

ADNOC – Abu Dhabi, UAE

- Technical consulting and participation in a multi-company bid evaluation team to evaluate the submitted bids from major oil, gas and energy companies opposite tenders from the Abu Dhabi National Oil Company (ADNOC) for development of two, world-scale, highly sour gas fields. Included scope to cover gas field development, reservoir management, sour gas and condensate processing facilities (500 – 1500 MMSCFD), acid gas injection and/or sulphur production, and pipelines for delivery of gas and liquid products to custody transfer points.

Agave Energy Company - New Mexico, USA

- Preliminary design calculations for a 0.5MMSCFD acid gas injection scheme including water content, hydrate formation and phase envelopes.

Allen Energy - Como, Texas, USA

- Preliminary design calculations for a 2 MMSCFD (60% H₂S, 40% CO₂) injection scheme including water content and phase envelopes.

APF Energy - Sakwatamau

- Rated the performance of an amine plant to determine process capabilities under a wide range of flow conditions.

Barnes and Click – Houston, Texas

- Process simulations of NGL recovery plant as expansion to existing. Debottlenecking study.

B.P. Resources Canada Ltd. - Chetwynd, BC

- Optimization and costing of modification scenarios for a 70 MMSCFD gas plant.

Blue Range Resource Corporation

Hillsdown

- 16 MMSCFD gas plant rating.

Wood River

- 8 MMSCFD gas plant performance review.

Canada Northwest Energy Limited (now Sherritt International Corporation)

Gorzyca, Poland

- Conceptual design and project budgeting for a 24 MMSCFD gas plant (57.9 % N₂) involving 1200 B/D oil, 450 B/D LPG and a 15 USGPM amine plant.

Indonesia

- Conceptual design of a 15,000 B/D oil battery plus 6600 B/D water handling comprised of two FWKO, a test separator and test tank, two emulsion separators, oil accumulation and 5 storage tanks, oil transfer pumps, flare stack, water accumulation and skim tanks, water injection pumps.

Róžańsko, Poland

- Conceptual design and project budgeting for a 120 MMSCFD gas plant (42% N₂) involving 3800 B/D oil, 2065 B/D LPG, nitrogen removal and 250 MW power generation.

Canadian Hunter (now ConocoPhillips Canada) - Elmworth

- Process study regarding reduction of CO₂ in ethane product by optimizing 575 MMSCFD expander pressure ratios and demethanizer temperatures. Resulted in recommendation to add a CO₂ rectification column to the demethanizer center feed liquid.

Canadian Natural Resources Ltd. - Greencourt

- 35 MMSCFD optimization study of liquid recovery improvement options.

Canoro Ltd. – India

- Performed simulation runs in order to obtain a specific sales gas composition from a feed gas inlet. The requirement was to design a debutanizer and deethanizer to separate feed stream into separate gas streams with specified compositions.

Capilano Holdings Inc. (AZGERNEFT) - Azerbaijan

- Preliminary process design and cost estimate for a \$2 million system of flowlining, field satellites, FWKO, desanding, treating, produced water reinjection, and fuel gas scrubbing.

Chesapeake Energy Corporation – Oklahoma

- 2 MMSCAD sour gas plant evaluation including:
 - New amine contractor specification
 - New VRU system design and specification
 - Flare system review, FKOD specification
 - Liquid stabilization unit design and specification
- Process engineering for the design of an 80 MMSCFD sour gas plant, including inlet gas compression, amine sweetening, hydrocarbon dew point control and acid gas injection.

Chevron Canada Resources - Bigoray

- Preliminary design and process review for a 0.9 MMSCFD acid gas (20% H₂S, 80% CO₂) low-pressure acid gas injection scheme, including injection pressure estimation and water content calculations.
- Design of a novel dehydration unit for acid gas using low temperature methanol injection.

Chevron Research and Technology - Tengiz, Kazakhstan

- Design of a high-volume (250 MMSCFD) high-pressure (9000 psia) sour gas (16% H₂S, 5% CO₂) injection scheme. Generation of methods for estimating physical properties and phase equilibria encountered in the process.

City of Calgary - Bonnybrook

- Evaluation of the digester gas system for the sewage treatment plant.
- Design and specification of the storage compressor.

Crest Energy Consultants - Confidential

- Design of surface facilities for a 6000 B/D ethane injection scheme for miscible flood with process conditions near the critical point of ethane.

Crestar Energy Inc.(now ConocoPhillips Canada) - Wembley

- Debottlenecking study for the 100 MMSCFD gas plant in order to develop the plant turnaround strategies.

Cymric Resources Ltd. - Steelman

- 0.75 MMSCFD gas plant troubleshooting and feasibility study evaluating various sweetening processes for process improvement.

Devon Canada Corp (formerly Anderson)

Coleman

- Engineering review of 60 MMSCFD sour dehydration facility. (27% H₂S).
- Installation of molesieve regeneration cooler.

Woking

- Simulation of the gas plant to determine maximum capacity.

Draig Resources Ltd - Chigwell

- Flash calculations on PROSIM to determine the associated gas produced from multiple oil/gas/water mix streams being taken through a two stage pressure drop.

Encana - Deep Panuke, Nova Scotia

- Preliminary design of an offshore acid gas injection scheme to inject 4.5 MMSCFD of acid gas with an approximate composition of 25% H₂S and 75% CO₂.
- Study included compressor design (1200 HP), phase equilibrium calculations and water content.
- Scenarios studied included blending the acid gas with condensate prior to injection.

Enerpro - Bigoray

- Review of acid gas injection scheme due to changes to acid gas composition.

Esso Resources Canada Ltd. - Big Bend

- 11 MMSCFD gas plant process debugging.

Gas Authority of India - Pata, India

- Evaluation of problems at a 400 MMSCFD dehydration facility.

Gas Liquids Engineering Ltd. - Various

- Simulation studies with the Bryan Research and Development Company's software including: Improving the C₂₊ and C₂₊ recovery performance of existing natural gas processing plants based on turbo expander refrigeration and/or absorption. Nitrogen removal from natural gas by cryogenics or absorption. Helium separation by cryogenics. Modeling and simulation of natural gas dehydration with molecular sieves. Modeling and simulation of hydrocarbon separation on activated carbon.

Gentra Resources - Ferrier

- Simulations for sweetening of stabilizer overheads gas.

Gulf Canada Resources Limited (now ConocoPhillips Canada)

Brazeau

- 1 - 2 MMSCFD acid gas injection study involving a process and cost analysis for various options.

Red Earth

- 11,000 cum/d water flood simulation and study of surface equipment and pipeline systems.

Swan Hills

- Conducted a mechanical reliability study for the 65 km of produced water pipelines, 50 km gas gathering and oil flowlines (ranging from 4" Ø to 12" Ø). The system flows were 7500 B/D oil, 50 MMSCFD gas and 180,000 B/D water.
- Conducted system improvement studies for the above gas gathering and produced water injection pipelines.
- Carried out the economic evaluations for various production gain scenarios involving reliability improvement for the gathering and produced water injection systems.
- Investigated the reliability effect, environmental risk reduction, and the production improvement associated with the rerouting of the production from seven oil wells. The system flows were 4 MMSCFD gas, 650 B/D oil and 24000 B/D water.
- Designed flare system modifications at the miscible flood plant in order to avoid the utilization of the flare pit. The modifications included a flash drum system to separate the phases—gas to flare, liquids reinjected in the NGL line.
- Prepared equipment specifications for the stated modifications at the miscible flood plant and conducted the bid evaluations and procurement.

HCO Energy Inc. - Ansell

- Rated the performance of the 10 MMSCFD gas plant at existing conditions.
- Through simulations, identified the bottlenecks and recommended the equipment changes that would be needed to optimize the plant performance.

Industrie Meccaniche Scardellato SpA - Italy

- Design of a skid-mounted nitrogen rejection unit.

IPE Bolivia SRL - Santa Cruz, Bolivia

- Multiphase pipeline simulation.
- Pipeline simulations to increase gas production from 2 MMSCFD to 16 MMSCFD including five compressor stations and pipeline looping.

Iranian Offshore Oil Company – Kharg Island, Iran

- Acid gas injection front end engineering and design (FEED) study. The study was part of a gas gathering and NGL recovery project. The NGL plant on Kharg Island will process 600 MMSCFD of sour gas, produce 460 MMSCFD of sweet gas, 48,000 bbl/d of hydrocarbon liquids and inject 85 MMSCFD of acid gas into a reservoir. Developed the acid gas compression P&ID's and equipment data sheets, and prepared the process basis of design for the acid gas pipeline.

Jacobs Canada - Alberta

- Review of acid gas injection design drawings.

James E. Smith & Associates - Tyler, USA

- Design of an acid gas injection scheme for the disposal of up to 3 MMSCFD of acid gas including injection pressure calculation, water content optimization and compression design.

Kharafi National – Kuwait

- Completed pre-bid/basic design engineering for 150,000 barrel per day sour oil and 550 MMSCFD sour gas treatment facilities. Scope included well-site tie-in, gathering system, pressure separation, oil stabilization, storage, and vapour recovery, gas recompression, gas sweetening and dehydration, and 600 tpd sulphur plant. Budgetary cost estimation was also provided.

KCS Resources - Texas, USA

- Preliminary design calculations for a 2.5 MMSCFD acid gas (50% H₂S, 50% CO₂) injection scheme.

Long Petroleum - Louisiana, USA

- Design calculations for a proposed scheme for the injection of 1.5 MMCFD of sour gas (6% H₂S, 6% CO₂) including injection pressure estimation, water content, compressor sizing and hydrate calculations.

MAXX Petroleum Ltd. - Judy Creek

- Study increased flowrate at desiccant gas plant. Proposed flowrate increase from 1 to 3 MMCFD based on available compression and design of desiccant units.

Moiibus - Achesen

- Preliminary design of a sour gas plant (7 MMSCFD) and acid gas injection scheme (80% CO₂, 20% H₂S).

Nova Chemicals - Sarnia, Ontario

- Calculations for the prevention of hydrate formation in a liquids ethane pipeline.

PDVSA/PPC - Caracas, Venezuela

- Evaluation and recommendations to improve the accuracy and reliability of 120 gas metering stations in Maturin District.

PDVSA/Tivenca – Maracaibo, Venezuela

- Conceptual design of multiple processing options for 1200 MMSCFD gas stream including CO₂ removal, ethane recovery, turbo-expander facility, mercury removal and a nitrogen rejection facility.

Pembina Resources Limited

Morpeth, Ontario

- Study and system design to reduce mercaptans by 40 ppm for a 15 MMSCFD gas plant facility.

Slave / Seal

- Process simulations for the amine plant.

Viking/Kinsella

- Study of liquids recovery improvement scenarios.

Petro Operating Company - Florida, USA

- Acid gas injection data analysis.

Polish Oil and Gas Company

Chobienice, Poland

- Design basis memorandum and project specifications for Chobienice Gas Plant.

Confidential, Poland

- Compression system design and evaluation for two new gas fields.

LMG, Poland

- Project sponsorship for the review of the base design of the LMG Plant (Lubiatów, Międzychód, Grotów) prepared by a consortium consisted of PBG, Thermo Design Engineering and Technip KTI. The LMG Plant will produce 1300 t/d of stabilized and desalted oil, 16 000 Nm³/h of sweetened gas, 27 t/d of LPG 13 t/d of C₅+ and 40 t/d of liquid sulphur.

Prime West Energy - Sundre

- Rated the ability of an existing refrigeration plant (two Mycom P250S compressors) to process 28 MMSCFD of natural gas.

Ranger Oil Limited - Josephine

- 50 MMSCFD process optimization study/plant expansion scoping.

Red Mountain Energy

Alibekmola, Kazakhstan

- Project management for the preliminary design of a 40 MMSCFD gas plant located in Kazakhstan. Simulated process design by VMGsim for compression unit, amine sweetening unit, low temperature separation unit and sulfur recovery unit.

Kenlyk, Kazakhstan

- Project sponsorship for the conceptual design of a 14 MMSCFD choke plant

Minnibai, Russia

- Project sponsorship for the conceptual design, basic engineering, HAZOP and detailed engineering of a 45 MMSCFD cryogenic facility to separate nitrogen, sales gas and C₂+ products from a mixed stream of these components. The plant embodies a relatively simple two (2) tower design, without the need of external refrigeration, with effective nitrogen rejection, high purity sales gas, and 95-99% recovery of ethane in the C₂+ stream.

Tatarstan, Russia

- Project sponsorship for the conceptual design of a 2 BCFD gas dehydration facility.

Rigel Energy Corporation

Bucking Horse

- 60 MMSCFD process optimization study/plant expansion scoping.

Progress

- 35 MMSCFD process optimization study/plant performance testing.

Rio Alto Exploration Ltd. - Ante Creek

- 18 MMSCFD optimization study and costing of modification scenarios.

Scimitar Petroleum (Egypt) Ltd - Egypt

- Conceptual design of a commercial heavy oil facility producing 10,000 bbl/d oil and 30,000 bbl/d water.

Shell Research Centre - Calgary

- 15,000 psi design of small pressure vessels for core research projects. High viscosity fluids were involved in this very cost sensitive project.

Solex Energy Inc. (now Altagas) - Edmonton

- Conceptual process design for purification (COS and mercaptans) and fractionation of a 30,000 B/D condensate stream to yield propane, butane and heavier fractions.

Spectra Energy Midstream - Nevis

- Scoped a future 500 HP acid gas injection scheme.

Suncor Inc.

Adsett

- Preliminary scoping and process design for an amine plant.

Fort McMurray

- Preliminary design of modifications to an existing 2 MMSCFD vapour recovery unit to switch Freon AZ 50 refrigeration to propane refrigeration.

Targa Energy Resources – New Mexico

- Analyzed plant process data and produced an acid gas injection FEED report. The report included design considerations such as material selection, recommendation and line sizing.
- Actively involved in the design of compressor train and glycol dehydration unit. Studied process characteristics and properties at varying conditions and commented on necessary design aspects.

Tebodin & Partner LLC

Rabab, Oman

- Sponsorship for the conceptual design phase of a sour gas treatment facility.

Lekhwaier, Oman

- Engineering support for the technology screening and conceptual development study of gas treating facilities in support of Petroleum Development Oman's (PDO) Rabab Field Development Project. Worked closely with senior project manager to identify key options for gas sweetening, and H₂O removal, prior to NGL recovery and sales gas compression. Sweetening and/or dehydration of inlet separator liquids was also discussed, as was compression and dehydration of separated acid gas streams. Optimization of integrated plant configurations and cost estimation provided the basis for a recommended conceptual plant design.
- Further tasks performed included the preparation of equipment data sheets, establishing vendor contacts and calculating potential plant operational expenses.

Tecna S.A. - El Porton, Argentina

- Basic engineering of acid gas injection compressor facility.

Total Petroleum Canada Ltd.

Buckinghorse

- Gas plant capacity test and debottlenecking study for a 60 MMSCFD facility.

Hythe

- 12 MMSCFD gas plant capacity test and debottlenecking study.

Josephine

- 50 MMSCFD process optimization study and plant expansion scoping.

Progress

- 35 MMSCFD gas plant capacity test and debottlenecking study.

Ulster Petroleums Ltd. - Wapiti

- Rated performance of a 259 MMSCFD sweet gas plant and proposed 100 MMSCFD expansion.
- Identified bottlenecks limiting flow and recommended the equipment / process changes that would be needed to optimize the expanded performance while maintaining propane recovery over 90%.