



Production Facilities in Upstream Oil & Gas

Outline

1. Purpose/function
 - a. Take what comes out of the well(s), measure production volumes, and make it sellable.
 - i. Oil, gas, water, and various impurities can flow out of a well.
 - ii. Revenue generating products must be separated and measured. This is how oil & gas companies get paid and also how they pay royalty owners.
 - iii. The facility prepares the sellable products for midstream companies to transport, refine, and sell it to downstream markets.
 - iv. The facility separates, treats, and stores (or ships) everything that came out of the well(s).
2. Background
 - a. Facilities can differ due to many factors
 - i. Well pressure
 - ii. Well production volumes (oil, gas, water)
 - iii. Number of wells
 - iv. Composition of wellbore fluids (including amount of impurities)
 - v. Midstream requirements
 - vi. Federal, state, and local requirements
 - vii. Mineral/royalty ownership
 - viii. Operator preferences – how and where they wish to perform the actions mentioned under “purpose/function”
 - ix. Local available infrastructure
 - b. Complexity
 - i. Complexity and size vary
 - ii. Adequate spacing must be provided between each piece component
3. Components
 - a. Primary/common
 - i. Separators (heated/unheated, vertical/horizontal, 2-phase/3-phase/4-phase, etc.)
 - ii. Measurement (meters – often allocation and custody transfer meters included)
 - iii. Storage (ex. tanks)
 - iv. Additional gas processing (ex. dehydration systems)
 - b. Accessories
 - i. Compressors
 - ii. Combustors/flares
 - iii. Pipes & valves
 - iv. Pumps
 - v. Pigging equipment (to keep midstream lines clear)
 - vi. Electrical equipment (ex. generators, transformers, breakers)
 - vii. Control systems/automation



- viii. Heaters/coolers/heat exchangers
- ix. Filters
- 4. Examples
 - a. An unlimited number of examples exist
 - b. Legacy – separator, tank, gas meter
 - c. Emissions controlled – separator, tank, VRT, VRU, combustor, meter
 - d. Centralized
 - i. Facility by well(s) might just include separator (for accounting)
 - ii. Production streams commingled and sent to centralized battery in field or on lease
 - iii. Centralized facility could include separators, tanks, emission control devices (VRU, combustor/flare, etc...), gas processing/conditioning equipment, meter, and accessory items
- 5. Facilities today - Many companies striving to:
 - a. Reduce footprint
 - b. Reduce emissions
 - c. Increase safety (often with automation)