

This invention is a process for producing pressurized liquid (19) rich in methane from a multi-component feed stream (10) containing methane and a freezable component having a relative volatility less than that of methane. The multi-component feed stream (10) is introduced into a separation system (31) having a freezing section operating at a pressure above about 1,380 kPa (200 psia) and under solids forming conditions for the freezable component and a distillation section positioned below the freezing section. The separation system (31) produces a vapor stream (14) rich in methane and a liquid stream (12) rich in the freezable component. At least a portion of the vapor stream is cooled to produce a liquefied stream rich in methane having a temperature above about  $-112^{\circ}\text{C}$  ( $-170^{\circ}\text{F}$ ) and a pressure sufficient for the liquid to be at or below its bubble point to produce a product (20) and a stream (21) to provide refrigeration to the separation system.

