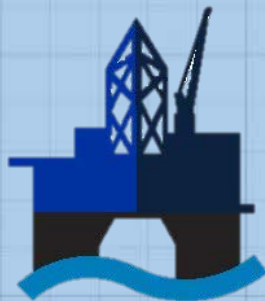




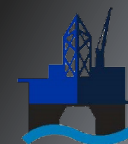
Water Treatment Facility Overview

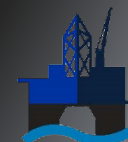
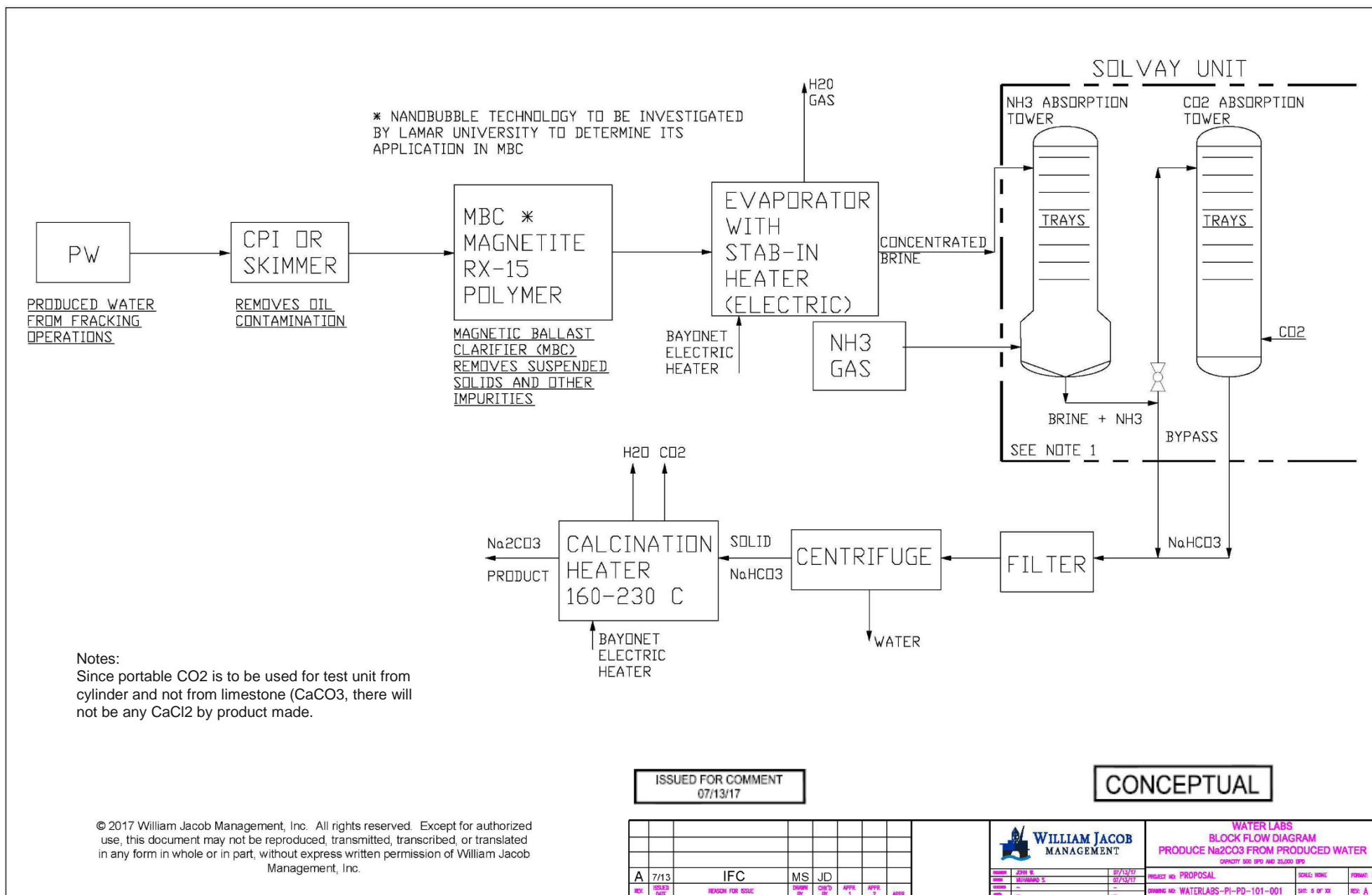


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MANAGEMENT

Solvay / Debang Process

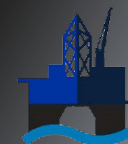
- WJM has identified a process/costs for a small batch treatment process for the Solvay process.
- Review of the test flow diagram. For discussion during meeting with estimates to build a small batch process.
 - *Test diagram is only for the basic process flow and does not include facilities, tanks etc.*
- William Jacob Management to present a FEED (Front End Engineering Design) estimate for the Solvay process for 25,000 Bbls/day as a modular unit. Scalable to meet requirements with additional units running in parallel.
- WJM/NALCO/WaterLabs to present additional documentation to understand the chemistry and process.





Front End Engineering Design (FEED) Study

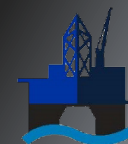
- ▶ Engineering input required
 - Magnetic Ballast Clarification Unit (MBC) package information
 - ***To be provided by Water Labs.***
 - Solvay license (if required) from Solvay USA or Solvay Global (Belgium)
 - ***This is to be determined. May not be required.***
 - Solvay detailed process package and associated equipment fabrication
 - ***Vendor to be determined during FEED.***



Front End Engineering Design (FEED) Study

▶ Deliverables

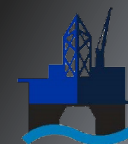
- Cost estimate for detailed design
- Fabrication estimate
- Preliminary layout of modules
- Process Flow Diagram (PFD)
- P&IDs
- Single line diagrams (electrical)
- Equipment list
- Power requirements
- Definition of utility requirements
- Preliminary detailed schedule – design, fabrication and installation



WJM FEED Team

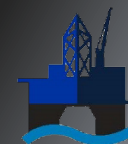
▶ Personnel – 13

- Solvay Engineer
- Process Engineer
 - Piping designer – 2
- Chemical Engineer
- Structural Engineer
 - Structural designer – 1
- Instrument Engineer
- Electrical Engineer
 - Instrument and Electrical designers – 2
- Mechanical / Equipment Engineer
- Procurement Manager



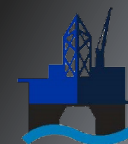
Front End Engineering Design (FEED) Study

- ▶ Timeline and cost estimate
 - 15 weeks
 - Budgetary estimate = \$975,000
 - *Budgetary estimate is determined by the level of detail required in the FEED deliverables. This may need to be adjusted up or down based on client input.*



Front End Engineering Design (FEED) Study

- ▶ Next stages
 - Refine scope of work for FEED
 - Team location - TBD
 - Determine start date for FEED



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MANAGEMENT

Thank you!

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