# Supporting Information

Table S. 1 Process input parameters for different case studies of the LPG recovery from natural gas

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Sr. No.** | **Parameter** | **Unit** | **Base Case** | **Case 1** | **Case 2** | **Case 3** |
| **Feed Conditions** |  |  |  |  |  |  |
| 1 | Gas Flow Rate | MMSCFD | 5.00 | 5.00 | 5.00 | 5.00 |
| 2 | Pressure | Psig | 600.00 | 600.00 | 600.00 | 600.00 |
| 3 | Temperature | ⁰F | 140.00 | 140.00 | 140.00 | 140.00 |
| **Treated Gas Conditions** |  |  |  |  |  |  |
| 4 | Gas Flow Rate | MMSCFD | 4.60 | 4.61 | 4.60 | 4.61 |
| 5 | Gas Pressure | Psig | 50.00 | 50.00 | 50.00 | 50.00 |
| 6 | Gas Temperature | ⁰F | 135.00 | 135.00 | 135.00 | 165.10 |
| **Stabilized Condensate** |  |  |  |  |  |  |
| 7 | Actual Liquid Flow | bbl/day | 65.66 | 66.22 | 65.66 | 65.66 |
| 8 | Pressure | Psig | 155.30 | 155.30 | 155.30 | 155.30 |
| 9 | Temperature | ⁰F | 115.00 | 115.00 | 115.00 | 115.00 |
| 10 | RVP | Psia | 9.01 | 9.00 | 9.01 | 9.01 |
| **LPG Product** |  |  |  |  |  |  |
| 11 | LPG Product | Ton/day | 18.83 | 18.91 | 18.87 | 18.87 |
| 12 | Pressure | Psig | 165.30 | 165.30 | 165.30 | 165.30 |
| 13 | Temperature | ⁰F | 116.30 | 116.30 | 116.20 | 116.20 |
| 14 | C3 Recovery | % | 99.38 | 99.60 | 99.66 | 99.66 |
| 15 | C4 Recovery | % | 98.17 | 98.82 | 98.17 | 98.17 |
| **Major Equipment Summary** | |  |  |  |  |  |
| **HCDP & Stabilization Unit** | |  |  |  |  |  |
| 16 | **Cold Box I** |  |  |  |  |  |
|  | Heat Duty | MMBtu/hr | 1.263 | 1.284 | 1.256 | 0.238 |
| 17 | **Cold Box II** |  |  |  |  |  |
|  | Heat Duty | MMBtu/hr | 0.345 | 0.345 | 0.260 | 0.208 |
| 18 | **Chiller** |  |  |  |  |  |
|  | Heat Duty | MMBtu/hr | 0.164 | 0.706 | 0.172 |  |
| 19 | **Exchanger (operation Chilling)** |  |  |  |  |  |
|  | Heat Duty | MMBtu/hr |  |  |  | 1.210 |
| 19 | **Turbo Expandor** |  |  |  |  |  |
|  | Heat Duty | hp | 39.740 | 39.830 | 42.410 | 43.950 |
| **LPG Recovery Unit** | |  |  |  |  |  |
| 20 | **Gas/Liquid Exchanger** |  |  |  |  |  |
|  | Heat Duty | MMBtu/hr | 1.151 | 1.179 | 0.862 | 0.657 |
| 21 | **De-Ethanizer Reboiler** |  |  |  |  |  |
|  | Heat Duty | MMBtu/hr | 0.763 | 0.745 | 0.739 | 0.693 |
| 22 | **De-Ethanizer Condenser (Chiller)** |  |  |  |  |  |
|  | Heat Duty | MMBtu/hr | 0.634 | 0.675 | 0.582 | 0.510 |
| 23 | **De-Butanizer Reboiler** |  |  |  |  |  |
|  | Heat Duty | MMBtu/hr | 0.453 | 0.455 | 0.454 | 0.454 |
| 24 | **De-Butanizer Condenser** |  |  |  |  |  |
|  | Heat Duty | MMBtu/hr | 0.461 | 0.462 | 0.461 | 0.461 |
| 25 | **Condensate Cooler** |  |  |  |  |  |
|  | Heat Duty | MMBtu/hr | 0.077 | 0.078 | 0.077 | 0.077 |
|  |  |  |  |  |  |  |