

Kuparuk River Unit Facility Information

Basic KRU Facility Description

There are currently five fields (participating areas) in the Kuparuk River Unit (KRU). The participating areas are:

- The Kuparuk Participating Area (KPA)
- The West Sak Participating Area (West Sak PA)
- The Tarn Participating Area (Tarn PA)
- The Tabasco Participating Area (Tabasco PA)
- The Meltwater Participating Area (Meltwater PA)

The KPA is the original and largest field in the KRU. Almost all of the infrastructure within the KRU was built by the KPA owners for the sole purpose of developing KPA resources. The other participating areas or 'satellites' were developed after 1997 and have facility access agreements with the KPA.

Companies with an ownership interest in the KPA facilities include:

- BP Exploration (Alaska), Inc.
- Chevron U.S.A Inc.
- ConocoPhillips Alaska, Inc. (Unit Operator)
- ExxonMobil Alaska Production, Inc.
- Union Oil Company of California

The above companies all have ownership interests in the satellite fields but not with the same ownership interest as the KPA.

Figure 1 shows the Kuparuk River Unit basic facilities. The major components are:

- Central Processing Facilities (CPFs) - the Kuparuk Participating Area (KPA) Owners built and own these three CPFs to process KPA production. Since 1997, a number of new satellite fields have been developed and all are tied into CPF2 with the exception of West Sak which is tied into CPF1.
- Drillsites - there are 46 drillsites, 43 of which are owned by the KPA Owners. Two drillsites are owned by the Tarn Participating Area Owners and one drillsite is owned by the Meltwater Participating Area Owners.
- The Oliktok Pipeline (OPL) – This DOT and RCA regulated, common carrier pipeline transports natural gas liquids (NGLs) from Prudhoe Bay to the KRU in order to create miscible injectant (MI) for enhanced oil recovery. The Oliktok Pipeline Company owns the OPL.
- The Kuparuk Pipeline (KPL) – This FERC and RCA regulated, common carrier pipeline transports crude from the Colville River Unit (delivered to CPF-2 by the Alpine Pipeline (APL), Kuparuk River Unit and Milne Point Unit to TAPS

KRU Facility Description

Pump Station No. 1 (PS1). The Kuparuk Transportation Company (KTC) owns the KPL.

- Seawater Treatment Plant (STP) - This process plant is designed to treat water drawn from the Beaufort Sea. The treated seawater is primarily used for waterflood operations at the KRU. Under a special agreement, STP also supplies waterflood water to the Colville River Unit. The STP is owned by the KPA Owners.
- Other Kuparuk Infrastructure – The Kuparuk Operations Center, Construction Camp, Spill Response Center, Industrial Center, Warehouse, Airstrip, Topping Plant (adjacent to CPF-1), roads and pipelines are owned by the KPA owners.

A very basic description of the production process is as follows:

Oil Train

- As indicated in Figure 2, drillsite production flows to a specific CPF. There is limited flexibility to send drillsite production to more than one CPF.
- CPF3 does not have a second stage separator so it sends wet oil (oil containing a small fraction of water) to CPF2 and CPF1 for final processing.
- Oil processing at CPF-1 and 2 consists of 2 stages of 3 phase separation and an electrostatic coalescer to remove water to sales quality level.
- Fiscal metering occurs at CPF1 and CPF2. The shipping pumps and meters are owned by the KTC.
- Produced oil from CPF 2 flows down the KPL where it is commingled with oil from CPF1 and sent another 26 miles to Pump Station 1 and then down TAPS to Valdez.

Produced Water Train

- Produced water from each CPF is re-injected into injection wells at drillsites associated with that CPF.
- Some water is used for jet pump lift (a form of artificial lift).

Produced Gas Train

- As shown in Figure 3, produced gas is compressed (through two stages) and passes into the tie-line which connects all of the CPFs.
- Gas entering the first stage of compression is called 'Front-End Gas'.
- Fuel gas is taken from various points in the system.
- Gas lift gas is taken from the tie-line.
- Injection gas passes from the tie-line into one of the Gas Injection Trains at either CPF-1 or 2.

Injection Gas Train

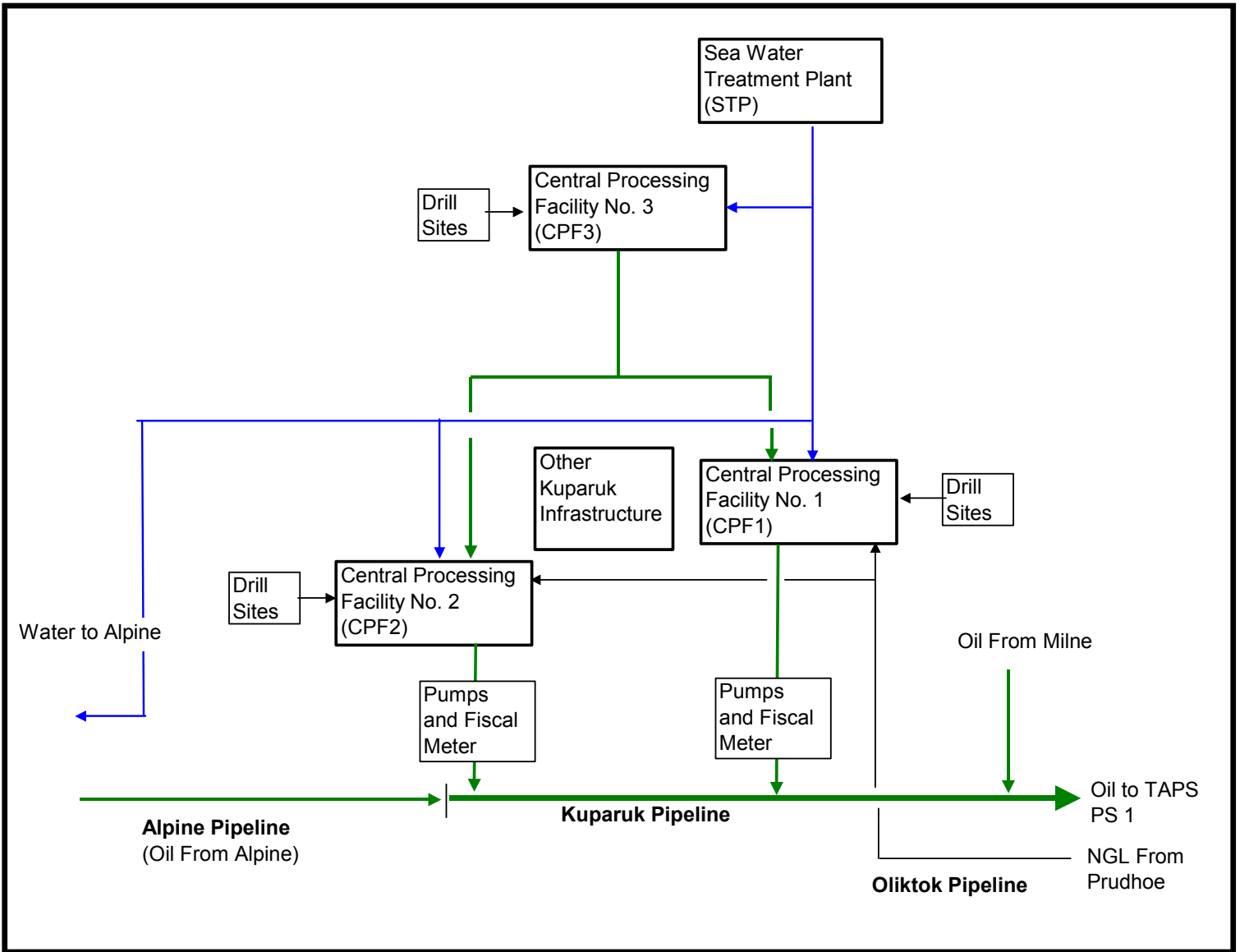
KRU Facility Description

- As shown in Figure 4, injection gas is taken from the gas lift tie-line, compressed, mixed with natural gas liquids (NGLs) to form miscible injectant (MI) and the MI is sent to specific injection wells.
- Gas entering the Injection Gas Train is called 'Back-End Gas'
- Dry gas can also be injected but currently, all injection gas is MI.
- Indigenous NGLs are generated from gas at the CPF-1 and 2 plants.
- NGL is also imported from Prudhoe Bay via the Oliktok Pipeline.
- A small amount of MI gas is used for gas lift in locations where normal gas lift gas is not available.

Injection Water Train

- As shown in Figure 5, injection water consists of produced water and seawater from the Seawater Treatment Plant (STP). The STP filters, heats, chemically treats and deoxygenates seawater for use in waterflood operations. Where practical, an attempt is made to keep produced and seawater streams separate to avoid operational problems.

Figure 1A. Basic Facilities in the Kuparuk River Unit



This data is intended for informational purposes only and is provided on an "as is" and "as available" basis, without warranty of any kind, either express or implied. Potential third parties should contact ConocoPhillips directly for further information (www.conocophillipsalaska.com/facilityaccess/CPAIContacts.asp). Additional legal information regarding this data is included at www.conocophillips.com/utilities/copyright.asp

Figure 1B. Basic Facilities Schematic in the Kuparuk River Unit

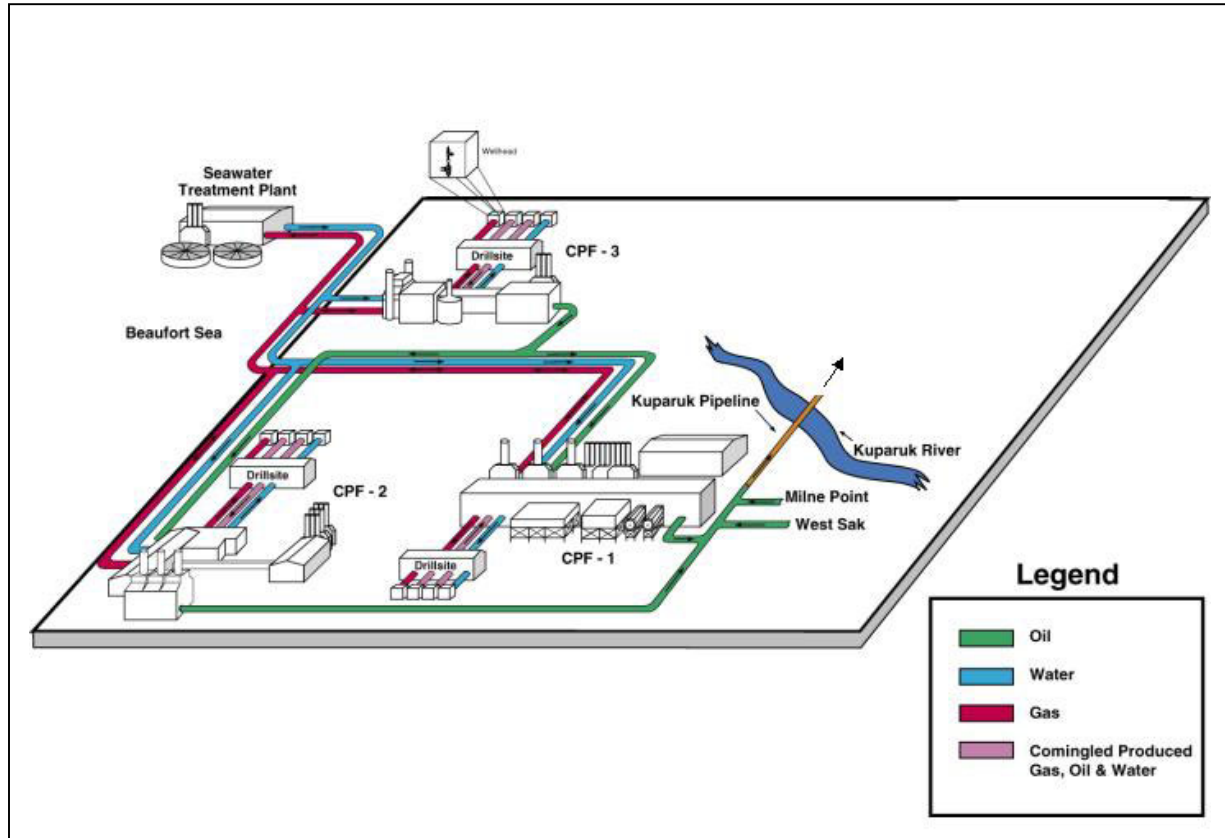
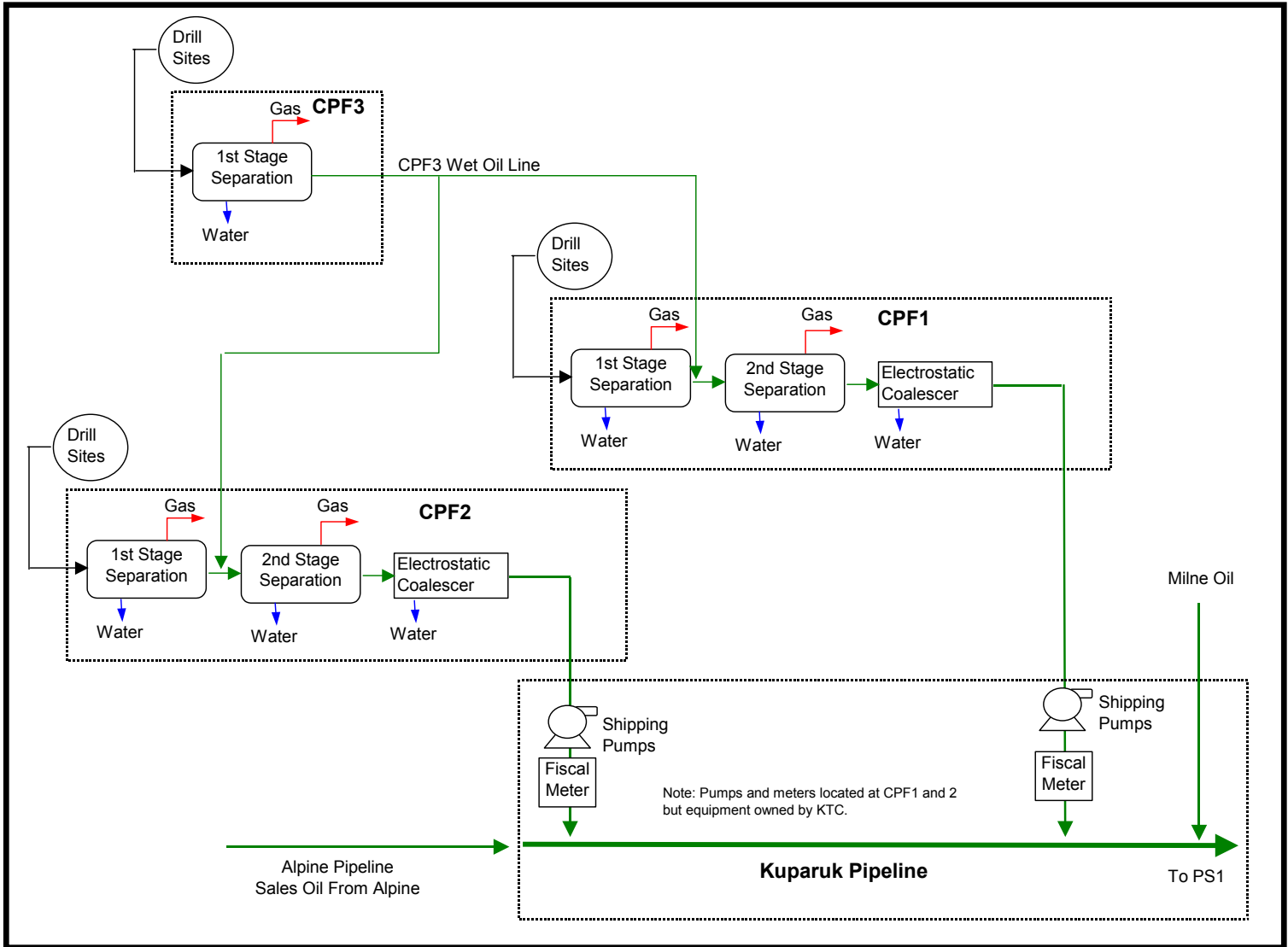
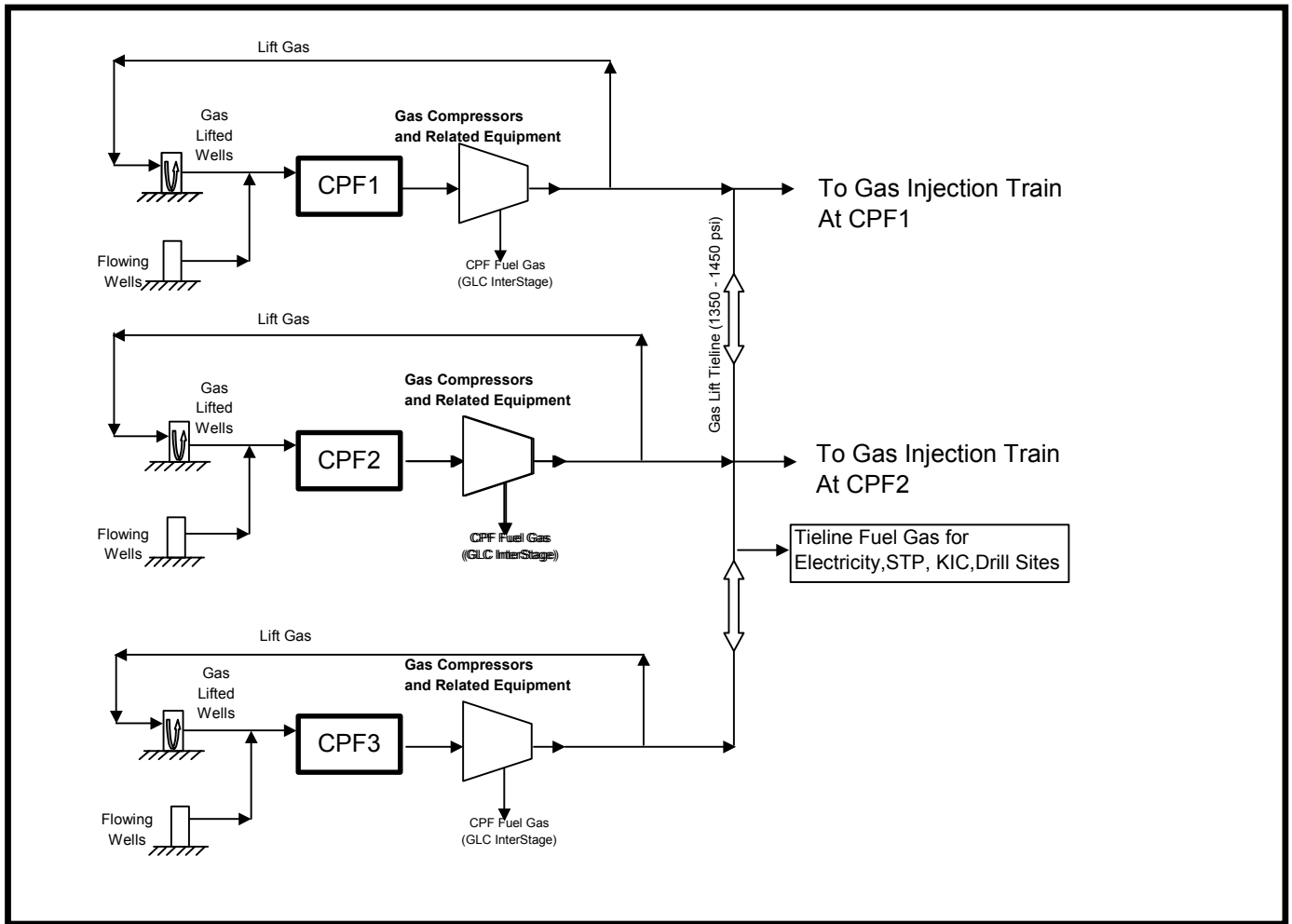


Figure 2. Basic Oil Train Diagram



This data is intended for informational purposes only and is provided on an "as is" and "as available" basis, without warranty of any kind, either express or implied. Potential third parties should contact ConocoPhillips directly for further information (www.conocophillipsalaska.com/facilityaccess/CPAIContacts.asp). Additional legal information regarding this data is included at www.conocophillips.com/utilities/copyright.asp

Figure 3. Produced (Front-End) Gas Train



This data is intended for informational purposes only and is provided on an "as is" and "as available" basis, without warranty of any kind, either express or implied. Potential third parties should contact ConocoPhillips directly for further information (www.conocophillipsalaska.com/facilityaccess/CPAIContacts.asp). Additional legal information regarding this data is included at www.conocophillips.com/utilities/copyright.asp

Figure 4. Injection Gas Train

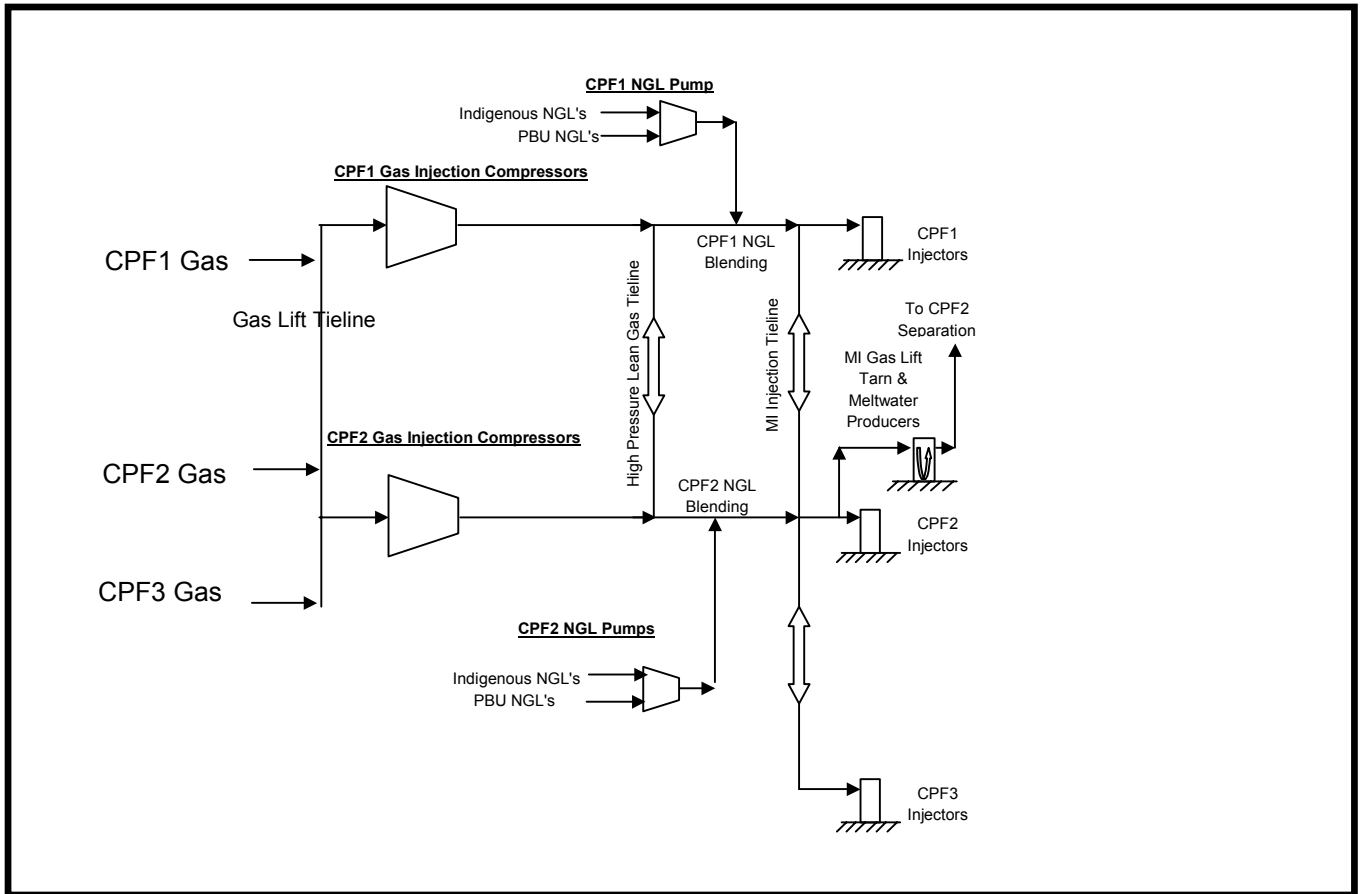


Figure 5. Produced and Injection Water Train

