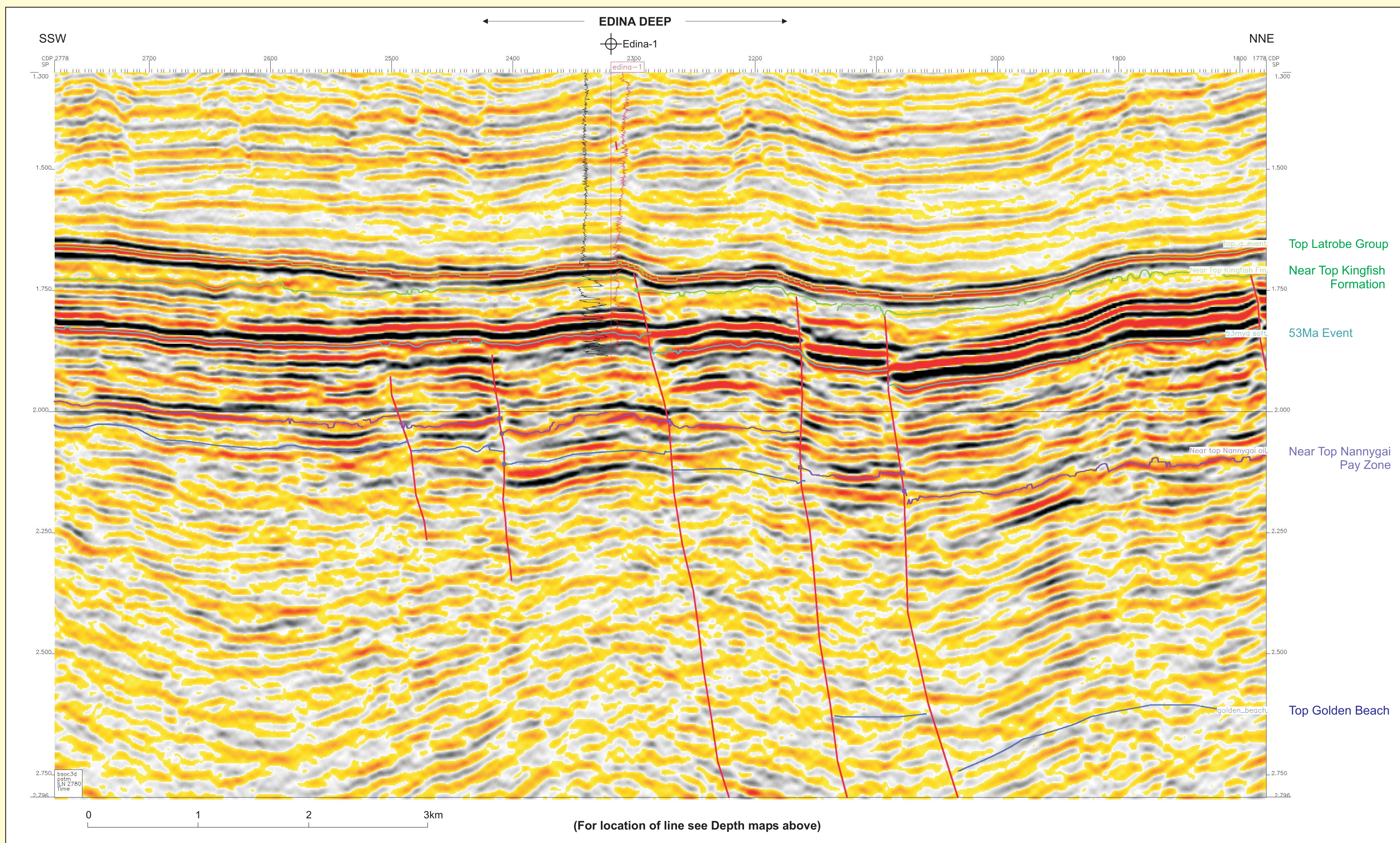
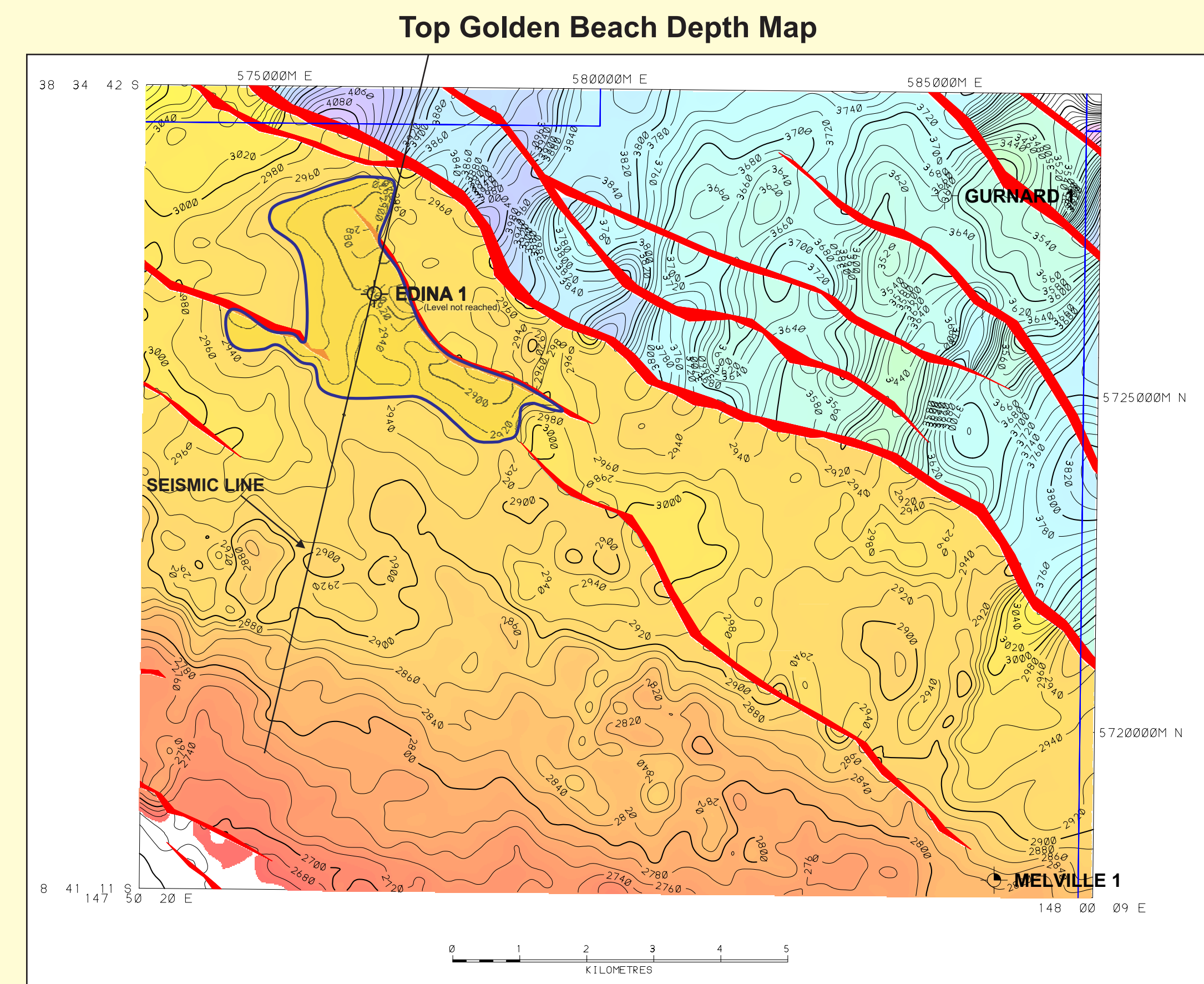
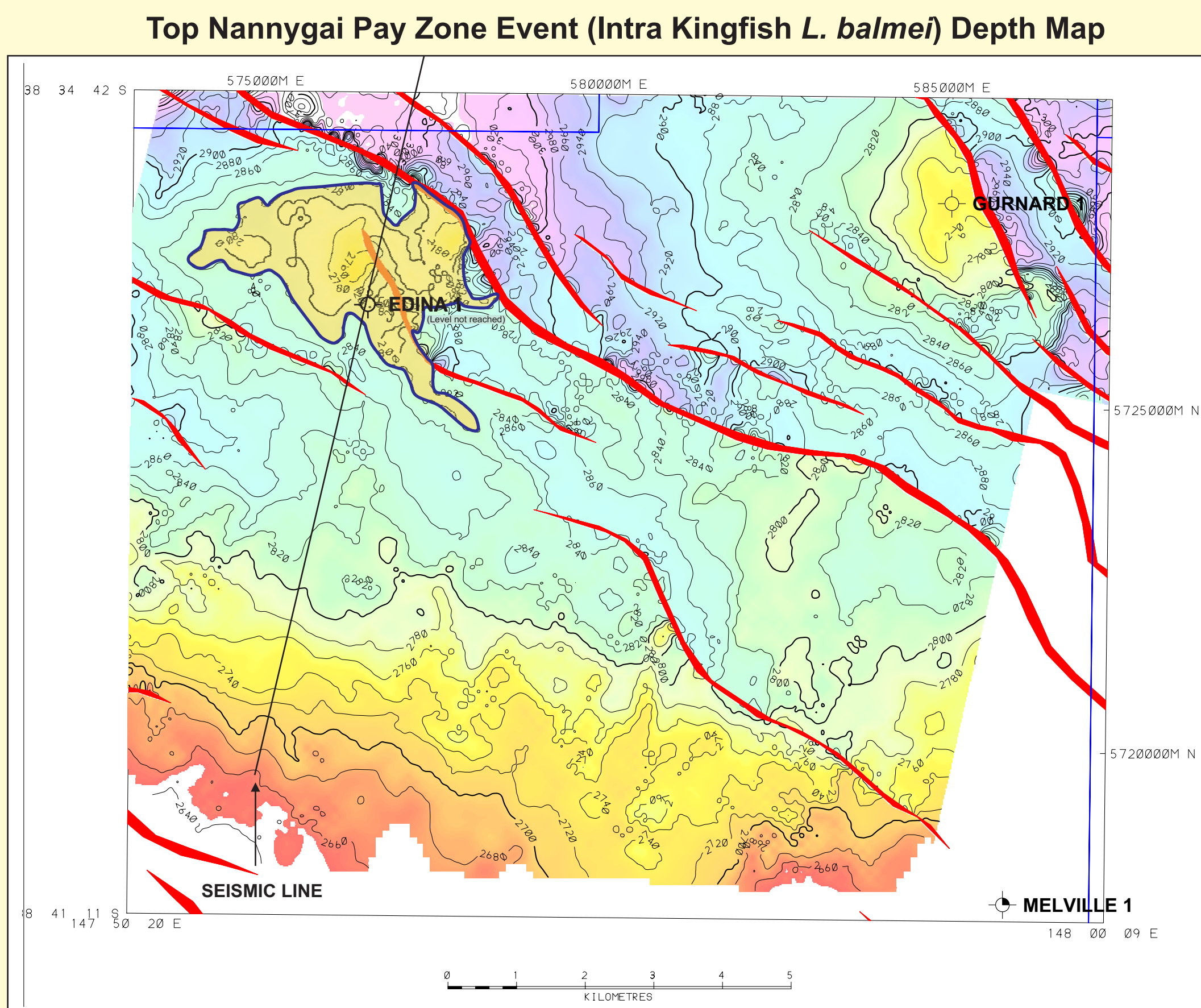
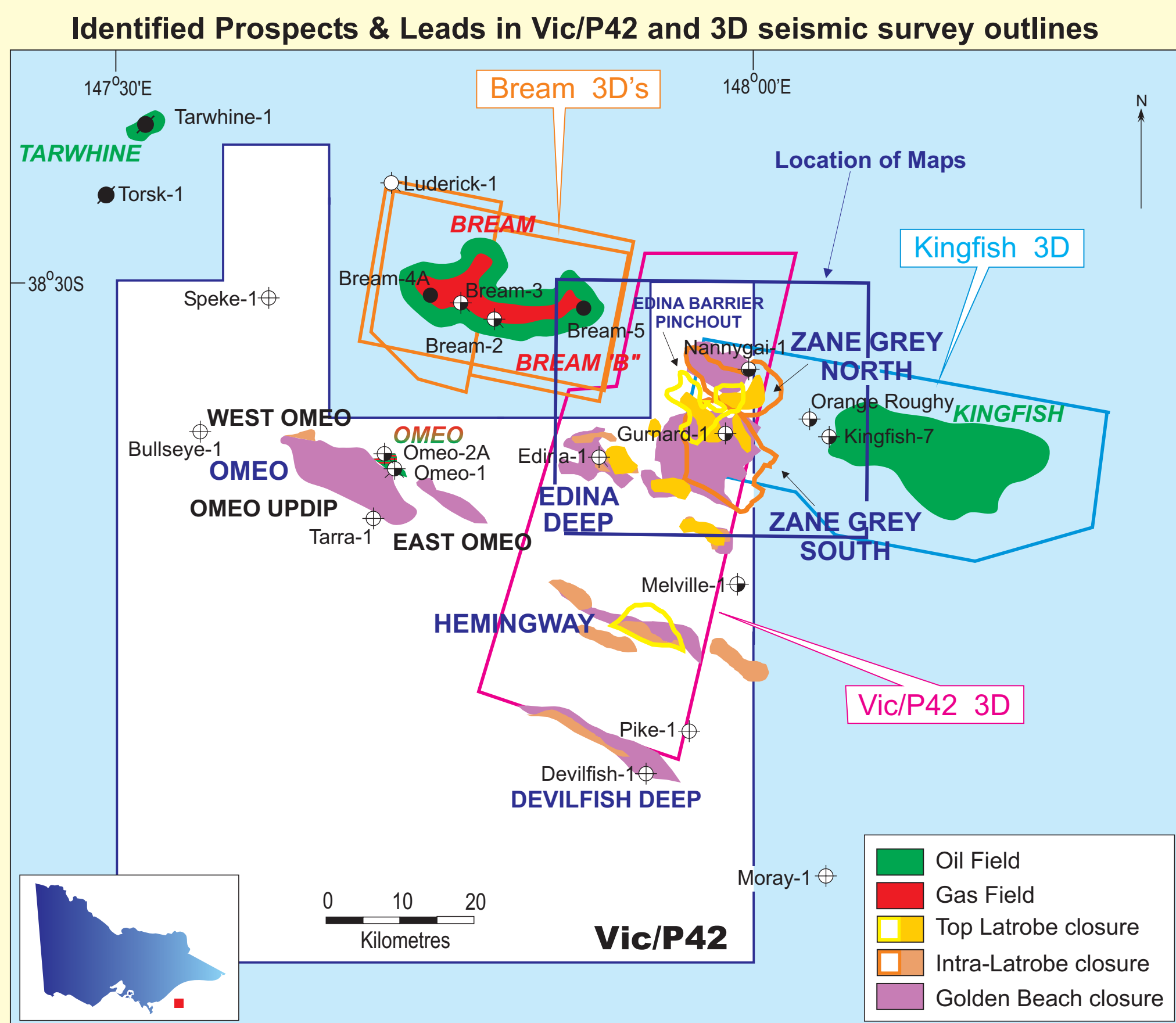


VIC/P42 - EDINA DEEP, OFFSHORE GIPPSLAND BASIN, VICTORIA



Edina Deep

The Edina Deep Prospect is a faulted anticline beneath Edina-1 with an upside in upthrown fault closure, at the Volador Formation level. At deeper Golden Beach Subgroup level it forms a tilted upthrown fault block closure. The structure appears to be formed, through tilting and rollover above the major basin forming normal fault striking NW-SE to the immediate northeast, separating the shallower Terrace from the Central Deep. Edina-1 was drilled in 1982 to test a small faulted anticline mapped at the top Latrobe Group. The well did not penetrate deeper than the Kingfish Formation (Upper *L. balmi* palynozone) and no significant hydrocarbon shows were encountered. Current mapping indicates a top Latrobe vertical fault structural relief of ~30m at the well. Logs and cuttings indicate that excellent reservoirs occur in barrier bar sandstones of the upper Kingfish Formation. These were encountered beneath glauconitic sandstones and shales of the Gurnard Formation, with moderate porosity but very low permeability. The Kingfish Formation reservoirs form a high net to gross sequence and were unlikely to be laterally fail sealed against Gurnard Formation (and Kingfish) immediately northeast. The lack of accumulation in Gurnard Formation sandstones may be due to a lack of fault seal in calcareous sandstones of the 'Early Oligocene Wedge'. Potential is seen in the deeper and lower net to gross sequence of the Volador Formation (as encountered on trend in Melville-1), specifically the Roundhead Member and Kate Shale reservoir / seal pair. At the Nannigai Payzone seismic event a culmination is mapped at 2750m with an interpreted spill point mapped to the Edina Deep faulted anticline at 2785m into further upthrown fault closure northeast of Edina-1, with additional closure before a saddle point to the south east at 2820m.

The acquisition of 3D seismic in 2002 by BSOC over the area has delineated the structure and provides good definition. Detailed velocity information through the overburden has been derived from advanced geophysical processing techniques, although a significant depth conversion risk remains.

Well correlation over 13km to the southeast at Melville-1 (in the same structural terrain) provides confidence that a prospective sequence of reservoir seal pairs remains untested (by Edina-1) within deeper undrilled sequences of the Kingfish and Volador formations, and Golden Beach Subgroup deposits.

Reservoirs

The Volador Formation forms the primary reservoir objectives in the prospect, in particular, thick sandstones of the Roundhead Member. In Melville-1, along trend, 56m of high net to gross sandstones were encountered beneath 32m of marine Kate Shale. Reservoir quality in this well was excellent with average porosities of 16.4% and good permeability. A similar unit to the Grunter Member is also anticipated by correlation with Melville-1. Golden Beach Subgroup reservoirs around 60m thick and 68% n/g are also predicted to occur in a more fluvial facies with average porosity of 14%.

Seals

Top seals may be provided (in a stacked pay) by back barrier lagoonal and interdistributary shales suggesting more prevalent deeper in the sequence. Analysis of the clay smear potential in wells Gurnard-1, Nannay-1 and Melville-1 suggests CSP over 45 (likely sealing) do not occur until deeper in the Kingfish Formation (lower L. *balmeri* palynozone) and into the Volador Formation. Regionally, the Kingfish Formation becomes more distal to the palaeoshoreline with depth at this location and the potential for developing laterally extensive lower coastal plain shales exists, which is interpreted to augur well for intraformational sealing.

The thick marine Kate Shale, if present is likely to be an effective top seal for the Roundhead Member play. Top Golden Beach volcanics, similar to those encountered in Melville-1, if present, are expected to be an effective top seal to Golden Beach Subgroup reservoirs. However, lateral fault seal will pose a significant risk for this prospect, especially to the northeast where high net to gross Kingfish Formation is interpreted in the downthrown block.

Source Rocks

Non-marine coastal plain organic rich mudstones and coals represent the source rocks for both oil and gas in the basin. These are dominantly of terrestrial plant origin and widely distributed throughout the Latrobe Group, Gas and oil mature source rocks for the Edina Deep Prospect are interpreted to occur in the Central Deep to the north and northeast. Potential oil mature source rocks are interpreted within the Latrobe Group Halibut Subgroup immediately to the northeast, which is interpreted to have provided an oil charge to the undersaturated giant Kingfish oil field. Gas mature charge is interpreted to the north beneath the Bream Oil and Gas field. Therefore, both gas and oil charge may occur in Edina Deep.

Any oil encountered in Edina Deep is likely to have properties comparable with Bream and Kingfish. The Bream oil is described as a paraffinic crude with 45 API and a pour point of 60 Fahrenheit. Kingfish oil is 47 API and a pour point of 60. The Bream oil is saturated at reservoir conditions and is in contact with a large, low CO2 gas cap. No indication of H2S is identified in nearby wells.

Risks

The main risks for the Edina Deep Prospect relate to the mapped depth closure and hence the depth conversion, and the lateral fault seal. Velocity variation in the overburden makes the depth conversion problematic and a significant risk. The lateral fault seal and top seal are also significant risks due to the reliance on fault closure. Whilst the Kate Shale, if present, would provide a good top seal, lateral fault seal remains a major risk. Top seal of the volcanics for the Golden Beach reservoirs also poses a large risk, as they may not exist here.

Reserves Potential

Risked and unrisked reserves potential has been estimated for the potential plays in the prospect and are summarised below. These reserve estimates are for Vic/P42 only.

	UNRISKED RESERVES (RECOVERABLE)		RISKED RESERVES (RECOVERABLE)					
			POS	MSV		P90	P50	P10
	OIL Mmb	GAS Bcf		OIL Mmb	GAS Bcf	OIL Mmb	OIL Mmb	OIL Mmb
Edina Deep	81.7	6.4	24%	40.2	6.7	14.6	40.3	66.7

VIC/P42

EDINA DEEP OFFSHORE GIPPSLAND BASIN

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