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Biodiversity Survey of the Montara Field Oil Leak

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Summary document

Background:

On August 21, 2009, the Montara H1 production well, located on the Montara Wellhead Platform (WHP) suffered a dramatic well-control accident. The well is installed in License Area AC/L7, 200 kilometres off Western Australia's Kimberley coast.

The accident occurred in an area known as the Montara Oil Field where information concerning marine species and ecosystems is limited. The Montara H1 well began pouring oil and gas into the Timor Sea at a rate of between 300 and 400 barrels a day (the Thai owned company PTTEP estimate), and 69 people were evacuated from the adjacent West Atlas jack-up rig that was drilling in the vicinity of the well-head platform.

The resulting environmental disaster has now been recognised as one of Australia's worst oil spills, and comes at a time when this biologically rich marine region is increasingly in the spotlight for oil and gas development.

In September, a whole month after the incident and with oil still spewing into the Timor Sea, it became apparent that a formal examination of the extent and full environmental impact of the spill had still not occurred. With previous studies on the area's marine life so scarce, and with no baseline survey of the vulnerability of adjacent ecosystems or marine wildlife by the company or its predecessors, it was clear an urgent rapid assessment of region was needed.

On Thursday September 24, WWF launched a research trip from Darwin to the affected area to gain a first-hand snapshot of the region's marine life and the potential impacts and risk of harm to marine wildlife from the slick.

Based on PTTEP's estimate that the rig was leaking 300 - 400 barrels per day, the total amount of oil released over the 34 days from when the leak began to the start of WWF's research trip is estimated to be 13,600 barrels or more than 2 million litres of oil. There are concerns however about the accuracy of PTTEP's estimates, which are now deemed to be too low.

According to information published by AMSA, light crude fractions such as that leaking from the Montara well have a range of harmful and toxic effects on wildlife. Evaporation means there is the potential for 'stickier' fractions to remain behind as 'mousse' and waxy residue. These residues, along with emulsions and wax particles, may take much longer periods to weather, and may persist for extended periods in the marine environment.

WWF's resulting report paints a picture of an abundant marine community under serious and continued threat of toxicity from an oil spill that, due to its remote location, has continued without the scrutiny it deserves.

The Survey:

Led by WWF-Australia's Dr Gilly Llewellyn, a team of ecologists assessed the range of wildlife found in the region to provide a snapshot of the risk posed by the spill. It found the area was home to many unique and sometimes threatened wildlife species, including migratory species, and it observed many of these species interacting directly with oil.

Numerically, spinner dolphin was the most abundant species encountered (202), followed by sooty tern (176). Both species were regularly recorded in areas of oil sheen and more heavily oiled areas. Marine reptiles, including threatened hawksbill and flatback turtles and sea snakes, were also seen swimming through the area affected by oil.

Oil was encountered frequently during the three days of the survey with the expedition often crossing concentrated lines of waxy particles and areas of heavy yellow waxy crusts, presumed to be residue from the oil spill further south. The expedition also encountered large areas that were heavily oiled, where literally no limit to the extent of the oil could be seen from the vessel.

On the morning of the first day of the survey, Saturday 26 September, 17 sea snakes were seen in just seven minutes and 42 overall throughout the day. Schools of fish, along with feeding sooty and bridled terns



Spotted Sea Snake *Hydrophis (ornatus) ocellatus* surfacing in surface sheen with waxy particles.



stretched to the horizon in all directions. That evening while the expedition was anchored, a Leaches' storm petrel, hawksbill turtle and flocks of sooty terns feeding with fish were seen foraging in oil sheen.

At dawn the next day, Sunday 27 September, heading over the Jabiru Shoals 400 miles offshore, the team observed a large pod of approximately 80 spinner dolphins. As the expedition headed into deeper water behind Jabiru Shoals it encountered an impressive 21 dolphin pods.

After heading a few hours toward the source of the Montara oil leak the wind rose slightly and the expedition was forced east by increasingly pungent fumes, presumably as a consequence of being directly downwind from the leaking well-head.

The new course passed directly between the Jabiru and Challis wells and in the late afternoon the expedition encountered a thick layer of oil-like soft yellow crust, accompanied by moderately heavy oil sheen and a strong oil smell. Two groups of spinner dolphins, sea snakes and sooty terns were observed in the slick, which continued until night fall.

By Monday 28 September it appeared as though oil was mainly concentrated over the Sahul Banks to the northeast of the survey. The expedition encountered the densest areas of oil on the water twice on the evening of the 27 and 28, about 50 nautical miles from the source of the leak.

On the return journey back to Darwin the expedition passed through oil sheen and waxy particles, including some, for example, the size of dumplings, up to about 140 nautical miles from the Montara oil well. This was also an area where the team encountered a number of threatened flatback turtles in oil sheen.

Overall the expedition recorded 17 species of seabird, four species of cetacean and five marine reptiles including two species of marine turtle. At least eleven of the species were listed migratory and two, hawksbill and flatback turtles, are listed as threatened with extinction under the Environment Protection and Biodiversity Conservation Act 1999.

During a three day survey it is only possible to make limited observations of a vast and virtually unexplored region. Based on previous wildlife surveys around Ashmore Reef it is clear that at least another 10 species of

cetacean occur within the region and may occur in the affected area. It is also highly likely that there would be additional species of sea snake and seabirds that frequent the area and which would be at risk from the slick. The report's species list is reflective of the season and the short amount of time spent on site. Nevertheless, the results provide a reliable basis on which to scope the area's biodiversity value.

Surface oil could be readily detected by extensive patches or continuous glassy water, particles of white waxy residue and, in areas of moderate to high sheen thickness, strong smell and the presence of a soft yellow less weathered crust with volatiles. Oil sheen was present for the majority of the three days of the survey so most animals were likely to have interacted with it to some degree and therefore be at risk of harm from its toxic effects, which may be manifest over long time periods.

Official estimates of the size of the slick from AMSA indicate that it is about 6,000km² (25 x 70 nautical miles) but the expedition found oil sheen at distances beyond 70 nautical miles from the well head. Satellite images from for September 24 indicate that the leak could have covered between 25,000 km² and 10,000 km². With oil continuing to leak since then the footprint of the slick can only have grown.



Bottlenose Dolphin. Chris Sanderson, for WWF-Australia. Note, at least two bottlenose and a spinner dolphin showed signs of emaciation, though other animals appeared healthy. This pod was in an area of extensive light sheen with large, low density wax particles.

Conclusion

The area affected by the Montara oil spill contains a huge amount of marine life, including some of the most iconic species in the ocean. Dolphins and sea birds are found in abundance in the area, and were seen interacting directly with the oil slick, as were threatened marine turtles. In three days it was only possible to make limited observations and the region is likely to be far richer and far more diverse than was possible to assess in a limited time-frame

As of October 22 – two months after the accident – three attempts to plug the leak have failed and oil continues to pour unchecked into this rich marine area.

The unfolding wildlife crisis and threat of harm to wildlife from toxic oil has not received the urgency and attention it deserves. Given we now have a better picture of the area's biological abundance, and the area's wildlife has been observed interacting directly with the oil slick, a clearer understanding of how the accident occurred and why it took so long for government agencies to assess its extent and impacts is urgently needed.

Most importantly, given the interest in further development of oil and gas projects in the area, stronger operational safeguards and tighter regulations are urgently required to prevent similar accidents from occurring in the future.