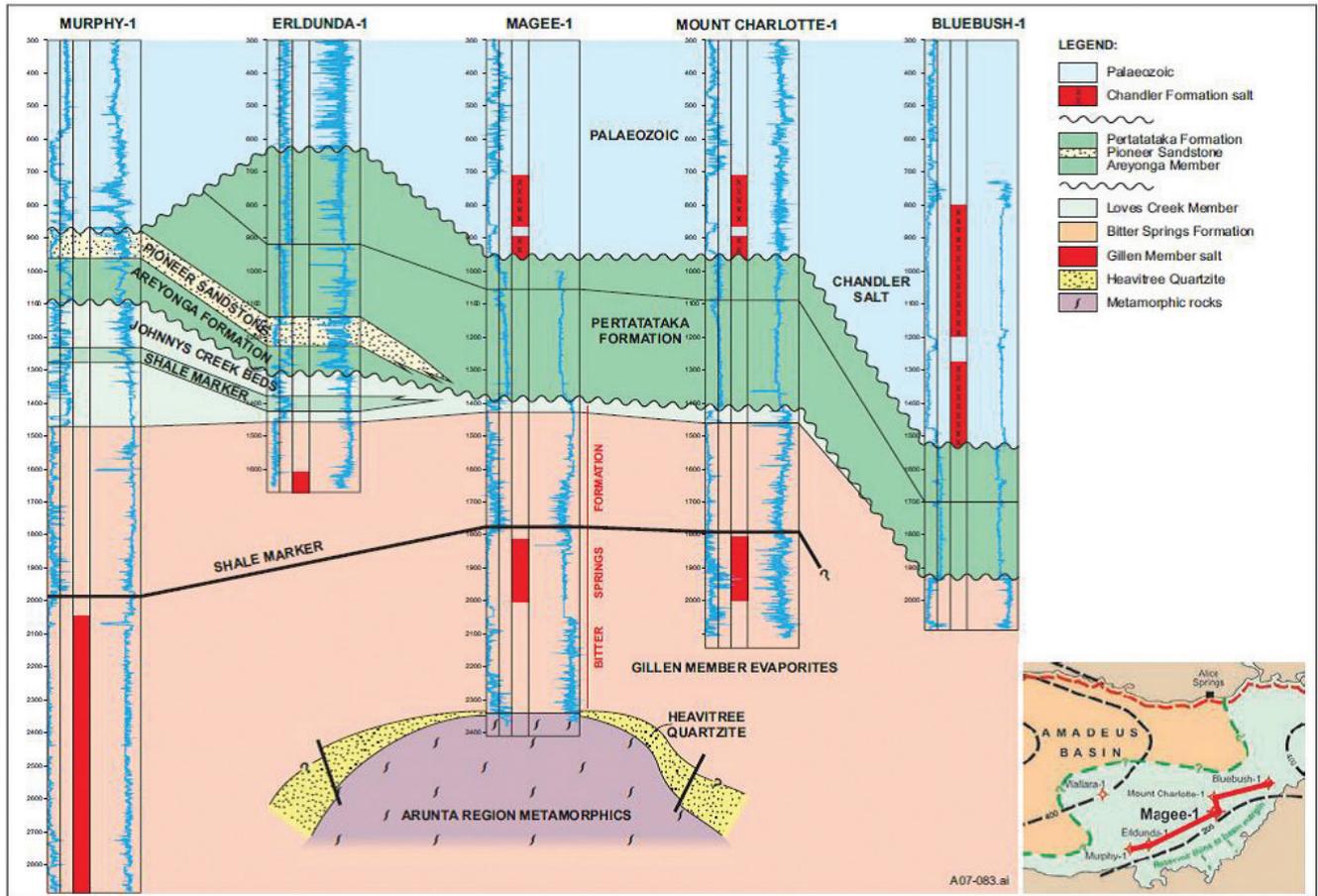


Figure 2. Well-log cross section of the Southern Amadeus Basin. (Young and Ambrose 2007).



Figure 3. Salt core recovered from drillhole CH003

References

- Young IF and Ambrose GJ, 2007. Petroleum geology of the south eastern Amadeus Basin: the search for sub-salt hydrocarbons: in Munson TJ and Ambrose GL (editors) *Proceedings of the Central Australian Basin Symposium, Alice Springs, Northern Territory, 16/18 August 2005*. NTGS Special Publication 2, 183-204
- Tellus Holdings Ltd, 2014. Chandler Salt Mine Project – Maiden JORC Measured Resource. http://www.tellusholdings.com/pdf/2014/2014_Jul_02_Chandler_Maiden_JORC_Measured_Resource.pdf [accessed February 2015].

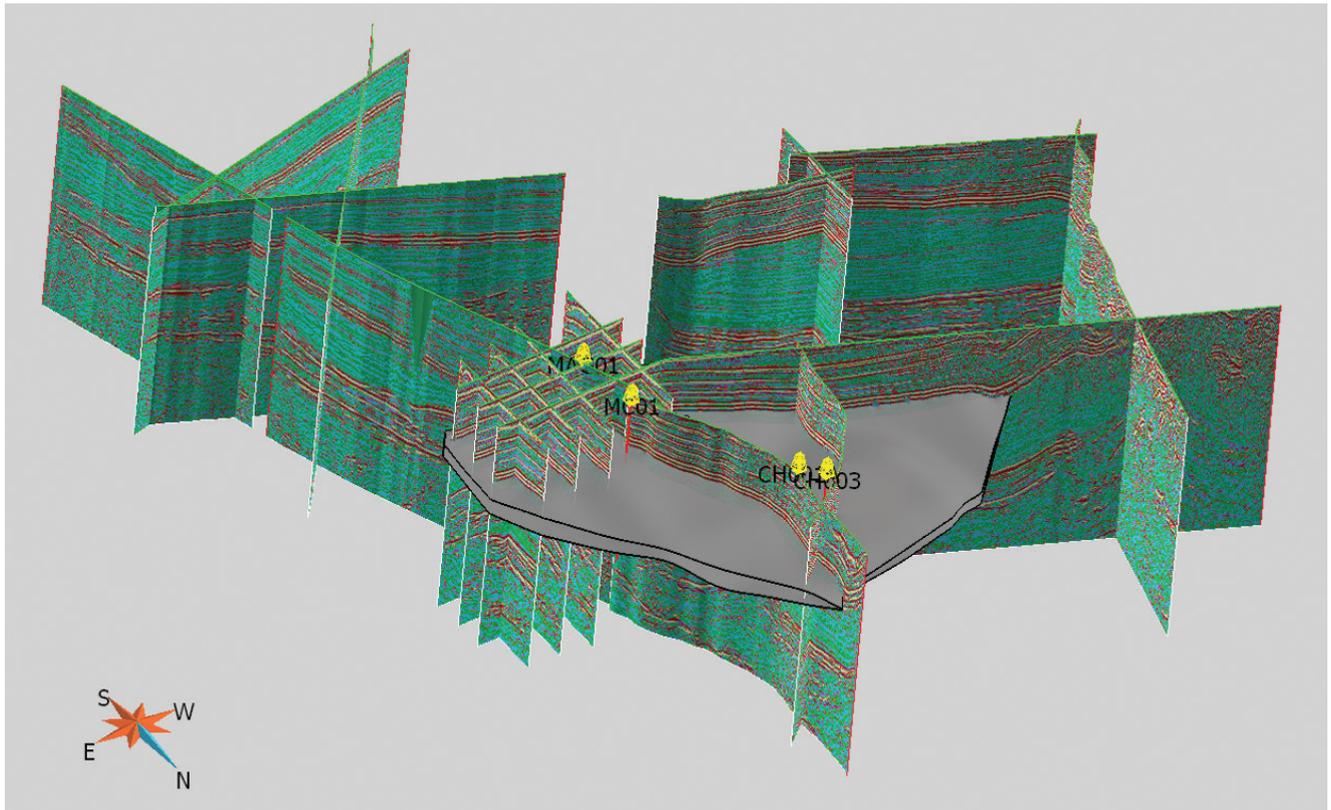


Figure 4. Extent of the Chandler Formation in relation to 2D seismic lines and drillholes.

Geological evolution of the JERVOIS RANGE 1:100 000 special map area

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Detailed geological mapping has been undertaken by the Northern Territory Geological Survey (NTGS) in the 1:100 000 special map area of JERVOIS RANGE⁵ in 2013 and 2014 under the *CORE* initiative. The primary aim of the program has been to investigate the geological evolution and the resource potential of the outcropping Palaeoproterozoic Aileron Province of the Arunta Region, which hosts significant copper and polymetallic base metals mineralisation through the study area, including the *Jervois mineral field* (eg McGloin and Weisheit 2015), which contains some of the largest undeveloped copper deposits in Australia. This study has also investigated the geological evolution of Neoproterozoic-Palaeozoic Irindina Province of the Arunta Region and the relationship of the Arunta Region basement with the overlying Neoproterozoic-Palaeozoic Georgina Basin. Airborne magnetic and gravity data were interpreted to provide a framework for structural and solid geology investigations which were verified and complemented with field observations. Comprehensive

petrological, geochemical and geochronological data indicate that the oldest exposed rocks in Jervois Range are marine clastic and chemical sediments deposited at ca 1790 Ma. Early, possibly bi-modal and syn-tectonic magmatism took place during or slightly after sedimentation, followed by felsic magmatism at ca 1780–1770 and 1755–1740 Ma. High-temperature, low-pressure metamorphism and progressive deformation affected the rocks of the Aileron Province between ca 1740 Ma and 1710 Ma. The contact of basement rocks to high-grade Neoproterozoic-Palaeozoic metasedimentary rocks of the Irindina Province is sheared, whereas the unmetamorphosed Georgina Basin sediments unconformably overlie the basement rocks. Major basement structures were re-activated during the long-lived Alice Springs Orogeny ca 450–300 Ma and juxtaposed basement rocks against sedimentary successions of the Georgina Basin.

Regional Geological Setting

The JERVOIS RANGE special map area is dominated by polymetamorphic and polydeformed basement rocks of the Arunta Region, which forms part of the North Australian Craton (**Figure 1**). The Arunta Region extends over an area of approximately 200 000 km² and has a complex stratigraphic, structural and metamorphic history spanning the Palaeoproterozoic through to the Palaeozoic. The region can be subdivided into three provinces: Aileron,

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⁵ Names of 1:250 000 and 1:100 000 mapsheets are shown in large and small capital letters, respectively, eg HUCKITTA, JERVOIS RANGE.