6.0 UNIT 85 - METHANOL PURIFICATION (CASE 14 only)

6.1 PROCESS DESCRIPTION

Raw Methanol product produced in Methanol Synthesis (Unit 84) will be purified in this unit to produce Grade C methanol. The Grade C methanol is a chemical feedstock for making formaldehyde, acetic acid, and many other chemical products. Grade C methanol will contain a minimum of 99.85 percent by wt. of methanol.

Two distillation towers will be used in series for the purification of crude methanol. Crude methanol, preheated in a feed-effluent exchanger, will be fed into the first distillation column. The overhead from the first column consists of a small quantity of methanol plus the dissolved gases in the crude methanol feed. This overhead stream is incinerated. The bottoms from the first column will be heated further in a heat exchanger against low pressure steam and then fed into the second and final distillation tower. The overhead from the second column will be cooled in an air cooler and collected in a reflux drum. A part of the liquid methanol will be sent back to the tower as reflux and the remaining part will be collected as Grade C methanol product. The bottoms from the second column contain water and heavier alcohols that are fed to the waste treatment unit.

6.2 FLOW SHEETS

Flow Sheets for the Methanol Purification area are proprietary with the licensors involved. Details of the processes cannot be revaled until a licensing agreement is signed.

6.3 UNIT MATERIAL BALANCE

Stream compositions for the Methanol Purification area are proprietary with the licensors involved. Details of the processes cannot be revaled until a licensing agreement is signed.

6.4 ACCOMPLISHMENTS (CASE 14 only)

A preliminary process design configuration was completed and a cost estimate was made for both SNG and hydrogen purification. The SNG Unit will be designed by Fluor. SNG conversion guarantees will be obtained from catalyst vendors.

The Hydrogen Purification Unit will be obtained from Union Carbide. Performance guarantees will be obtained from them.

The design of the SNG Methanation Unit can be obtained from Lurgi; however, the quantity of gas to be methanated does not warrant the additional cost of licensing fees. Catalyst vendors will supply performance guarantees for their catalyst and Fluor will design the unit to meet their pressure and temperature requirements.

6.5 CURRENT STATUS

This unit is required for Case 14 only. (Not used in Case 13). To date, only a minimum amount of work has been performed on this unit. Grade C methanol will be produced in a two column distillation system designed and engineered by Fluor. The design work is not complete. Further work will be needed with due consideration of the actual flow quantity and composition of the crude methanol to be produced in Methanol Synthesis (Unit 84).

6.6 LICENSORS AND EVALUATIONS

There is no licensor for this unit. However, the feed composition and quantity to this unit will be provided by the licensor of the Methanol Synthesis Unit (Lurgi). Fluor will design the Methanol Purification Unit (Unit 85) using in-house computer programming capability.