

MUTINEER-EXETER DEVELOPMENT



MUTINEER EXETER DEVELOPMENT ENVIRONMENTAL PLAN: PUBLIC SUMMARY

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1. INTRODUCTION

Santos Ltd. operator for the Mutineer-Exeter field began operations on 29 March 2005 at the start of field operations the MODEC Venture 11 FPSO arrived in the field and hooked-up to the subsea infrastructure already in place.

Operations initially involved weekly offloads to offtake tankers with the offloading frequency decreasing in later field life. The current Mutineer-Exeter Development consists of one well at Exeter and three wells at Mutineer. Future development may include: additional wells around the existing production centres; up to four additional wells at Exeter and seven at Mutineer, or; other fields tied into the existing production centres. The design life of all the facilities in the field is 15 years

2. COORDIANTES OF ACTIVITIES

Mutineer-Exeter is covered by two adjacent production licenses as shown in Figure 2.1 (WA-26-L for the Mutineer field and WA-27-L for the Exeter field). The development comprises the following principal infrastructure:

- Subsea production system with production centres in each of the Mutineer and Exeter fields.
- FPSO with a Disconnectable Turret Mooring (DTM) moored between the two fields.

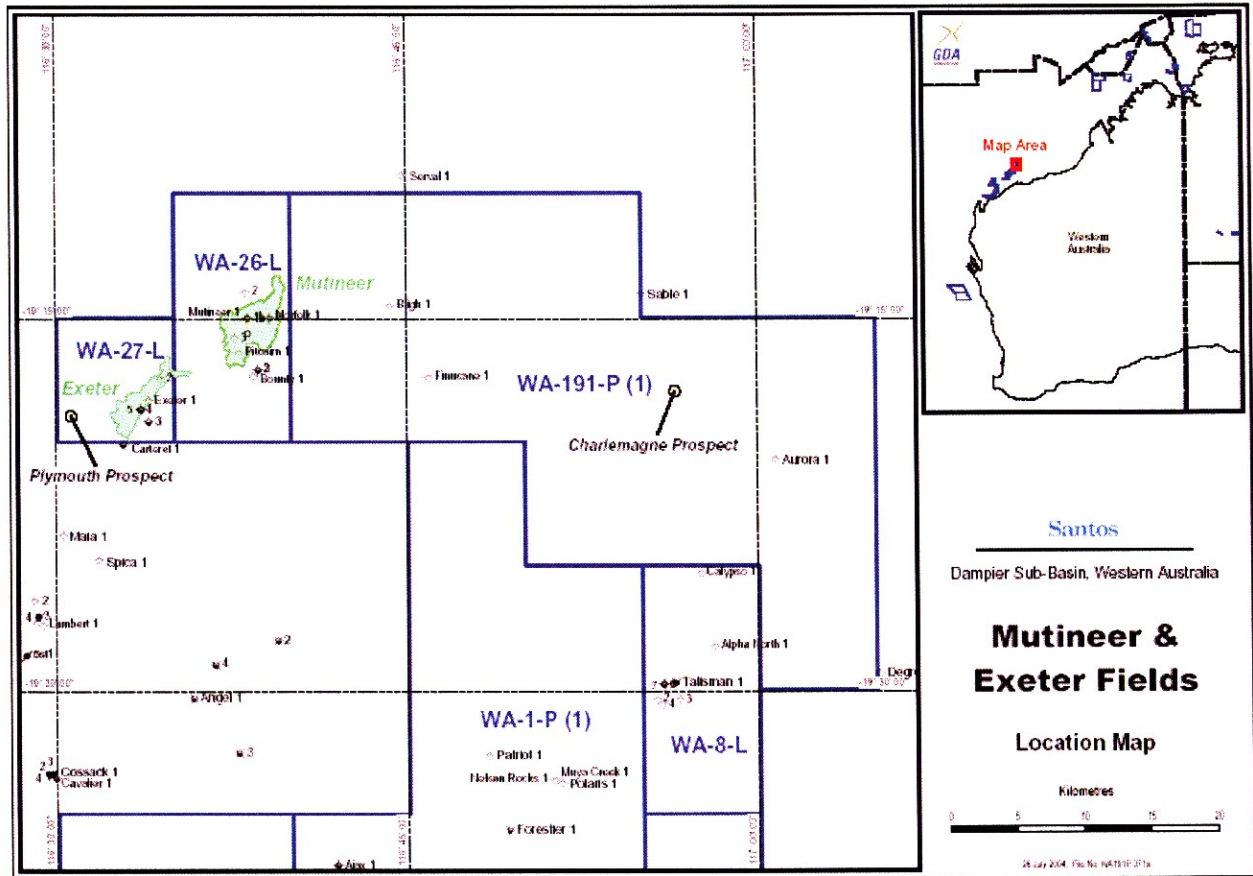
Table 2 presents the surface coordinates of and water depth at, the FPSO DTM and at the Mutineer and Exeter production centres. Water depth in both WA-26-L and WA-27-L ranges between 140 and 160 m.

Table 2 FPSO and Production Centre Surface Coordinates

FPSO DTM	Mutineer Production Centre	Exeter Production Centre
Geographic Surface Coordinates – Latitude and Longitude		
19° 16' 33.45" S 116° 36' 33.45" E	19° 15' 32.6764" S 116° 38' 16.375" E	19° 18' 35.447" S 116° 33' 41.146" E
Geographic Surface Coordinates – Northings and Eastings (Geodetic Datum of Australia 1994, Map Grid of Australia Zone 50)		
7,868,591.7 m N 458,946.0 m E	7,870,465.61 m N 461,654.38 m E	7,864,829.89 m N 453,926.25 m E
Water Depth		
155.5 m below Lowest Astronomical Tide (LAT) 157.9 m below Mean Sea Level (MSL)	160.8 m below LAT 162.7 m below MSL	145.5m below LAT 147.4m below MSL

Note LAT: Lowest Astronomical Tide, MSL: Mean Sea Level

Figure 2.1 Mutineer-Exeter Field Development Map



3. RECEIVING ENVIRONMENT

The seabed across production licenses shoals evenly and very gently (seabed gradient much less than 1°) to the south to southeast. The depth contours are parallel, evenly spaced and trending east to northeast. The sediments are siliceous carbonate medium sands to silt/clays, greenish grey in colour with some shells and shell fragments. Given the depth of water and sedimentary seabed, few significant benthic resources are expected to be located across the survey area.

The area supports a diverse assemblage of fish, most fish have tropical distributions and are well distributed throughout the Indo-West Pacific region. The region also supports large populations of cartilaginous fishes such as sharks and rays. The most prolific of the sharks are the whalers, represented by at least twelve species in the region, whale sharks are not known to aggregate in or near production licenses. A number of whale and dolphin species occur in the waters some being seasonal visitors while others occur at low densities all year round. The most common whale species is the Humpback Whale.

Sixteen species of seabirds have been recorded in the area these included birds that occur year round or as seasonal visitors, such as Petrels and Shearwaters. Most birds encountered offshore were foraging in flocks of 20 to more than 200 individuals, often of different species, and commonly associated with schools of pelagic fish, such as tuna. Foraging groups typically comprise Sooty Terns, Wedge-tailed Shearwaters and the occasional Frigatebird. Many migratory birds that occur in the area are trans-equatorial some of these are protected with agreements between Australia and other countries.

4. MAJOR ENVIRONMENTAL HAZARDS AND CONTROLS

The Mutineer-Exeter Field EHSMS continually identifies hazards, systematically assesses the risks and eliminates or manages the hazards. This can be demonstrated by the following:

- The Field EHSMS covers all activities in the Mutineer and Exeter fields; and
- It has the appropriate structure and processes to foster continual improvement in health, safety and environmental performance.

No **high** or **substantial** hazards were identified in the risk assessment. **Moderate** hazards were the only hazards examined in further detail a summary of the identified hazards and controls is presented in Table 3..

Table 3 Summary of Environmental Hazards

Environmental Hazard	Risk Ranking	Mitigation
Waste Materials		
Routine Activities		
Produced Formation Water (PFW)	Moderate	Monitoring; quarterly samples sent onshore laboratory Design; concentrations >30 mg/l diverted inboard and re processed
Grey water, sewage and putrescible waste	Moderate	Procedural; routine maintenance of treatment system Design; sewage effluent treated in extended aeration system with a screen size less than 25mm
Production Chemicals	Moderate	Monitoring; chemicals handling, storage, usage and disposal to comply with MSDS Procedural; reviewed and selected based on minimum effect and minimum quantities Design; chemical injection package banded and drained to slops tanks
Power generation exhaust emissions	Moderate	Monitoring; treated crude fuel consumption recorded and reported daily Procedural; regular maintenance of engines to ensure maximum efficiency all boilers inspected in accordance with manufacturers recommendations Design; low sulphur fuel used, high thermal efficiency reciprocating engines used.
Venting gas and fugitive emissions	Moderate	Procedural; regular maintenance of all process equipment Design; Use boiler flue gas, shutdown valves fitted with limit switches & isolation valves locked in position

Environmental Hazard	Risk Ranking	Mitigation
Hydrocarbon Releases		
Non-Routine Activities		
Crude oil spill from well blow-out	Moderate	Procedural; all well and process under continuous monitoring. ESD and SSSV's tested periodically, exclusion zone around subsea structures controlled Design; well planning and design integrity, well valves controlled on the FPSO and Shutdown valves tested periodically.
Crude oil spill from FPSO / offtake tanker cargo tanks	Moderate	Procedural; early warning system for errant vessels, cautionary and safety zones gazetted. Oil Spill Contingency plan approved and tested Design; FPSO of double hull design
Release of crude oil from subsea flowline/infrastructure/riser	Moderate	Procedural; flow, pressure and temperature recorded on the FPSO, routine maintenance Asset Integrity Management System Design; All subsea equipment API rated, production system designed to maximum shut-in pressure and designed to 100 year cyclone conditions.
Leak of crude oil from FPSO offloading line and associated pipework.	Moderate	Procedural; all off loadings monitored on a 24 hour basis. Off loading hose pressure tested periodically. Design; break away coupling installed and a SDV fitted to discharge outlet of the FPSO
Spillage or inadvertent release of diesel fuel	Moderate	Procedural: diesel handling, loading and offtake procedures in place. Design; treated crude fuel is produced on board the FPSO limiting the need to transfer diesel and is stored in tanks onboard.
Chemical Releases		
Non-Routine Activities		
Planned chemical releases, e.g. hydrotest discharge, hydraulic fluids	Moderate	Procedural; all produced formation water is monitored with test fluids sent to the slops tanks Design; segregated storage areas.

5. CONSULTATION

In developing the Mutineer Exeter Development Santos consulted with numerous stakeholders and representatives including;

Australian Maritime Oil Spill Centre (AMOSC)
Department of Environment (DoE)
CALM Marine Branch
Fisheries WA

Environmental Protection Agency
Calm (Environmental Protection)
Department of Industry & Resources (DoIR)

6. FURTHER DETAILS

For further information about the Mutineer Exeter Development . please contact

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