Petroleum Systems of the Bonaparte Basin

3. JURASSIC PLOVER-PLOVER (.) PETROLEUM SYSTEM
(Malita Graben, Sahul Platform)

The Jurassic Plover-Plover (.) petroleum system extends north from the Malita Graben across the Sahul Platform near Troubadour Shoals, with the northern limit defined partially by the boundary with Indonesia. The Sahul Platform is a large northeast trending basement high bounded by thick fault blocks and horsts. The study area is located on the eastern flank of the Sahul Platform.

The Malita Graben is a northeast-oriented trough that contains a thin Mesozoic to recent section exceeding 10 km in thickness and is the main “source kennel” for this petroleum system. The primary source for hydrocarbons is the oil and gas prone Plover Formation. This section is mature for gas generation within the graben and mature oil source pods are likely on the shallower northern graben flank. The Plover Formation entered the oil window in the mid-Cretaceous. Other potential hydrocarbon sources include the Late Jurassic Flamingo Group and the Early Cretaceous Euchla Shale Group.

The primary reservoir is the Plover Formation. Other good quality reservoirs include the Flamingo Group and the Infracretaceous Cretaceous Group.

This system has excellent prospectivity for gas with four gas/condensate discoveries in the region: Chuditch, Evans Shoal, Sunrise and Troubadour. The Abadi field (5 tcf of gas) is also a member of this system but lies outside Indonesian waters.

Petroleum System Characteristics

- **Source**: Plover Formation, Flamingo Group, Infracretaceous Cretaceous Group
- **Reservoir**: Plover Formation, Flamingo Group, Infracretaceous Cretaceous Group
- **Source Quality**: Marine mudstones and coal with terrestrial input
- **System Age**: Jurassic
- **Expulsion**: Mid-Cretaceous (pl through to Tertiary) (dry gas)
- **Traps**: Hand blocks, faulted fault blocks, faulted anticlines, Stratigraphic
- **Risk**: Gas flushing of oil accumulations, OGL
- **Acreage Release**: 2002

Figure 1: Schematic of the Plover-Plover (.) petroleum system. The map displays a location map and a map showing the total area of the Plover-Plover Petroleum System. The map also shows the location of the discovery well, Sunrise-1, and the location of the Malita Graben. The map also shows the location of the discovery well, Sunrise-2, and the location of the Malita Graben.

Figure 2: Cross section through the Plover-Plover (.) petroleum system. The map displays a cross section through the Plover-Plover Petroleum System. The map also shows the location of the discovery well, Sunrise-1, and the location of the Malita Graben.

Figure 3: Field reserves for the Plover-Plover Petroleum System (.). All reserve numbers are sourced from Northern Territory Government. The map displays a location map and a map showing the total area of the Plover-Plover Petroleum System. The map also shows the location of the discovery well, Sunrise-1, and the location of the Malita Graben.

Figure 4: Summary of the Sunrise - Troubadour - Loxtton Shoals petroleum system. The map displays a location map and a map showing the total area of the Sunrise - Troubadour - Loxtton Shoals petroleum system. The map also shows the location of the discovery well, Sunrise-1, and the location of the Malita Graben.

Figure 5: Geoscience Australia estimates of the recoverable hydrocarbons to be discovered in the next 10-15 years. The map displays a location map and a map showing the total area of the recoverable hydrocarbons to be discovered in the next 10-15 years. The map also shows the location of the discovery well, Sunrise-1, and the location of the Malita Graben.

Figure 6: Summary of the Sunrise - Troubadour - Loxtton Shoals petroleum system. The map displays a location map and a map showing the total area of the Sunrise - Troubadour - Loxtton Shoals petroleum system. The map also shows the location of the discovery well, Sunrise-1, and the location of the Malita Graben.

Figure 7: Petroleum systems of the Bonaparte Basin. The map displays a location map and a map showing the total area of the petroleum systems of the Bonaparte Basin. The map also shows the location of the discovery well, Sunrise-1, and the location of the Malita Graben.

Figure 8: Petroleum systems of the Bonaparte Basin. The map displays a location map and a map showing the total area of the petroleum systems of the Bonaparte Basin. The map also shows the location of the discovery well, Sunrise-1, and the location of the Malita Graben.

Figure 9: Geoscience Australia (2002) summary of petroleum resources by type estimated to be discovered in the next 10-15 years in the Malita Graben. The map displays a location map and a map showing the total area of petroleum resources by type estimated to be discovered in the next 10-15 years in the Malita Graben. The map also shows the location of the discovery well, Sunrise-1, and the location of the Malita Graben.