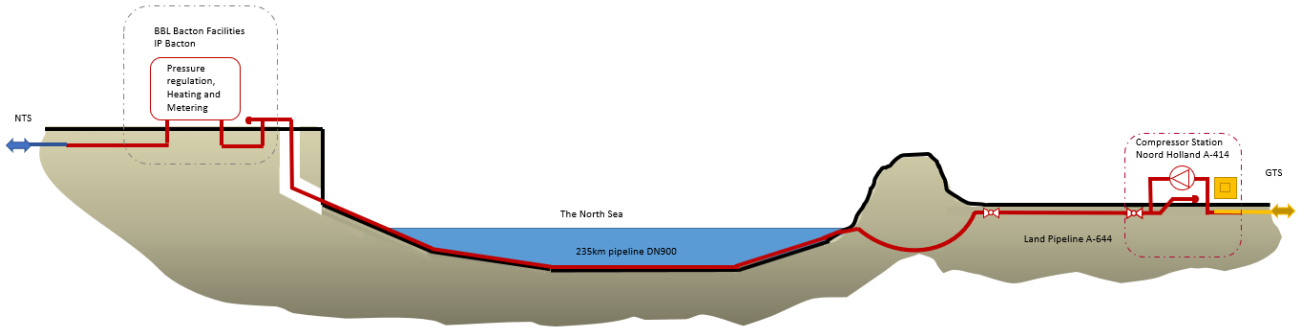
Technical capacity of the Balgzand-Bacton pipeline

Introduction

BBL Company owns and operates the pipeline between Balgzand in the Netherlands (NL) and Bacton in Great Britain (GB). On each side are technical facilities located that facilitate the operations of the pipeline. Compression is only available on the Dutch side at CSNH (Compressor Station Noord Holland near Anna Paulowna). From 2019 onwards the pipeline is made bi-directional and also capable to transport natural gas from GB to NL.

On the NL side the pipeline is connected to Gasunie Transport Services (GTS), the Dutch national network operator. On the GB side the pipeline is connected to the NTS (National Transmission System) as operated by National Gas Transmission (NGT).

This paper describes the technical capacity of the entry and exit network point at Bacton in GB (IP Bacton). The interconnection point at Julianadorp in NL has been integrated within the GTS domain in 2018 and therefore not explicitly described, whereas Dutch based assets are inherently of influence of the BBL transmission system as a whole.



Technical capacity of exit point Bacton

The technical capacity of the exit point Bacton, for gas transport from NL to GB, is mainly determined by the available compression capacity at CSNH and heating equipment at the Bacton facilities, the latter to compensate for the Joules-Thompson effect as a result of flow control and pressure let down when flowing towards the NTS.

The technical capacity of the pipeline is based on the following principles and equipment:

- Quality, quantity, pressure, caloric value and temperature of incoming gas from GTS;
- Compression capacity as a result of suction pressure from the GTS system and the discharge pressure to the pipeline;
- Available electrical power for compression;
- Ambient temperature (cooling capacity);
- Gas composition.

The current maximum technical firm capacity of BBL for exit IP Bacton has been determined at 18,000,000 kWh/h based on the following assumptions:

- Inlet pressure of 55bar(e) at CSNH;
- Exit pressure of 70 bar(e) at Bacton;
- A corresponding linepack;
- Maximum ambient temperature at CSNH of 28 °C;
- Maximum available electrical capacity of 46MW;
- Availability of 3 compressors;
- A minimum gas caloric value of 38,93 MJ/m^3(n).

Technical capacity of entry point Bacton

The technical capacity of the entry point Bacton, for gas transport from GB to NL, is mainly depending on NGT's operating conditions since no compression is available at Bacton. The linepack of the pipeline is significantly different in this flow direction whereas gas has free flow from the NTS in to the pipeline. At the Dutch receiving side compressor station CSNH will boost the gas into the GTS network.

The current maximum technical firm capacity of BBL for entry IP Bacton has been determined at 7,699,193 kWh/h based on the following assumptions:

- Inlet pressure of 55bar(e) at Bacton;
- A corresponding linepack;
- Availability of 3 flow control streams at the Bacton facilities;
- Minimum arrival pressure at CSNH of 31,5bar(e);
- Maximum ambient temperature at CSNH of 28 °C;
- Maximum available electrical capacity of 23MW;
- Availability of 2 compressors;
- A minimum gas caloric value of 38,93 MJ/m^3(n).

Under certain conditions the technical capacity can be raised to 10,000,000 kWh/h based on the assumptions as above, with the following deviations:

- Inlet pressure of at least 60 bar(e) at Bacton / availability of the required pressure service by National gas;
- A raised linepack;
- Availability of all 4 flow control streams at the Bacton facilities.