



## CONDENSATE UPGRADE FEED STUDY

### Overview

This project was a FEED study for a Two Stage Flash Condensate Upgrading Facility in northern Alberta. Three separate scenarios were created for evaluation. The capital cost for detailed design was estimated to be approximately \$150M.

The EPC company tasked with the design of the FEED study made the decision to contract PointVerge™ (PVL) for the Materials Management on the project. The intent was to start the materials management at the FEED stage and be able to continue through the detailed design should the company be awarded the contract. This would allow the materials from the FEED study to be used as an accurate starting point for budgeting and purchasing once the detailed design commenced.

### Material Management Processes

**Materials Execution Plan (MEP) Roles:** Following informal discussions with the EPC, it was decided that PVL would provide the roles of Materials Management Coordinator (MMC), Cad specifications and parts number database maintenance, and QuBR™ report administration. In these roles, PVL worked remotely with the EPC Engineering Design Team and Lead Purchaser.

**CAD Specifications and Part Numbers:** PVL Cad support received the mechanical piping specifications to be used on the project and built them into the Cad program database to for use by the designers. This task was coordinated with the EPC Cad Manager. A database consisting of a complete set of individual part numbers designed by PVL were added to the specifications catalog library and assigned to the Cad piping specs. The part numbers were designed to allow for pricing information to be referenced in the BOMs being generated for the FEED studies.

**QuBR™ Project Set Up:** A project specific account in QuBR™ was configured by PVL for the management of all BOM data exported from the 3D models during the FEED. A set of custom reports were added to the account in preparation for materials control and tracking. These included reports for Quotation Requisitions, Purchasing, Factored Weld Diameter Inches, Insulation & Tracing, Valves, Piping Supports, Line Fill Volumes, etc. The reports were designed to support the various individual team members requirements.

**Model Management Set Up:** PVL Cad Support provided instructions to the EPC Cad Manager on how to set up 3D Piping Model Collector files for the three separate scenarios. These files contained all piping models attached as reference files and were used for the exporting of BOM files during the project. This allowed for materials to be quickly identified and monitored based on their specific case scenario.

**3D Model Auditing:** A procedure of exporting BOMs from the 3D collector models was performed daily by the EPC Design Lead. This file was sent to the PVL Materials Coordinator working remotely and uploaded to the QuBR™ project account. The MMC then used QuBR™ to download various detailed reports of pipe, valves, and fittings for use in verifying their compliance to the mechanical piping specifications. At the same time, the part numbers were also checked for accuracy to the part numbers database.

Any items found to be problematic and required fixing in the models were gathered into Model Material Update (MMU) reports. These reports were sent back to the EPC Design Lead for distribution to the responsible designers. Problems identified at the spec level were also sent to the design and engineering leads for resolution. The intent was to have materials checked at the design level, instead of being reviewed at the procurement level. This procedure ensured that materials in the 3D models were accurate well in advance of a Request For Quotation being sent to vendors.

**FEED Study BOM RFQ Reports:** The FEED studies required Request For Quotation's for budgetary purposes on each of the three scenarios. The EPC Procurement Lead sent the request for a BOM to the MMC in the form of an email. The RFQ report was generated by the MMC and passed on to the document control lead for the assignment of a file name and revision numbers. The RFQ MTO report contained an additional column with the individual part numbers and a blank column next to it titled "Unit Price".



The procurement lead instructed the bidding vendors to populate the prices using the Unit Price field. This was a very important step to be followed so the pricing could be compiled into the QuBR™ pricing database for future reports. Once the quotes were returned to the procurement lead, they were forwarded to the MMC for input into the QuBR™ pricing database. These prices were now attached to the component part number database and could be used for all reports throughout the FEED.

## Results

- Since this project was a FEED study, only the procedures in the MEP required for the deliverables at this level of detail were used. It was very successful and put the 3D models and materials in a good place for moving the project to the detailed design phase.
- The biggest success indicator was that the RFQ BOMs sent to various vendors for quoting were returned with all part prices provided, and procurement was not contacted for any clarifications. The materials were accurate and described in a manner that allowed vendors to quote quickly and with no additional information required.
- The project was put on hold due to economic conditions; however, the 3D models and materials are all clean and ready for when the detailed design is moved forward.

