



Fact Sheet Gathering Centers, Flow Stations

Introduction

The purpose of separation facilities (known as “gathering centers” on the western side of the field **GC-1, GC-2, GC-3**, and “flow stations” on the eastern side **Flow-1, Flow-2, Flow-3**) is to separate raw crude oil, water and gas produced from the wells into the three main components. The crude must meet certain pipeline specifications before being shipped to Pump Station 1 at the start of the Trans Alaska Pipeline System (TAPS). Each separation facility is designed to process about 350,000 barrels of raw crude oil per day. The separation facilities can also handle various amounts of gas and water. The largest gas handling facilities are Flow Station 1 and Gathering Center 1, each capable of processing 2.7 billion cubic feet of gas per day. The largest water handling facility is Flow Station 2 which can process up to 600,000 barrels of water per day.

Oil System

Raw crude produced from individual production wells located at well pads is diverted to flowlines (pipelines). The flowlines transport the raw crude to the separation facilities, where the water and natural gas mixed with the raw crude are removed. The stabilized crude is then sent to Pump Station 1, the beginning of TAPS.

Gas System

The separated natural gas is compressed, dehydrated, and transported to the Central Gas Facility (CGF) where natural gas liquids are recovered and sent to TAPS and a portion are used to make miscible injectant which is used in enhanced oil recovery. The remaining dry gas goes to the Central Compression Plant (CCP), where the majority is injected into the Sadlerochit formation. A small

Separation Facilities Fast Facts

Separation facilities (also called Gathering centers/ flow stations) separate natural gas and water from crude oil extracted from production wells.

There are 6 separation facilities (3 gathering centers/ 3 flow stations) at Prudhoe Bay. Other North Slope oil fields have their own separation facilities.

Each separation facility at Prudhoe Bay is designed to process about 350,000 barrels (14.7 million gallons) of raw crude in a day.

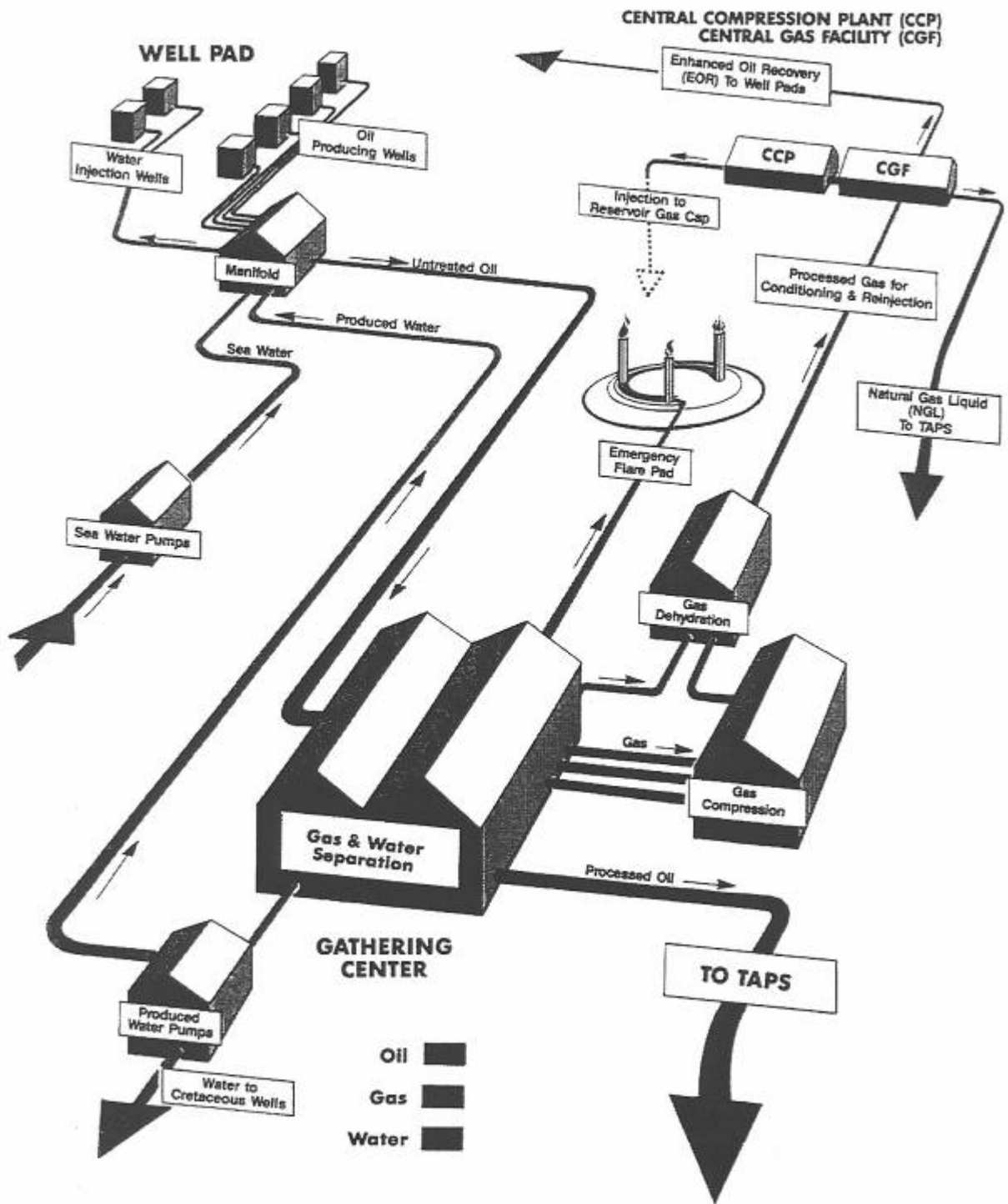
Each gathering center processes an average of 70,000 barrels of oil, 1400 million cubic feet of natural gas, and 200,000 barrels of produced water each day; quantities vary from facility to facility.

portion of the compressed and dehydrated produced gas is used within the Prudhoe Bay Unit as fuel gas and some is sold to local utilities and TAPS. At GC-1 and FS-3, another portion is diverted to the “gas lift” compression plant. Gas lift is a process where recovered natural gas is re-injected into the wells to add buoyancy to the oil to help “lift” it to the surface.

Water System

The “produced” water separated from the raw crude is processed to remove oil and solids. This treatment process yields an oil stream (which is returned to oil processing equipment), a dirty water stream (which is injected into the Cretaceous formation nearly 1 mile below the Earth’s surface), and a treated produced water stream (which goes to injection wells at the well pads). The treated produced water injected into the formation supports a field-wide waterflood program designed to maintain reservoir pressure and “sweep” crude oil from injection wells toward oil production wells.





Simplified process flow: Figure shows processing of crude oil, natural gas, and water and delivery of oil to the Trans Alaska Pipeline System. Produced fluids are sent to separation facilities (gathering centers or flow stations). Raw crude oil – composed of mixed water, oil, and gas – enters separator vessels. Gas is liberated from the oil and, being lightest, flows out the top. Water and oil fall to the bottom, and the oil is recovered. In order to adequately dry the oil for market, several stages of separation and final dehydration are required. Through this process, oil is cooled to about 140 degrees Fahrenheit.



Graphic of GC Process

