

NEW CONCEPT FOR MARGINAL FIELDS

ORANJE-NASSAU ENERGIE STARTS PRODUCTION FROM P11-E SATELLITE PLATFORM

Introducing an innovative platform design, Oranje-Nassau Energie (ONE) has started the production from the gas platform P11-E, located at the North Sea about 50 kilometres outside the Dutch coast. The new platform concept enables ONE to economically develop two marginal fields, despite current gas prices. The production has started in October 2016 and is estimated to end in 2022. During that period 650 million Nm³ gas is expected to be recovered. The satellite operates emissions-free. Power is generated by a unique combination of solar and windmills, storing renewable energy in batteries.

Because remaining undeveloped gas prospects and fields on the Dutch Continental Shelf are relatively small, it is a challenge to create economically attractive new developments. Taking up this challenge, ONE has developed, together with GeoSea N.V., the Oranje-Nassau Standard Satellite (ONSS) that now is in use for the first time for the P11-11 and P11-12 gas fields. By developing these fields, ONE for the first time in its history has completely managed an offshore E&P asset from exploration discovery to production.

Alexander Berger, CEO ONE: *“P11-E is the first offshore development completely managed by ONE from exploration discovery till production. Despite low gas prices, we have demonstrated that we can successfully develop offshore gas fields within time and budget. ONE shows again it is the operator of choice for marginal fields.”*

According to EBN this is an excellent development, because it demonstrates the way forward for an industry under pressure. It has been safely executed and, cost effectively, will provide lower carbon energy to meet society’s needs while moving forward through the energy transition.

ONSS Concept

The ONSS consists of a standard design for the topsides combined with a modular jacket. The topsides, though small, accommodates a free-water knock-out facility, has three well-slots, a tie-in for a subsea well, a tie-in from another ONSS, an export riser, with the provision for piggy-backline and a J-Tube for an umbilical



Beside the process facilities, the unmanned satellite is equipped with an emergency shelter for eight persons, a helicopter deck and a five-ton crane. Several wind turbines and solar panels generate power. The design of the topsides can be used without adjustments for a wide range of gas fields up to two million m³/day gas throughput. The modular jacket, by use of modular transition pieces is suitable for water depths up to 50 metres and can therefore be placed in the entire southern North Sea. The jacket design is certified for use in the United Kingdom and the Netherlands.

Both the modular jacket and the topside have been constructed by Heerema. Ronald Wiebes of Heerema: *“With the topsides and jacket having been built indoors at the Zwiindrecht yard of the Heerema Fabrication Group, we are proud to have contributed to the success of the P11-E development. Other operators should look at this development as an example for successful low cost new concept. Further standardisation can help industry to reduce costs.”*

The platform has been installed by DEME Group. Niels van Berlaer from EverSea NV (DEME Group): *“We are very proud that we could participate in several development phases of the successful P11-E project. With the ONSS concept we are convinced ONE has the key to cost effective develop marginal fields in the future.”*

Gasfields

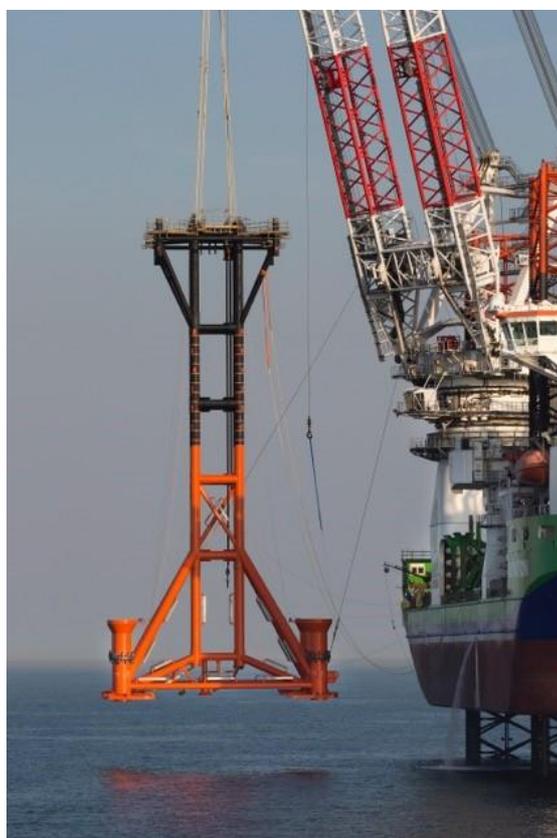
ONE and its partners TAQA Offshore B.V. and EBN B.V discovered the P11-11 field in the spring of 2014. This typical marginal gas field contains an estimated 650 million Nm³ recoverable gas reserves. After P11-E was placed, a second well was drilled from the platform discovering the P11-12 field. This field is expected to contain some 200 million Nm³ recoverable gas reserves and production will commence shortly. Both wells have a high Gas-Condensate-Ratio and are drilled through a thin oil rim. Development of the oil rims is uneconomic at the current forward oil prices.

The time between discovery and first gas from the P11-11 field lasted only 28 months and has been quoted in a publication of CGG as *“the fastest ‘turn around’ in the Dutch offshore during the last 13 years”*. ONE believes that the ONSS standard platform design significantly simplifies and shortens the engineering process, making first gas within eighteen months an achievable target.

From well to pipe

Water is separated from the produced gas and condensate at the ONSS. Gas and condensate are then exported via a new pipeline to the TAQA-operated P15-D processing facilities.

The new pipeline has a length of 9 km and 8” diameter, with a 2” methanol injection line. The new pipeline is connected at the seabed with the existing pipeline from P15-F to P15-D. The total pipeline length from P11-E to P15-D is 18 km. The pipeline navigates through nine meter high sand dunes from P11-E to P15-F, crossing telecommunication cables and avoiding old pipelines and future wind turbines. The pipeline is installed by Allseas in 2015. Allseas was given a large installation window to select their best opportunity to install the pipeline.



About Oranje-Nassau Energie B.V.

Oranje-Nassau Energie B.V. (ONE) is a private Dutch exploration and production company, with a long track record in running a diversified upstream portfolio. Following the acquisition of Dutch operator Cirrus, the acquisition of NAM's operated Q16 field and the Shell UK operated Sean gas field, ONE focuses on expanding its North Sea operated portfolio and will also look at attractive investment opportunities West of Africa. More on www.onebv.com.