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GREAT SOUTH LAND MINERALS LIMITED

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INDEPENDENT GEOLOGIST'S REPORT ON THE EXPLORATION PROSPECTIVITY OF THE ONSHORE TASMANIA BASIN

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INDEPENDENT GEOLOGIST"S REPORT ON THE EXPLORATION PROSPECTIVITY OF THE ONSHORE TASMANIA BASIN.

Introduction

Great Southland Minerals Pty Ltd (GSLM) has been granted exploration licence, SEL 13/98 that covers the onshore Tasmania Basin. The licence area is 30.356 square kilometres. Terms of the licence, which was granted in June 1999 for the duration of 5 years, requires completion of a $2 million work program including the acquisition of a minimum of 600 line kilometres of 2D onshore seismic data within the first 2 years and thereafter, at $2 million per year.

As part of the preparation to float the company on the Australian Stock Exchange, GSLM has commissioned this independent geologist's report to be included in the company prospectus. The purpose of this report is to provide a current review and assessment of the prospectivity of the Tasmania Basin. The report is based on documents and reports provided by GSLM as well as the results of geoscience investigations carried out by state and national geological surveys and universities, and is reliant on geological, geophysical and geochemical analyses and interpretations carried out by others. Much of the data and information and data have been generated through the activities of GSLM and its predecessor companies from 1984 onwards Discussions were held with directors and senior staff of GSLM. A field excursion was conducted to obtain first hand impressions on the geology of Tasmania. The author has no reason to believe that any information has been withheld.

The report reviews the exploration history of the Tasmania Basin. A brief summary of the geological history helps put the prospectivity in a regional context. A description of the main structural elements combined with an analysis of the factors necessary for a successful hydrocarbon habitat provides insight into the risks and rewards for investment into exploring for petroleum in the Tasmania Basin

Database and Information Sources

The Tasmania Basin is still at a very immature phase of petroleum exploration. Regional geological field mapping is reasonably comprehensive, and a wealth of published literature exists on many aspects of Tasmanian geology. In recent years, 3 B.Sc (Hons) theses from the University of Tasmania have made special reference to aspects of petroleum geology namely, reservoir distribution and quality, source rock identification and hydrocarbon maturity modelling. Regional magnetic and gravity surveys are available, providing input for models describing possible scenarios on the distribution of rock types and structural elements under the Tasmania Basin. Within the Tasmania Basin, seismic data is confined to two lines (20 kilometres in total) of stack data, recorded by AGSO in 1994 as part of their contribution to the TASGO project, as well as a short line on Bruny Island, acquired by Conga Oil. There is a series of seismic lines recorded in Storm Bay, D'entrecasteaux Channel and the Huon Estuary. Of these, the Storm Bay transect has been fully processed and is the only one available for interpretation.
A series of stratigraphic boreholes were drilled by the Tasmanian Department of Mines, some of which tag pre-Carboniferous lithologies. Information on the

lithologies and sequences penetrated by these wells is available at the Tasmania Department of Mines. Of the 45 wells drilled by private companies, most have lithological descriptions. Electrical logs have been sighted only from BHP's oilshale venture in the Styx Valley. Gas chromatograph and mudlogs have been recorded from GSLM's wells Shittim-1 and Jericho-1 on Bruny Island.
Known source rocks have been sampled and analysed. In recent years, tars, bitumens water and gas samples have been analysed using modern analytical techniques.

Exploration History of the Tasmania Basin

For over 100 years, the occurrences of bitumens and tars along reports of oil and gas seeps have led to varying degrees of effort to locate commercial quantities of hydrocarbons in onshore Tasmania. Over 130 reports of oil and gas seeps have been registered at the Tasmania Mines Department. On investigation, although most have turned out not to be naturally occurring hydrocarbons, about 10% of the cases have confirmed the presence of naturally occurring hydrocarbons in the form of seeps, tars and bitumens. This element along with the occurrence of the rich Tasmanites oilshale has motivated some 13 companies to actively explore for oil over the past 75 years. Some 38 wells have been drilled in the vicinity of seepages without any detailed knowledge of structure or stratigraphy. Most wells are drilled to depths of 350 metres or less and most bottomed in Jurassic dolerite. A peak of activity occurred in the 1920s, in the region between Devonport and Launceston, northern Tasmania. Another phase of activity occurred from 1967-1974, when 7 wells were drilled west and north-west of Launceston. The wells ranged in depths from 50-831metres and all bottomed in the Jurassic dolerite.

From 1984, various licences were taken out over the Tasmania Basin by GSLM and its predecessor companies, Condor Oil Pty Ltd and Conga Oil Pty Ltd. In the 1980s, geochemical analyses using current technologies was carried out on source rocks, seeps, tars and bitumens. A regional aeromagnetic survey was acquired in 1988. Short lines of seismic were acquired in the waters around and on Bruny Island. In the 1990s, routine geochemical analyses were carried out on new sample material. In 1994, Condor Oil Pty Ltd commenced drilling 2 stratigraphic wells (Shittim-1, and Gilgal-1). Shittim-1 was completed to a depth of 1751m in 1996/7 and encountered around 600m of Permian glacigene sediments intruded by two dolerite sills, and reached metamorphic basement. In 1997, the stratigraphic well campaign was continued by GSLM with the completion of Jericho-1 (640m) on Bruny Island, followed by Lonnavale-1(557m), Hunterston-1 (336m), Bridgewater-1 252m, Pelham-1 503m. All wells have been suspended in the Permian sequence or in the Jurassic dolerite.

Since well locations have not been located on structural features constrained by seismic data, it is not surprising that there are few reports of hydrocarbons. Oily water was recovered from 30 metres below surface in Johnson' well on Bruny Island (originally drilled in 1929). Gas was reported from the Iles well at Port Sorell in 1923. Gas shows have been recorded in GSLM wells, Shittim-1 and Jericho-1 on Bruny Island. The gas from Shittim-1 has been analysed and shown to be a highly mature thermal gas with the presence of methane, carbon dioxide, nitrogen, hydrogen and helium. The latter two gases indicate a source from deep in the basement.

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Regional Geology

The geological sequence in Tasmania begins with metamorphosed Late Proterozoic schists, phyllites, dolomites, and quartzites. Prior to the Middle Cambrian, two phases of structuring and deformation occurred with an intervening phase of tholeiitic volcanism. During the Delamerian Orogeny (Middle-Late Cambrian), a rifting episode initiated flysch deposition followed by the formation of a volcanic arc (Mt Reid Volcanics), culminating in east-west compression, uplift and erosion. Throughout the Ordovician to Early Devonian, in the west, stable epieric conditions representative of a passive sag phase established an extensive carbonate platform (Gordon Group). Following carbonate deposition, cycles of siliclastics were laid down (Eldon group). To the east, a thick succession (5-6km) of deepwater sandy flysch and mudstone was deposited in a subsiding trough throughout this time period.

These sequences were deformed by the Middle Devonian Tabberaberan Orogeny with structural development being controlled by the older structural grains. Folds developed over Cambrian fold trends (E-W trends), together with WNW and NW trending thrusts and folds. In the north-east and east, a complex fold thrust belt developed at the boundary between the shelfal and basinal facies. Widespread intrusion of granitoids occurred at this time.

The Tasmania Basin is made up of an Upper Carboniferous to Middle Jurassic succession, up to 1500m thick. Early basin fill was deposited on a glacial landscape with relief up to 1000m, and consists of glacigene tillites, diamictites and claystones passing up into lower coastal plain and shallow marine cold water mudstones, siltstones, sandstones and minor limestones. Of note is the occurrence of an algal (Tasmanites) oilshale. This sequence, termed the Lower Parmeener Group, is Upper Carboniferous to Permian in age and is unconformably overlain by the Upper Parmeener Group comprising sandstones and coal measures of Late Permian to Triassic age. There is some evidence for a phase of gentle folding of the Parmeener Group in the Late Triassic.

During the Middle Jurassic, a large volume of tholeiitic dolerite was intruded into the Tasmanian crust, mainly as sills into the flat-lying sediments of the Tasmania Basin. There are generally 1-2 sheets that can reach a total thickness of 400-500m. Intrusion of the dolerite was via many points centred mainly in the vicinity of Hobart. The dolerite sheets are thickest in this area. There are a few occurrences of basalt (Lune River) that are associated with the dolerite. This phase of dolerite intrusion is associated with the onset of rifting of Australia and Antartica. Separation of the two continents had occurred by the Mid Cretaceous, accompanied by ~~underwent~~ regional uplift of onshore Tasmania. This event is likely to have generated block faulting and folding of the Parmeener Group. Offshore Tasmania experienced continued rifting throughout the Middle Cretaceous to Palaeogene with the deposition of thick deltaic sequences (eg Bass, Durroon and Sorrell Basins). Late Cretaceous to Tertiary sequences, up to 800m thick, are to be found in narrow grabens around Launceston, Hobart and Macquarie Harbour. A veneer of Upper Oligocene-Early Miocene, shallow marine limestones and sandstones is found in northern coastal sections up to

100m above sea level attesting to Neogene uplift. Tertiary basalts are scattered across northern Tasmania and range in age from Paleocene to Miocene.

Structural elements

The present day structural elements affecting the Tasmania Basin consist of:

- Northern Grabens Province. Narrow grabens occur in the vicinity of Launceston (Tamar, Devonport/Port Sorell and Longford). There is a well-defined NW strike to bounding faults. Similar structural trends are seen in the offshore Durroon and Sorell Basins. Up to 800m of Tertiary to Recent sediments have accumulated in these grabens. The grabens surround an exposed block of Proterozoic basement (Badger Head Block) which appears to have been subject to Neogene reactivation.
- Central Lakes Plateau. A mildly structured, uplifted block, bounded by the Tamar Lineament and the Derwent Lineament shows gentle tilting to the south and west. There is little evidence of large fault systems. Some gentle warping of the Tasmania Basin sediments is evident.
- Douglas River Block. This block lies to the south-east of the Northern Grabens Province. The block appears to have structural characteristics similar to the Central Lakes Plateau. The dolerite cover has no erosional windows to the underlying Permo-Triassic sequence. To the north of a marked east-west lineament, the dolerite has been largely eroded away exposing mildly structured Parmeener Group.
- Hobart-Huon Block. A complexly structured block that makes up the country north-west and south of Hobart. The Tasmania Basin sequence is well dissected indicating many intersecting, minor, but pervasive fault systems emanating from the complex grain of underlying Lower Paleozoic and Proterozoic structural elements. It is worthy of note that this region contains the greatest density of dolerite feeder centres. Erosional remnants of Tertiary grabens with NW strike are preserved at Hobart (Derwent, Coal River), indicating the block has experienced some Neogene uplift.

The structural elements of the Lower Paleozoic and Proterozoic succession require comment as the distribution of potential reservoirs and structures beneath the Tasmania Basin unconformity constitute an exploration play. Of relevance is the structural style of the Middle Devonian deformation event, the Tabberaberan Orogeny. Open to tight folds form structures with two trends, N-S (earlier event), and NW- SE to WNW-ESE (later event). This structural style probably extends underneath the Central Lakes Plateau and the Hobart-Huon Block. East of the Tamar Lineament, the two stages of deformation during the Devonian have generated complex structures comprised of NNW trending folds associated with a thrust complex, with the main thrust zone dipping eastwards. This zone is coincident with the transition from the Ordovician to Devonian shelfal facies to the west and the basin flysch facies to the east.

The Tasmania Basin is a mildly structured sequence and covers most of central and eastern Tasmania. The present limits of the basin are erosional and the original basin was probably much larger, although a thin, incomplete succession in the north-east suggests the proximity of a depositional margin. Total thickness is in the order of 1,500m, the preservation of the thickest sequences centred along the axis of the Tamar Lineament.

Petroleum Systems

Based on the evidence gathered to date, two petroleum systems may occur in EL 13/98 held by GSLM. A petroleum system is identified by the presence of a mature source rock that provides charge for hydrocarbon accumulations. The system includes all the other factors required for oil and gas fields to exist, namely reservoir, seal, and trap configuration. Following the nomenclature set up for petroleum systems of Australia by Bradshaw (1993), the potential systems for onshore Tasmania are:

- Larapintine (Ordovician-Silurian sequence)
- Gondwanan (Late Carboniferous-Middle Triassic sequence)

Larapintine Petroleum System

Source rocks

Although not located, source rock facies should occur within the Gordon Limestone Group. Flooding events within the shallow marine sequence are the best candidates. The laterally equivalent Turquoise Bluff Slate (Mathinna Group) in NE Tasmania was deposited in an optimal environment for source rock development and is expected to interfinger with shallow marine facies in the east.

Based on conodont alteration indices (CAI), the outcropping Gordon Group is post mature for oil and gas except for some localities in the south where CAI and other geochemical data indicate maturities within the oil and gas window. Maturity modelling carried out by Woods (1995) caters for a wide range of outcomes for a potential source rock passing through the oil/gas window. This could occur in the Devonian, Triassic, Jurassic or Lower Cretaceous, depending on location, heat flow and burial history.

Reservoirs

There are no porosity and permeability data available for the Ordovician-Silurian sequences. The Gordon Limestone appears to have limited possibilities for primary porosity development. However, secondary porosity development is a possibility with the recorded descriptions of porous and vuggy dolomites. Furthermore, the Gordon limestone has a well-developed karst at the Devonian-Carboniferous unconformity. Further karstification is likely to have occurred during the Cretaceous. Permeability through fracturing is another possibility for reservoir development in the Gordon limestone.

Due to estimated paleoburial depths in excess of 3000m and the potential for a prolonged diagenetic history, porosities and permeabilities of the overlying Eldon Group sandstones are expected to be low. Porosity enhancement may occur close to unconformities. However, the sandstones have potential as gas-bearing reservoirs.

Seals

Intraformational mudstones occur within the Gordon and Eldon groups. However, paleoburial depths and the effects of the Devonian and subsequent deformations would have embrittled these lithologies, turning them into high risk seals.

Trapping Configurations

Possible trapping configurations for the Larapintine System are:

- Anticlines formed during Tabberaberan Orogeny with intraformational seals.
- Broad folds or fault assisted folds formed during Triassic or younger deformation events. These structures may be separate from or modify older Devonian structures.
- Stacked thrust sheets. This trapping configuration is likely to be encountered in a swath along the Tamar Lineament.
- Truncation traps at the Devonian unconformity.
- Erosional outliers of Gordon limestone sealed by Upper Carboniferous tillites and marine mudstones.
- Downfaulted inliers of Gordon or Eldon Group laterally sealed by Cambrian or older sequences with top seal of Upper Carboniferous tillites and marine mudstones.
- Buried hill topography sealed by Upper Carboniferous tillites and marine mudstones.

Gondwana Petroleum System

Source Rocks

Organic facies within the Parmeener Group are highly variable. The best source rock is the Tasmanites oilshale which is a widespread, 2 metre thick unit near the base of the Quamby Mudstone in the north of the basin. This oilshale is a world-class source rock with algal Type I oil-prone kerogen and TOCs up to 30%. There are good indications that this marine source rock facies occurs as thin streaks throughout the Quamby Mudstone. Coal measure sequences within the Parmeener Group contain organic facies that have the potential to generate light oil and gas (Type II/III) and gas only (Type III).

Vitrinite reflectance measurements and biomarker maturity indicators from source rock extracts show that the Parmeener Group source rocks are presently immature to low mature for oil generation. The frequent observation that source rocks at some localities have a petroliferous odour or ooze oil when broken open (as well as high S1 Rock Eval values) is indicative of in situ kerogen conversion. The oil sampled at the Lonnavale seep has been typed to the Parmeener Group Type I oil source rock.

Timing of maturation

Some basic maturation modelling has been carried out on the Permian source rocks (Woods, 1995). His results indicate the source rocks entered the oil window as early as the Mid Cretaceous.

Fission track analyses from outcrop and drillhole samples indicate three cooling (uplift) events. The first is associated with the Middle Cretaceous breakup of Australia and Antarctica. Fission track data suggest the removal of up to 2-3km of Upper Jurassic to Lower Cretaceous sediments. This is in agreement with the maturity profile of outcropping Permian source rocks. There is evidence for a Paleogene cooling event in eastern and western coastal areas suggesting changes in heat flow or anther phase of uplift and erosion. A third Neogene cooling event, which can be taken as evidence of the latest phase of uplift, is confined to the north-western areas of the state. The fission track data helps to refine the burial and uplift history from Upper Jurassic to Recent times. These data should be incorporated into more detailed modelling to define charge dynamics. The continued subsidence in the northern grabens during the Tertiary provides a site for the latest maturation phase of the Permian source rocks. Apart from the graben areas, regional Neogene uplift has arrested further maturation of the source rocks over most of the Tasmania Basin.

Apart from local contact metamorphism, the changes and impact on maturation timing due to heat flow caused by the intrusion of the Jurassic dolerites is a topic that requires further investigation.

Reservoirs

The Permian-Triassic sandstones, deposited in fluvial to shallow marine environments, are widespread in the Tasmania Basin. Woods (1995) and Maynard (1996) log and detail facies associations, and describe diagenetic events for the Lower Parmeener Group. The sandstones are fine to medium, occasionally coarse grained, moderately to well sorted, quartz-rich with subordinate feldspars and micas. Upper Parmeener Group sandstones contain more feldspathic and lithic units. The diagenetic sequencing follows the usual pattern of early quartz overgrowths, pressure solution and silica cementation, followed by clay authigenesis (kaolinite, smectite) and feldspar dissolution. Carbonate cements occasionally occur.

Lower Parmeener Group sandstones range from 10-40m in thickness, while Upper Parmeener fluvial sandstones aggregate to a gross thickness of 200-300 metres. Porosities range up to 25%, averaging 13%. The few permeability measurements from outcrop samples and Shittim-1 range from 386mD to less than 1mD. Contact heat metamorphism of the sandstones is recorded in the proximity of the Jurassic dolerite sheets that can effect porosities up to 30 metres from the contact.

Seals

Two regional seals occur within the Lower Parmeener Group, mudstones of the Quamby/Woody Island and Ferntree Formations. The Woody Island Formation tends to become silty in the south of the basin. The Quamby/Woody Island Formation occurs above the basal tillite/diamictite sequence, which could constitute a seal in its own right. The Ferntree Formation is the primary seal for the sandstone reservoirs of Liffey Group in the north of the Basin and the Malbina Formation sands in the south of the Basin. No regional seals have been identified in the Upper Parmeener Group.

The Jurassic dolerite could be invoked as a sealing lithology. However, there is a strong likelihood that the dolerite will display pervasive jointing and be fractured by fault systems. The dolerite's effect on surrounding sediments may have enhanced their sealing capacity through contact metamorphism.

Trapping Configurations
For the Gondwana system, the following trapping configurations are envisaged.

- Low relief anticlines
- Tilted fault blocks
- Compaction drape over the pre-Permian unconformity

Play Concepts

A future exploration portfolio of prospects and leads in the three structural zones of the Tasmania Basin would probably feature the following main plays.

Northern Grabens Province, Douglas River Block.
Trapping configurations consist of tilted fault bocks or fault-assisted anticlines in Lower Parmeener Group. The main reservoir target is the Liffey sandstone. Top and lateral seals are formed by Ferntree mudstones. Oil or light oil and gas charge is derived from Lower Parmeener source rocks.

Central Lakes Plateau, Huon-Hobart blocks.
A variety of trapping configurations is likely such as Devonian folds, erosional outliers or buried hills of karstified and fractured Gordon limestones for both areas. The Central Lakes Plateau may contain the additional possibility of gentle anticlines and tilted fault blocks forming traps in the Parmeener Group. Seals are formed by Lower Parmeener Group tillites and mudstones. Charge from both the Larapintine and Gondwana systems is possible. A dry gas charge is sourced from highly mature Ordovician source rocks with oil charge from lower Parmeener source rocks.

Risks

The Tasmania Basin is a good example of an Australian frontier basin. Examining the exploration campaigns, and the nature of oil and gas discoveries in other analogue Australian basins, a frontier basin of this type presents a significant challenge. However, hydrocarbons have been discovered and commercially developed in basins with similar structural history and hydrocarbon habitat as the Tasmania Basin. Examples from the Larapintine system are the Mereenie Field, ultimate recoverable reserves (UCR) around 50 million barrels oil and 600 billion cubic feet gas and Palm Valley Gas Field (UCR 750 billion cubic feet gas) in the Amadeus Basin, Northern Territories; Gilmore Gas Field (proven recoverable gas reserves around 25 billion cubic feet) in the Adavale Basin, Queensland. Examples from the Gondwana System are the producing gas fields such as Turkey Creek, Rolleston, Yellowbank, in the Denison trough of the Bowen Basin, Queensland. Ultimate recoverable reserves of the gas fields in the Denison Trough could be in the order of 300 billion cubic feet.

In comparison with basins where a significant hydrocarbon discovery is yet to be made, the Tasmania Basin has a considerable advantage in having proven high quality, mature source rocks. Their presence provides a strong incentive to continue with an exploration campaign. However, other hydrocarbon habitat elements such as trapping configuration, timing of maturation and charge and hydrocarbon retention in traps are still very much in the unquantified category. Quantification of elements requires subsurface data coverage and further methodical analysis and modelling. Until this data is gathered and analysed, it is difficult to accurately assess the risks of the hydrocarbon plays in the Tasmanian Basin.

It has been widely surmised that the recovery of useful seismic data from beneath the dolerite would be unsuccessful due to masking effects by the dolerite. However, the seismic line 95AGS-T4, acquired and processed by AGSO in 1994/5 clearly shows coherent reflection events from the pre-dolerite section, indicating that useful data can be obtained.

Other subordinate elements that require addressing are the distribution and quality of seals, and the possibilities of waste zones reducing hydrocarbon column lengths through poorly developed reservoirs due to depositional setting or diagenesis. Predicting the subsurface distribution of reservoirs in the Gordon limestone will not be an easy task. Long residence time coupled with the uplift history presents the possibility of biodegraded oils in accumulations.

Exploration Strategy

Up until now, GSLM and its predecessor companies had been pursuing a strategy of reducing the uncertainities of petroleum systems by way of regional studies of the geochemistry of source rocks, seeps, tars and bitumens, reservoir distribution and quality, structural elements of the basin and the nature of the geology below the Jurassic dolerites. This strategy has been further augmented by the drilling of stratigraphic wells to acquire more information on the position and thickness of the dolerites within the Parmeener Group.

GSLM's intended future strategy is to embark on a 2D seismic program to:

- determine the extent of the petroleum systems
- define potential petroleum targets.

Based on the results of the seismic program, suitable prospects will be tested with a drilling campaign.

The company's strategy is considered to be appropriate for the next phase of exploration. It is recommended that the company take into consideration the following additional activities that could make a significant contribution to the execution of a cost-effective program and improve the chances of a successful hydrocarbon discovery.

- Acquire high resolution magnetic and additional gravity data prior to seismic acquisition. AGSO have recently completed and processed a survey covering the northern part of the basin. However, new data will be required for the southern area. These data will help refine structural domains, the distribution and thickness of dolerites and the nature of the pre-Permian sequence. This data will be of great benefit in the specification of acquisition and processing parameters of subsequent seismic programs.

- Acquire a limited regional 2D seismic survey guided by the magnetic and gravity results. This investment, while not directly delineating drilling locations, will allow for the focussed layout of the subsequent detailed seismic program.

- Based on the interpretation of the gravity/magnetic and regional 2D seismic data, acquire denser 2D seismic coverage over structural trends and areas of focus for hydrocarbon charge. The structural complexities of the Larapintine System and the subtleties of the less deformed Gondwana System both require seismic coverage that is sufficient to give confidence that future drillable prospects have low risk in trap delineation.

- Build up portfolio of traps prior to the drilling campaign. Rigorous ranking of the portfolio will improve chances of success.

- Continue with geological studies and include the following activities:
    - systematic assessment of additional porosity and permeability data using minipermeameter on outcrop and borehole samples.
    - investigate porosity reduction effects close to dolerite sills.
    - investigate SR distribution, quality and maturity of the Larapintine System.
    - improve maturity modelling with emphasis on heatflow history and the impact of Jurassic dolerite event. Improve understanding on timing of charge.
    - map the distribution of regional seals and their proximity to reservoirs. Factor in the risk of potential waste zones.
    - obtain more information and models for the buried hill play and karst development.

Ranking Regions in the Tasmania Basin

Based on the available evidence on the prospectivity of the Tasmania Basin, the structural regions can be ranked according to the state of the hydrocarbon habitat and the degree of difficulty in acquiring further data to improve the chances of success.

Highest Ranked. Northern Grabens Province
Factors include:

- favorable maturation and charge history
- preservation of Parmeener Group with well developed reservoirs and seals
- Jurassic dolerite sills less frequent and thinner than in the south
- pre-Permian sequence is complex but may provide secondary target at the unconformity
- dense seismic acquisition is achievable
- prospects may be small.

Ranked No. 2. Central Lakes Plateau
Factors include:

- Lower Parmeener Group drape and broad, low relief structures
- large Devonian structures
- Gordon limestone karst is the target reservoir
- Lower Parmeener reservoir units may have shaled out
- possible oil charge from Gondwana System, but there may be a risk of biodegradation
- post-mature Larapintine source rock is a risk. Prospects may be charged with dry gas with high inert gas content
- good seismic coverage is achievable.

Ranked No3. Douglas River Block
Factors include:

- Lower Parmeener source possibly mature
- Parmeener Group well preserved under dolerite cover
- Traps may have a high integrity
- Dolerites may be very thick
- Seismic acquisition will be moderately difficult

Ranked No. 4. Hobart-Huon Block
Factors include:

- a structurally complex region. Prospects are likely to be small
- outliers of Gordon Limestone may be limited in areal extent
- Larapintine source rock probably has favorable maturity for gas/condensate
- Seismic acquisition very difficult and expensive. Seismic coverage is likely to be inadequate to produce robust trapping configurations.

Conclusion

It is concluded that there is a probability that petroleum exploration in the Tasmania basin will encounter hydrocarbons in quantities to justify commercial development of the hydrocarbons in the domestic market. Although the Tasmania Basin is classified as a frontier basin, there is sufficient encouragement to progress on to the next phase of exploration, namely the acquisition of geophysical data with adequate density. This data will enable the emerging prospect and lead portfolio to be quantified, risked and ranked. By way of this process, investors will be in an improved position to make a balanced and objective assessment of the future rewards of the Tasmania Basin.

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Figures

Locality Map, Tasmania Basin

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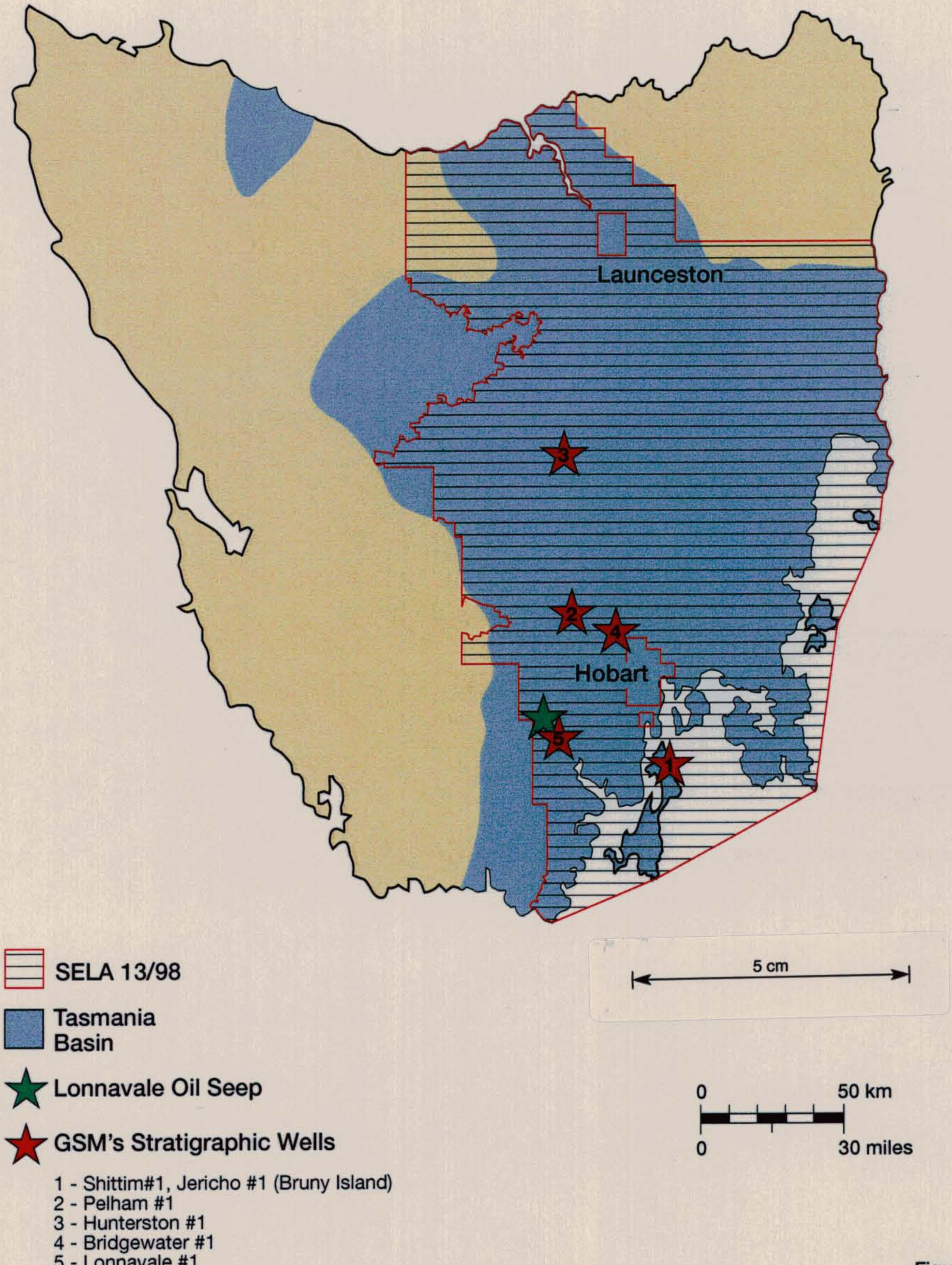

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Figure 1

Generalised Stratigraphy of Tasmania

617017

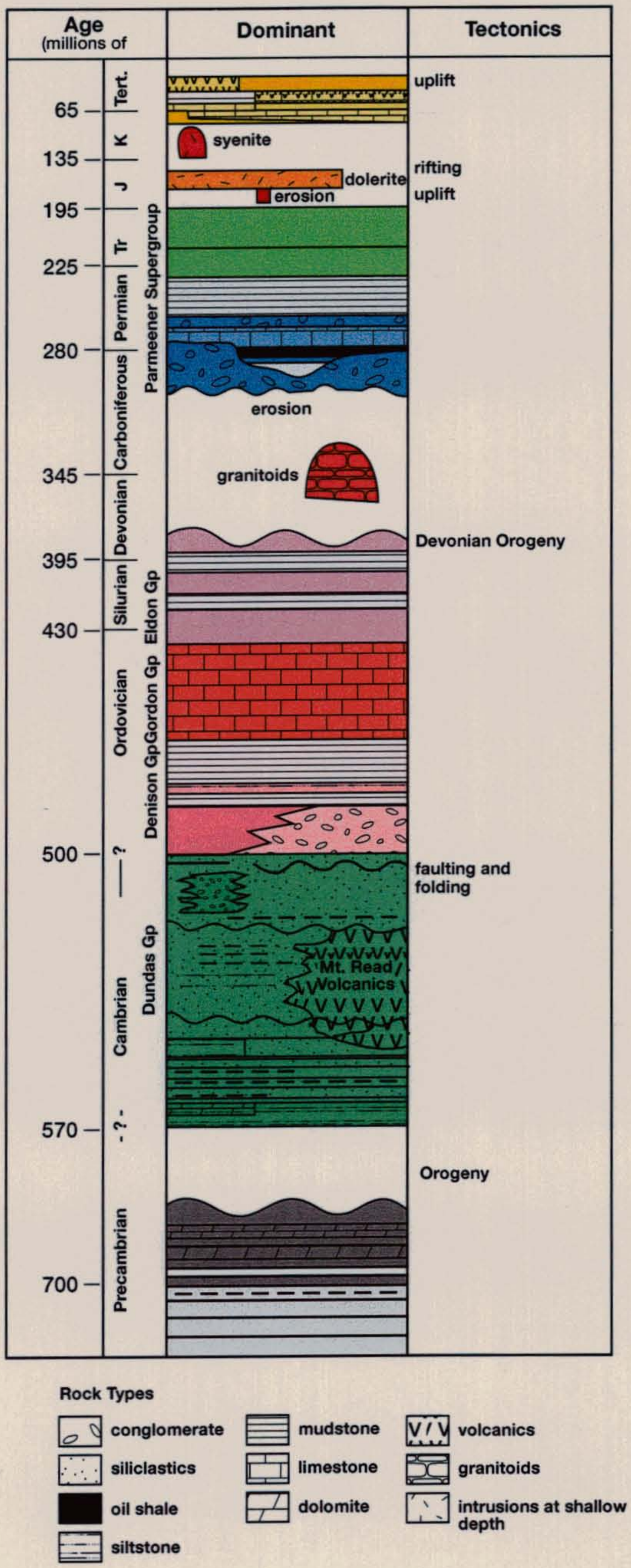

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Figure 2

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Structural Elements of Tasmania Basin

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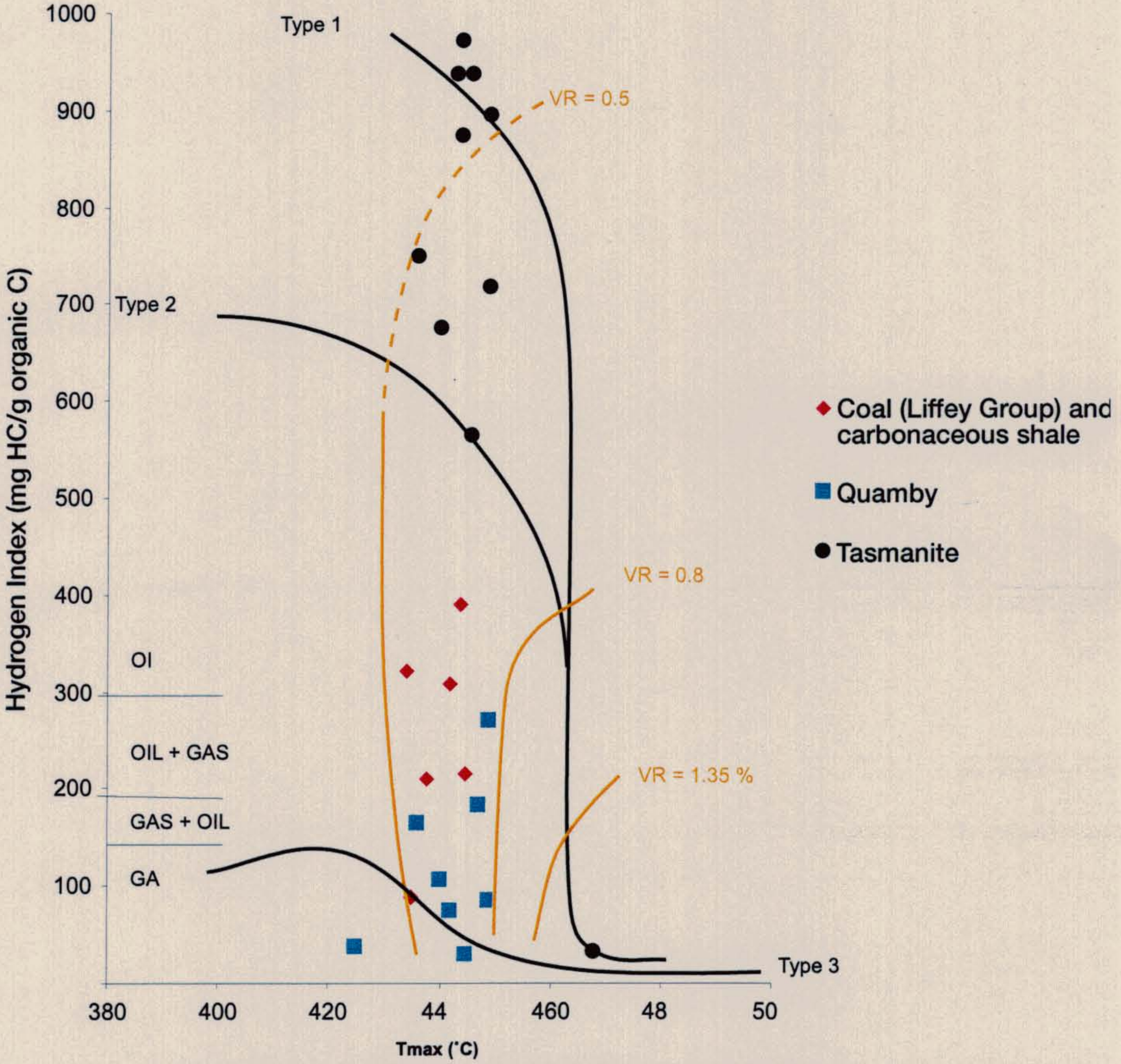
Figure 3

617019

Tasmanian Source Rock Characteristics based on Rock Evaluation data



Hydrogen Index vs T_{max} (˚C) for Tasmanian Source

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Figure 4

Timing Risk Chart for the Larapintine Petroleum System, Tasmania

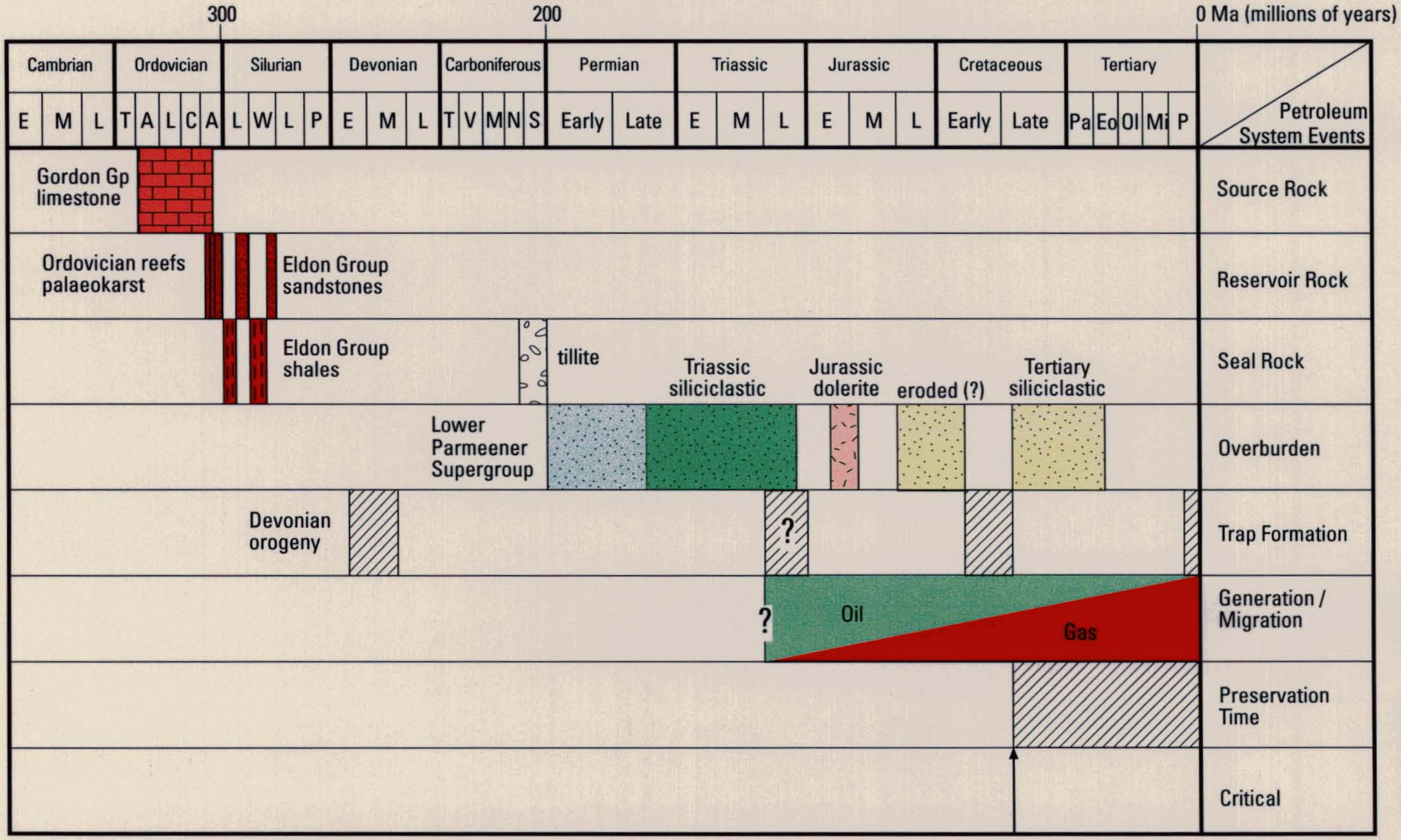

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Figure 5

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Timing Risk Chart for the Gondwana Petroleum System, Tasmania

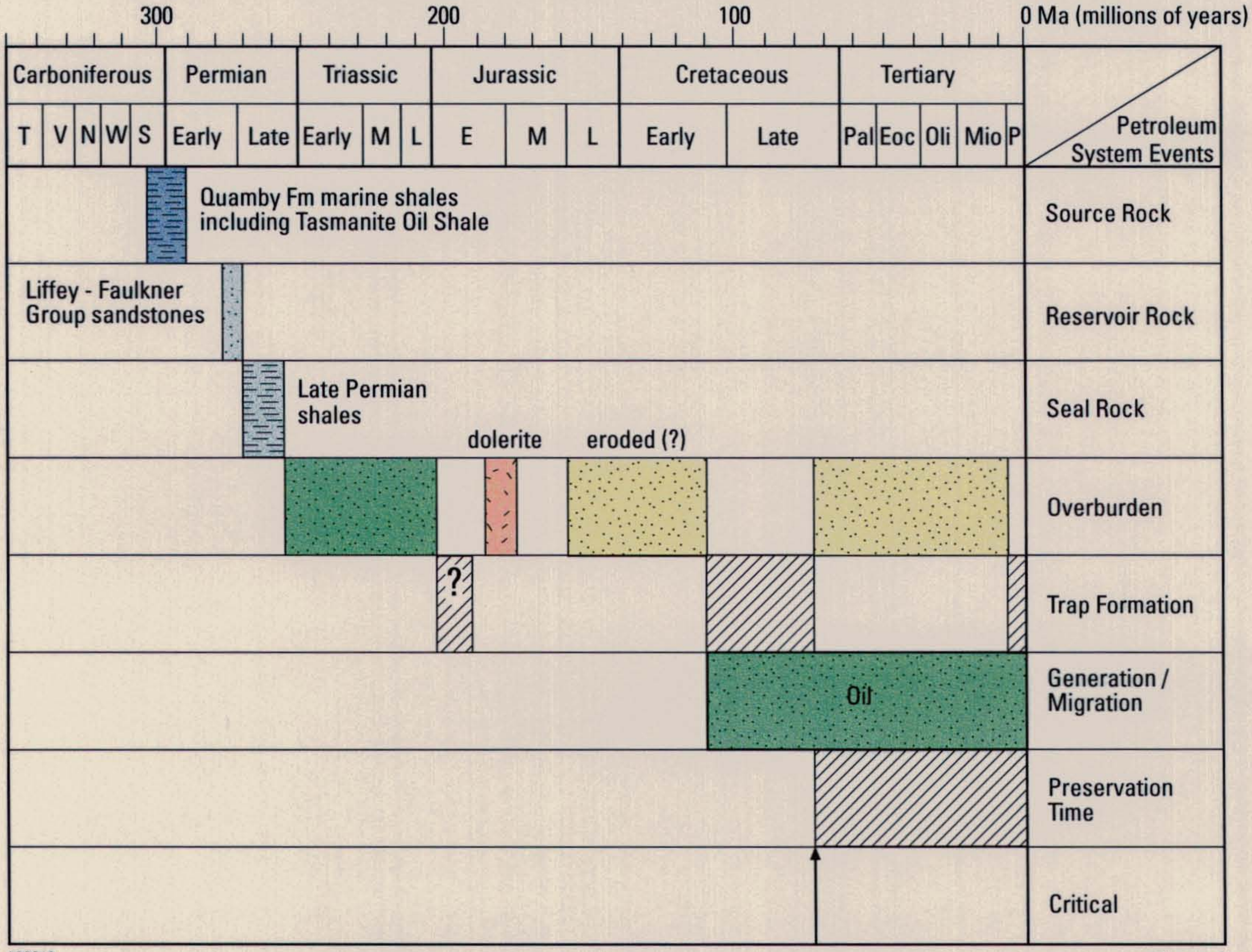

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Figure 6

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