

# Fast Facts

## Triton FPSO Bittern/Guillemot W & NW and Clapham Fields



### Overview

- Triton FPSO producing oil and gas from the Bittern, Guillemot West & North West fields Clapham and Pict and Saxon fields
- Location UK Central North Sea, Block 21/30, approximately 193km (120 miles) east of Aberdeen
- Joint project developed by Dana Petroleum and Shell Expro
- Integrated teams are led as follows:
  - FPSO – Dana (duty holder)
  - Bittern – Dana (operator)
  - Guillemot W & NW – Dana Petroleum
- Clapham, Pict and Saxon fields developed as subsea tie-backs to the Triton FPSO by operator Dana Petroleum
- Fields tied back to FPSO via subsea facilities comprising a series of pipelines and manifolds:
  - Bittern 20kms from FPSO
  - Guillemot West 12kms from FPSO
- Export Oil via shuttle tanker
- Gas via Fulmar gas line to St Fergus
- Drilling carried out by mobile drilling units over the respective fields.
- Joint venture partners in the Triton FPSO area are:
  - Dana (52%);
  - Tailwind (46%); and
  - Endeavour (2%)

### Technical Data

#### Construction

- New-build double hull tanker, built in Korea
- Modified in the Sembawang shipyard, Singapore
- Turret, cranes and topsides pallets installed and onshore commissioning Tees Offshore Base, UK.

#### Mooring/Riser System

**Design:** Passive system using an internal bow turret 4.4m dia. Design by Bluewater

**Mooring Lines:** 3 x 3 lines, each 1,250m long, chain/wire/chain system

**Riser System:** 9 Flexible risers and 2 umbilicals 15 riser slots installed, allowing additional risers to be added

#### Dimensions

**Length overall:** 244m (800ft)

**Moulded breadth:** 42m (138ft)

**Moulded depth:** 21.3m (70ft)

**Deadweight:** 105,000 tonnes

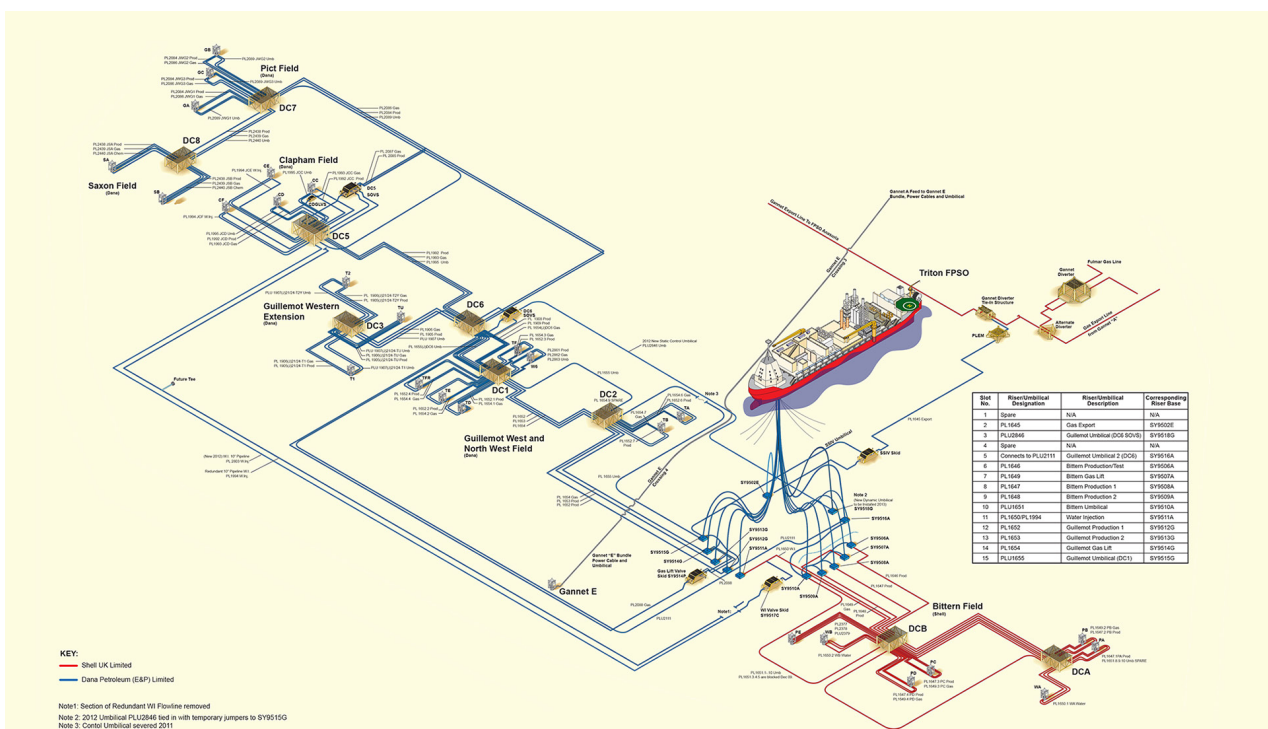
**Water Depth:** 300ft (90m)

**Power generation:** 42 MW from 2 x LM6000 dual-fuelled gas turbines

**Storage capacity:** 630,000 barrels

**Process capacity:** Oil 105,000 bopd, Gas 140 mmcf/d, Water injection 125,000 b/d.

Field Data	Bittern	Guillemot West	Guillemot North-West	Clapham	Pict	Saxon
<b>Location</b>	UK Central North Sea, UK Block 29/1a and 29/1b Approx 20km SE of Triton	UK Central North Sea, UK Blocks 21/29a, 21/25, 21/30, 21/29b Approx 14km NW of Triton	UK Central North Sea, UK Block 21/24 Approx 14 km NW of Triton	UK Central North Sea, UK Blocks 21/24 Approx 22km NW of Triton	UK Central North Sea, UK Block 21/23b Approx 34km NW of Triton	UK Central North Sea, UK Block 21/23b Approx 35km NW of Triton
<b>Water depth</b>	300ft (90m)	290ft (87m)	290ft (87m)	276ft (85m)	275ft (84m)	281ft (85.65m)
<b>First Production</b>	March 2000	March 2000	March 2000	October 2003	June 2005	November 2007
<b>Recovery</b>	Waterflood	Natural depletion	Natural depletion	Water Injection	Natural depletion	Natural depletion
<b>Field Life</b>	13 years	10 years	10 years	12 years	15 years	13 years
<b>Wells</b>	5 production and 2 water injection wells	4 production wells	1 production well	2 production and 2 water injection wells	3 production wells	2 production wells
<b>Drill Sites</b>	2	2				
<b>Manifolds</b>	2 x 7 slot manifolds	2 x 6 slot manifolds				
<b>Pipelines</b>	2 x 10in Production, 1 x 8in Production/Test 1 x 12in Water Injection 1 x 4in Gas Lift Approx. 20km long + 2km long back to FPSO	2 x 12in Production 1 x 4in Gas Lift Approx 12km + 3km long back to FPSO	Part of Guillemot West Infrastructure	Part of Guillemot West Infrastructure	Part of Guillemot West Infrastructure	Part of Guillemot West Infrastructure



## Safety Systems

**Safety Case** 14 (2) material change update for Gas Import in 2011.

**Evacuation** preferred option:

- 1 via helicopter
- 2 Lifeboat
- 3 Liferaft or lifebuoy

**Temporary Refuge** Accommodation containing control room, communications

- Lifeboats:** 2 x TEMPSC  
1 port (59-man), 1 starboard (62-man) aft
- Liferrafts:** 4 x 15-man aft, 2 x 12 man emergency shelter forward
- Lifebuoys:** 10 located around vessel
- Escape Routes:** Walkways protected by firewalls running past process equipment on either side of vessel.

### Firefighting

- Firepumps – 2 x 1950m<sup>3</sup>/hr of firewater
- Extensive water deluge and water curtains throughout facility
- Helideck – foam monitors delivering 6mm coverage of foam.

### Emergency response

- Fully trained response teams
- Regular exercises/drills.

### Environment

- FPSO double-hulled
- Process and vessel design plus storage procedures to minimise VOC emissions
- High efficiency turbines and waste heat recovery systems for high energy efficiency and reduced exhaust gas emissions
- Initial response and monitoring of any spill carried out via FPSO management and Dana
- If necessary these would be escalated to respective field operators if additional external resources are required
- Procedures to minimise discharges
- Oil pollution emergency plans to deal with significant incidents
- Key factors to response:
  - Weather
  - Amount of spill
  - Location of spill
  - Local sensitivities
- Member of Oil Spill Response with extensive expertise and equipment and dispersants.

## People

- Normal crew:** Approximately 70.
- Accommodation:** For up to 80.
- Shift pattern:** Generally 2 x 12-hour shifts/14 days on, 21 days off (contractor conditions determined by employer).

### Management Structure

- Offshore Installation Manager (akin to ship's captain)
- Supervisors from joint team
- Core operations support personnel from contractor Wood Group.

### Travel offshore

- Full inventory of people maintained at each stage
- Baggage and body search at heliport
- Full safety briefing before all flights
- Immersion suits/lifejackets/rebreathers worn at all times
- Survival training and full offshore medical examination required
- Minimum Industry Safety Training (MIST) required

### Induction

New personnel – comprehensive induction on arrival covering safety, welfare, and other familiarisation aspects

### Medical Facilities

- Qualified Medic (SRN + specialist training)
- Qualified first-aiders
- 2-bed, well-equipped sickbay
- Onshore medical support – CAPITA – Aberdeen-based doctors on 24-hour call-out.

## Standby Vessel

### Ocean Osprey

- Shared with Shell on Gannet and Anasuria
- Owner/Operator:** Atlantic – Offshore
- Built/Converted:** Zanakona 2014
- Type of vessel:** Emergency Rescue, Recovery and Tanker Assist Vessel

### Vessel Data

- Length/ Breadth:** 66.80/16.00 meters
- Speed:** 14 knots
- 2 x 1935kW MAN engines
  - 1 x transverse bow thruster
  - 1x bow azimuth thruster
- Fast rescue craft:** 1 x WEEDO 800 FRC
- Daughter craft:** 2 x MP 1000
- Launching device:** 3 x heave compensated systems for FRC and DC
- Rescue basket:** DACON
- Rescue Zones:** Fitted port and starboard plus Dacon Scoop Recovery System
- Survivor facilities:** Fully compliant with class A SBV requirements capacity for 400 survivors, with survivor seating, bunks, hospital treatment area, showers and toilets.

