

SUMMARY

Experienced in all phases of the business, project, and construction management of upstream & midstream oil, gas, products, and energy-related projects with an emphasis on meeting and exceeding world class safety and quality expectations. Accomplished at working within complex, integrated work environments with multi-discipline and multi-cultural staffs to ISO, US, and various foreign standards, practices, procedures, and specifications in a variety of geopolitical climates on small, large, and mega-projects. Have managed work for EPC contractors, engineering consultancy services companies, as well as E&P owner companies.

Areas of expertise include both technical (engineering and construction) and commercial aspects gained while working with integrated multi-national oil and gas companies, partnerships and joint ventures as a solution integrator and key source of expertise. Skills consist of developing contracting strategies and contract negotiations; independent project assessments (including risk assessments; constructability reviews, construction readiness reviews, operations readiness reviews); partner and subcontractor selections; security; field development planning, project execution development and troubleshooting; feasibility studies, conceptual and detailed cost estimates; tender preparation and evaluations; risk management; assist in making informed, tactical commercial decisions to deal effectively with key objectives, risks, and other issues encountered in worldwide operations; and providing expert witness services.

Background includes over 30 years' experience, the last 25 years on international assignments, in the management, engineering, design, planning, construction, and commissioning & start up of upstream & midstream oil, gas, and energy related facilities (Greenfield and Brownfield): LNG plants, tank farms, pipelines, compressor/pump stations; production facilities; coal-bed methane (CBM) extraction; marine terminals; fuel storage and distribution systems including onshore, near-shore and offshore in North, Central, and South America, the Caribbean, the Middle East, Central Asia, China, Russia, the Far East, and Africa.

MAJOR CAPITAL PROJECT EXPERIENCE**Alpha Crude Connector**

Contracted to: Frontier Energy, LLC
Location: US (New Mexico and Texas)
Scope: Senior Advisor, Engineering, Construction, and Operations
Project Cost: USD \$300M
Year: 2015 – current

As Senior Advisor for Construction, Engineering, and Operations, have overall responsibility for the execution of the project, including start-up/commissioning and transition to Operations. The Alpha Crude Connector (ACC) is an extensive crude oil gathering system in southeast New Mexico and Texas with initial capacity of 100Mb/d. ACC serves leases in the Delaware Basin with approximately 400 miles of pipelines and gathering lines, 300MBbl of storage, and several downstream pipeline connections. The pipeline is a FERC regulated system. The ACC connector operates on a common stream basis with an economic adjustment mechanism to equalize the value of inputs and outputs. The project received the Hart Energy "Project of the Year" award for 2016.

Chad Oil Field Development

Contracted to: Glencore E&P (Canada) Inc. / Griffiths Energy (Chad) / Caracal Energy Ltd (Client)
Location: Chad
Scope: Senior Construction Manager
Project Cost: USD \$500M - \$1.3B
Year: 2014 – 2015

Initially joined as Project Construction Manager over the pipeline and facilities at the FEED stage of the project. The estimated pipeline system consisted of 500 kms of 16"-24" ANSI Class 900 pipeline and 3-5 pump stations, including gas handling; heating stations; topping plants; power generation; 3 major river crossings and tie-in to the existing Chad-Cameroon pipeline. Pipeline throughput was designed for 100K BOPD and a capital cost of \$1.3B.

After the pipeline project was put on hold, moved to Senior Construction Manager over all in-country construction, including both major capital projects as well as field development projects, i.e. well head fabrications & hook-ups, civil construction, flowlines, gathering lines, gathering facilities, and special projects. Responsible for work estimation, budgets, work order and work pack development; organization, and execution aspects, including safety, quality, schedule, contracts, work permits, SIMOPS, brownfield & greenfield, and technical issues.

Caspian Sea Pipeline Expansion Project

Contracted to: Chevron Neftegaz Ltd (Client)
Location: Russia
Scope: Construction Manager, Tank Farm & Marine Terminal
Project Cost: USD \$1.5B

Year: 2011 – 2014

The capacity of the 900-mile (1,500 km) pipeline, which carries crude oil from Western Kazakhstan to a dedicated terminal in the Black Sea, increased to 1.4 MMBBLS/day from its previous capacity of 730 KBBLS/day. The project was implemented in three phases with capacity increasing progressively from 2012 to 2015. The project consisted of the refurbishment of the existing five pump stations, the addition of 10 new pumping stations, the replacement of a 55-mile (88 km) section of the line, six new storage tanks and the addition of a third offshore mooring point at the Black Sea terminal, six miles (10 km) north of the Port of Novorossiysk.

The Tank Farm & Marine Terminal scope includes:

- All construction works, testing, start-up and commission of the 1st and 2nd phases of construction of the tanks and associated structures and utilities in a seismically active area;
- Detail Design and construction of six (6) floating-roof tanks (VFRT 100,000 m³), double-sealed to prevent oil vapor discharge, cathodically protected, and with the fire extinguishing and bottom sediment preventing oil agitation system and piping;
- Pig trap and associated piping and tie-ins
- Perimeter fence including gas detection and intrusion detection
- Process, fire water, and drain system piping;
- Automated fire water protection system; automated foam system for tanks
- Production service support depot;
- Power substations, power supply and equipment room with control room;
- 70% of work performed in a Brownfield area
- SIMOP's for Commissioning & final tie-ins.

Angola LNG Project**Contracted to: Angola LNG Ltd (Client)****Location: Angola****Scope: - Construction Coordinator for the Plant Early Site Work
- Nearshore/Onshore Pipeline Construction Manager
- Commissioning Coordinator for 1st Gas****Project Cost: Plant: USD \$11B+ / Pipeline System: USD \$1.1B****Year: 2008 – 2011**

The LNG facility consisted of one (1) onshore LNG process train to treat and liquefy natural gas, two (2) LNG storage tanks, marine loading facilities and infrastructure and other support facilities. The Facility will process natural gas from wells offshore of Angola to produce 5.2 Million Tons Per Annum (MTPA) of LNG using the "ConocoPhillips Optimized Cascade Process", for export by ship. The plant portion of the Project includes the facilities from upstream of the slug catcher(s) to the product loading arms on the marine terminal including: gas separation & treating, condensate stabilization, LPG fractionation, liquefaction, product storage, loading and offsite systems including non-process infrastructure. The LNG will be loaded into LNG Tankers supplied by others, and transported to customers. In addition to producing LNG, the facility will also produce two LPG products (Propane & Butane) and condensate products, also for export by ship.

Offshore/nearshore/onshore pipelines include 200 kms each of 18", 22", and 24" pipelines for the gathering and transportation of approximately 1,000 MMSCFD of associated gas from Third Party offshore Angolan oilfields north & south of the Congo River, along with non-associated gas from shallow water fields, to the single-train onshore LNG plant.

Pipeline scope included onshore, nearshore, and shore approach, Explosive Remnants of War clearance (ERW-performed in accordance with United Nations' International Mine Action Standards (IMAS) and Angolan Nation Standards.), environmentally sensitive (e.g., savannah areas, river crossings, road crossings, and mangrove swamp areas), construction of a temporary jetty, external corrosion coated and internal flow coated pipe, valve stations, design code changes (from the offshore DNV design code, to the ISO & ASME onshore pipeline & facilities design codes), ESD valves, leak detection, intrusion detection, cathodic protection, fiber optic cable installation, and pressures ranging from 158 bar (2,300 psi) to 295 bar (4,279 psi), pre-commissioning and commissioning work including gassing up. The pipelines installed are current world records for the highest pressure transmission gas pipelines.

Escravos Gas Pipeline Project, Phase 3A (EGP3A)**Contracted to: Chevron Nigeria Limited (Client)****Location: Nigeria****Scope: Construction Coordinator / Site Manager****Project Cost: USD \$325MM****Year: 2006 - 2008**

EGP3A consists of the fabrication and installation of the below facilities offshore Escravos, Nigeria, West Africa. Jacket & piles fabrication & installation for 2 ea topside modules:

- One (1) new gas gathering and compression platform, (Meji GGCP) located in the Meji Field, that will receive up to 70 MMSCFD of low pressure separator gas from the existing, adjacent Meji PP/RP complex. Meji GGCP will receive, compress and dehydrate the gas to 1200 psig for transport to Okan GGCP via a 10-inch sub-sea pipeline. At Okan GGCP the compressed gas will directly enter the pipeline to the onshore Escravos Gas Plant without further treatment.
- One (1) new well platform (Okan NWP), providing nine (9) well slots and capable of handling up to 450 MMSCFD of high pressure gas, 33,000 BPD of condensate and 4,000 BPD of produced water for transport via a 24-inch pipeline to the onshore Escravos Gas Plant.

Pipeline installation, including FBE & Concrete weight coating for 20 kms of 10"; 6.6 kms of 20", 5km subsea power cable; 15 kms of onshore 245" pipelines; shore approach for dual 24" pipelines; 45 kms of offshore 24" pipelay, including piggable wye, PLEM, and SPM buoy; all related pipeline crossings, burials, riser installations, etc. All related Brownfield installations (on 4 related, existing platforms) and all hook up & commissioning and turn over to operations.

West Salym Project

Contracted to: Parsons/Shell (Client – Parsons provided CM services to Shell)
Locations: Russia, W. Siberia
Scope: Pipelines & Terminal Construction Manager
Project Cost: USD \$750MM
Year: 2004 - 2005

The West Salym Project is located in Khanty-Mansi Autonomous Okrug, 120 kilometres south west of Surgut and 30 kilometres west of Salym village. The Salym oilfields include West Salym, Upper Salym and Vadelyp with a license area totaling 2141.4 sq km. The Salym fields recoverable C1+C2 category oil reserves approved by the Russian Federation State Committee on Reserves (GKZ) amount to 152.6 million tonnes.

Project includes major field infrastructure, an all-weather road built in the Communication Corridor (ComCor), linking the three Salym fields. Storage tanks, warehouses, field camps and a helipad were constructed, and a high-voltage power line was routed to the transformer substations to provide electrical power.

Originally, the oil produced from the initial wells in West Salym was shipped to customers by road tankers. To eliminate this, construction of a Central Processing Facility (CPF) in West Salym and the oil-export pipeline to the Yuzhny Balyk Booster Station was undertaken. There, a tie-in funnels the Salym oil into the Transneft main trunk pipeline system. The pipeline will allow crude oil export in larger volumes. Processing (the separation of gas, oil, and water) will take place at the CPF. The plant is designed to collect and process six million tons of crude per year with an option to expand capacity to nine million tons after Upper Salym and Vadelyp fields have been hooked up. From the CPF, the oil will go into the 90- kilometre (56-mile) pipeline, and then into the Transneft system, and from there to the refineries.

Sakhalin 1 Project, Phase 1, EGP2

Contracted to: ExxonMobil (Client)
Location: Russia, Sakhalin Island
Scope: Early Site Manager; Pipeline Construction Lead
Project Cost: USD \$450MM
Year: 2002 - 2004

The Sakhalin-1 Project includes three offshore fields: Chayvo, Odoptu, and Arkutun Dagi. Exxon Neftegas Limited (ENL) is the operator for the multinational Sakhalin-1 Consortium (ExxonMobil interest 30%). Co-venturers include affiliates of Rosneft, the Russian state-owned oil company, RN-Astra (8.5%) and Sakhalinmorneftegas-Shelf (11.5%); the Japanese consortium SODECO (30%); and the Indian state-owned oil company ONGC Videsh Ltd. (20%). Sakhalin-1 was one of the largest single foreign direct investments in Russia.

Flowlines included onshore and offshore pipelines to transport production between the Chayvo Well Site, Orlan Platform, the Odoptu Well Sites and the OPF's. Flowlines also included the side tap assembly, pig launchers and receivers, valves, and instrumentation.

The pipeline constructed was a 24" line from the Chayvo OPF, westerly across Sakhalin Island and the Tatar Strait to the Russian Mainland. The pipeline then turned southerly after the landfall at Mys Kamenny terminating at the Export Terminal near DeKastri. The pipeline crossing of the Tatar Strait was approximately 20 km in length extending from the eastern tidal flats near the shore across a navigation channel to the tidal flats along the westerly shore approach.

The 97 hectare Export Terminal included the storage facilities, marine systems and related control systems necessary to load 110,000 DWT tankers via Chikhacheva Bay near DeKastri, Russia. The terminal consisted of the onshore and offshore facilities

required for receiving, storing and handling crude oil during the loading of 110,000 DWT (Afamax Class) tankers. The onshore facilities included a tank farm and loading control center, power generation facilities, measurement facilities, permanent housing, fire fighting, and warehouse-workshop facilities. The offshore facilities included a loading system and service vessel dock.

Chad Development Project

Contracted to: 1) Willbros-Spie Capag JV (Contractor); 2) ExxonMobil (Client)
Location: Chad and Cameroon
Scope: Two-fold: 1) Joint Venture Construction Manager for Planning; 2) Performed Construction Readiness Review for Owner Team
Project Cost: USD \$350MM (Pipeline portion)
Year: 2000 - 2002

The project was performed under the auspices of World Bank financing and was an EPC consisting of 1,070 km of a 250,000 BPD 30" products pipeline, with terrain ranging from arid plains, tropical rain forests, and mountains, from southern Chad to the west coast of Cameroon, including a CP system, 48 mainline valve settings, 32 major road crossings and 11 major river crossings.

The CCPS originated at the Pump Station 1 scraper launcher within the Central Treating Facility (CTF) near Komé in southwestern Chad. The CCPS extends to a shoreline tie-in with the offshore pipeline leading to an offshore loading facility off the coast of Cameroon. Approximately 180 Km of the CCPS is within Chad; the remaining approximately 890 Km of the CCPS is within Cameroon.

The Chad-Cameroon Pipeline System consisted of the following principal components:

- A single 30-inch diameter onshore crude oil pipeline, approximately 1,070 Km long;
- An initial pump station located within the CTF;
- Two intermediate pump stations located along the pipeline route;
- A pressure reducing station located near the shoreline south of Kribi;
- A 30-inch diameter subsea loading pipeline (approximately 11 Km long) extending from the pressure reduction station (PRS) to a near shore storage facility;
- A near shore storage facility consisting of a moored floating storage and off-loading (FSO) tanker.

Cuiaba Gas Pipeline Project

Contracted to: Parsons/Enron International (Client)
Location: Brazil and Bolivia
Scope: Construction Manager
Project Cost: USD \$950MM
Year: 1998 - 2000

Consisted of the installation of 626 km of a 265 MMSCFD, 18" gas pipeline through extremely remote, environmentally sensitive areas, including 3 major (directionally drilled) and 4 minor (conventional) river crossings, terrain ranged from plains, the wetlands of the Pantanal, mountains, and rainforests. Included in the work scope were metering stations, future compressor station sites, mainline valve settings, launchers/receivers, CP, SCADA, and pipeline pre-commissioning and commissioning.

Responsibilities included managing four (4) separate pipeline spreads divided among three (3) different contractors including four sets of spread superintendents and quality inspectors. Additional interface and coordination responsibilities included: resolving regulatory issues between Bolivian & Brazilian governments for the pipeline border crossing; managing external NGO's, including Amazon Watch, Friends of the Environment, and Greenpeace; coordination with the project financing sponsor, OPIC.

Cerro Negro Upstream Project

Contracted to: Parsons E&C (Contractor)
Location: Venezuela
Scope: Dual Role: Construction Manager-Pipelines / Field Engineering Manager-Facilities
Project Cost: USD \$625MM
Year: 1997 - 1998

Project was an EPC, grass roots 120,000 BPD Central Production Facility (CPF) in a logistically challenged area; 90 kilometers of heavy crude and diluent pipelines, gas sales and receipt pipeline and water injection pipelines, all with intelligent pigging capabilities; required infrastructure (i.e. internal/external roads, water supply, power supply, electrical distribution, etc.); logistics and heavy lift planning; well pads and associated facilities; manifolds and interconnecting piping and flow lines; coordination for the permitting of pipeline and power transmission routes and CPF land use; testing and pre-commissioning of pipelines and facilities; alliance agreement and contractual negotiations, integration and implementation with the prime construction sub-

contractor for a \$50 MM construction sub-contract; planning, organization, and interface with multi-discipline, multi-cultural engineering and construction staffs; and client interface.

Multiple Projects – South America

Contracted to: Willbros International (Contractor)
Location: Venezuela/South America
Scope: Operations Manager
Project Cost: Various; +/- USD\$30MM in work performed annually
Year: 1992 – 1996

Primary responsibilities included: project team organization, management of multiple projects in technically and logistically challenged areas, economic analysis of a wide variety of projects, including swamp, offshore and onshore pipelines and flow lines and related facilities and stations, production facilities, heavy transportation for drilling rigs, operation and maintenance of oil field installations, marine engineering and heavy civil marine construction, platform installations, port and harbor facilities, pilings, contract negotiations and risk management.

The company provided construction, EPC services, and dry dock services and pile manufacturing services in South America. It offered marine and lake-based construction services for the installation of gathering and injection pipelines, docks, jetties, terminals, and platforms. The company manufactured and installed concrete piling for use in platform installation in the shallow water fields in Lake Maracaibo. The company provided maintenance services to facilities on Lake Maracaibo and also operated a dry dock at its facility. To support these services, a fleet of marine and lake equipment was operated, including derrick barges, cargo barges, tug boats, and personnel transportation equipment. Its engineering services comprise the full array of project management, design, and field services.

The company's construction services included pipeline installation in various kinds of terrain, from onshore to swamp, marsh, and offshore locales. Its construction services also included the installation of pump and flow stations and other related facilities which would typically be included as part of a pipeline transportation system or gathering and processing facilities.

EDUCATION

BSc, Industrial Engineering and Technology, East Central University, Oklahoma, USA, 1983
MBA, Robert Kennedy College, Switzerland, focus on international business, 2005

Courses and seminars:

- Incident/Root Cause Analysis investigations, including TapRoot; 5-Why; and Why-Tree (Certified Facilitator)
- Construction Safety (OSHA)
- FCPA, Business Conduct and Ethics Code - current
- Energy Economics (MIT Online)
- Various Operational Excellence (OE) modules completed (Chevron)
- Construction Excellence 2005 (Exxon-Mobil)
- Project Management Process (Parsons Corporation)
- Project Financing and Capital Program Planning (Raytheon)
- International Operations Management (Raytheon)
- Constructability and Value Engineering Applications (Raytheon)
- Contractual Risk Management (Willbros Group)
- Construction Law and Claims Preparation (Willbros Group)
- ISO standards (Willbros Group)

LANGUAGES

English Spanish Portuguese (basic)

PAPERS, PUBLICATIONS & MANUALS

- "Fundamentals of Pipeline Integrity Management", Oil & Gas Technology, Russian language publication, March 2013 issue (Oil & Gas Technology magazine has been published in Russia since 1973).
- "Developing Effective Contracting Strategies for Major Capital Projects", Oil & Gas Technology, Russian language publication, June 2012 issue (Oil & Gas Technology magazine has been published in Russia since 1973).
- "Staffing Strategies for Major Capital Projects", *Oil & Gas Financial Journal*, co-written with Mr. Saeid Mokhatab, September 2011 edition.
- "Developing Effective Contracting Strategies for Major Capital Projects", Oil & Gas Technology, Russian language publication, April 2011 issue (Oil & Gas Technology magazine has been published in Russia since 1973).

- Contributor to ArcelorMittal Global R&D Gent (a research center in Belgium - <http://www.ocas.be>) in developing a Finite Element Simulation project that predicts pipe bending. Contribution centered on field (cold) bending and associated costs.
- "Managing Transitions on Major Capital Projects", Asian Power, 2Q edition, 2009.
- "Developing Optimum Contracting Strategies for Major International Projects", World Pipelines, March 2009 issue
- "Project Management – Common Pitfalls & How to Avoid Them", Energy Today magazine, a quarterly magazine covering the North American energy market (www.energytodaymagazine.com), Spring 2009 issue.
- "Fundamentals of Gas Pipeline Metering Stations", Pipeline & Gas Journal, co-written with Mr. Saeid Mokhatab, January 2009 issue.
- "Managing Change – Manage Change on Major Projects", World Pipelines, November 2008 issue
- "Managing Execution Risks in Oil and Gas Processing Industry' EPC Projects", co-written with Mr. Saeid Mokhatab. To be published in a future issue of Hydrocarbon Processing, awaiting publications details.
- "Basic Guide to Pipeline Compressor Stations", Pipeline & Gas Journal, co-written with Mr. Saeid Mokhatab and Mr. Sidney Pereira dos Santos, June 2008.
- "Pipeline Systems - Control and Integrity Management", Journal of Pipeline Engineering, co-written with Mr. Saeid Mokhatab and Mr. Sidney Pereira dos Santos, December 2007, Vol. 6, No. 4 edition.
- "Project Execution Risk: A Key Consideration for Upstream Energy Project Management", World Oil, September 2007 issue; co-written with Mr. Saeid Mokhatab and Mr. D. Wood.
- "A Constructive Approach - Constructability's Role in Upstream Project Execution", World Pipelines, June 2007 issue
- Recognized contributor to Dr. Aurangzeb Khan, Assistant Professor, Dept. of Management Sciences, COMSATS Institute of Information Technology, Islamabad, Pakistan in providing material for the development of Project Management courses for post graduate students, 2006.
- "Don't Take the Risk – Manage It - Managing Execution Risk in Upstream Projects", World Pipelines, December issue, 2006
- Corporate Constructability Program. 2005, Developed and implemented a complete Constructability Program for a major international EPC contractor. Program is comprehensive covering all aspects of upstream EPC projects, including project-specific Constructability Plan template, checklists, charters, sample agendas, program maintenance & feedback mechanisms, dispute resolution, etc.
- International Project Management System (IPMS), 2004, proprietary system for internal use as a guide for managing complex energy projects worldwide, from initial project assessments and feasibility studies to hook up, commissioning, and turn over. IPMS utilizes a phased approach that defines minimum deliverables required at specific phases along the project timeline. System also includes a prescriptive review process for passing into the next phase of project planning and execution.
- Construction Managers Handbook (CMH), 2003, proprietary for internal use, provides guidance for the overall Construction Management aspects of the formation, organization, establishment, and management of project site work. The CMH guides the Construction Manager through the major segments of a construction project including mobilization, managing interfaces, transitions, construction implementation and demobilization.
- "Typical Hydrottest Water Intake and Discharge Mitigation Measure's", March 2002, published in ExxonMobil Global Share library system as an authoritative reference.
- "Guidelines for Preparing a Construction Execution Plan", February 2002, published in ExxonMobil Global Share library system as an authoritative reference.
- "Pipeline Construction", Project Management Network Magazine, January 2002 (credited contributor to Ken Silverstein – author)
- "Keys to Successful Execution of International Projects", Project Management Institute, Troubled Projects, Fall 2001, Volume 1, Issue 3

WORKSHOPS AND SEMINARS CONDUCTED

- "Oil & Gas Project Financing", Kuala Lumpur, Malaysia, July 2011. A 3-day workshop designed specifically for the needs of Banks, Financial Lenders, and Intermediaries involved in project financing, investment analysis and syndicated lending for oil and gas projects as well as to industry professionals who wish to gain a comprehensive view of the impact of a project's economic success which can also be applied to enhance their company's and/or project's profitability.