



## **WIM M. VELDMAN** *M.Sc., FEIC, P.Eng.* **Pipelines**

- River Surveys
- Alignment
- EIA
- Design
- Bank Protection
- River Training Structures
- Monitoring
- Repairs

### **ECUADOR, OCP PROJECT (2000 - Present)**

Wim is assisting TECHINT in scoping, designing, field engineering, construction and review of as-built conditions for 70 river crossings and instream alignments for this oil pipeline from the Amazonas to the west coast via the Quito area. Prepared Operations and Maintenance manual.

### **PERU, CAMISEA PROJECT (2001 - Present)**

Similar to the OCP project, Wim is assisting TECHINT in the design and construction of about 40 river crossings in this natural gas and gas liquid pipeline from the Amazonas to the coast near Pisco and north to Lima. Preparing Operations and Maintenance manual following assessment of as-built conditions.

### **ARGENTINA, NORANDINO PROJECT (2001-2002)**

Wim evaluated design options for the replacement of the Rio San Andres crossing in 2001 which had failed due to debris flow. Upon TECHINT's approval of the recommended option, prepared a detailed design. In 2002 Wim was part of a multi-discipline team to review the Andes section of the pipeline. Remedial measures were recommended for a number of major river crossings.

### **ARGENTINA, GASATACAMA PROJECT (1997- ongoing)**

The Atacama pipeline which exports gas from the northern plains of Argentina to supply fuel gas for mines in the Atacama desert, traverses the high mountainous valleys and rivers of the Andes (at its peak at nearly 17,000 feet above sea level, it will be the highest pipeline in the world). In the Province of Jujuy in Argentina the alignment is located parallel to and in major river channels for about 40 km - the mountainous areas and settlements in the only flat areas next to the rivers preclude an out-of-stream alignment. Wim Veldman, following several field visits, prepared design recommendations for Fluor Daniel Williams Brothers for all the in-stream work and crossings. The in-stream work involves an extensive use of gabions to minimize burial depth of the line. Field engineering supervision by Wim Veldman and other Hydroconsult staff in 1998-1999. Monitoring of the pipeline (1999 - Present). Preparation of annual reports/assessments and designs (1999 - 2004).

### **ALYESKA PIPELINE SERVICE COMPANY (1973 - Present)**

Full time senior hydrologic consultant (1973-1976) for the \$8 billion, 800 mile, 48 inch trans-Alaska oil pipeline, responsible for final design review and field design changes of 80 river crossings and 30 miles of floodplain construction. Work involved 15 pipeline bridges, access roads, culverts, dykes, spurs and revetments containing 2,000,000 yards of fill and 300,000 yards of rock. Testified before the Federal Energy Review Commission in Washington, D.C. as an expert witness regarding the construction cost. Project manager for the hydrologic input (1989-1991) to Alyeska and Williams Brothers for the planning, permitting, detailed design and construction of a 9 mile, \$100 million pipe replacement in the Atigun River. This involved a unique 40,000 foot long river training structure utilizing gabions and articulated concrete mats to reduce the required burial depth of the pipeline. Prepared an Action Plan and detailed design of river training structures to protect a 40 mile long section along the Sag River following the 1992 flood of record (1991-1994). Design of a revetment for the Middle Fork Koyukuk River (1994). Reviewed design of Fibre Optic Cable at all major river crossings (1997). Conceptual and detailed design of bank protection for the Tazlina River Bridge (1997-1998). Assessment of measures required in the Dietrich/Koyukuk Rivers following high flows (1998). Detailed design work in 1999-2004. Line - wide recon in 2001 -2004.



### **B.C. GAS, SOUTHERN CROSSING PIPELINE PROJECT (1997-2001)**

Field assessments and design of major crossings and water management measures and silt controls, including the Columbia River near Trail, to support the EIA and cost estimates. Participated in trips and discussions with B.C. Environment and DFO personnel. Detailed designs. Field engineering during construction and support for water management measures.

### **CHILE, GASPACIFICO PROJECT (1998 - 2000)**

A gas pipeline, proposed from Argentina to The Concepcion area in southern Chile, crosses the rugged Andes and rolling foothills prior to reaching the Pacific Ocean. The route traverses numerous rivers. Wim Veldman field reviewed all river crossings, developed design methodologies and recommendations for the major crossings and prepared design profiles for the minor crossings. The end product resulted in significant cost and schedule savings and implements.

### **BP EXPLORATION ALASKA - BADAMI PROJECT (1994-2000)**

Hydrologic consultant to the Project Alliance team. Responsible for the development of design approaches and criteria for the river crossings (width from 3500' to 500') and overland flow for the R.O.W. application. Made presentations to stakeholders and regulatory agencies. Responded to regulatory questions. Undertook pre-breakup and breakup field assessments on the North Slope. Designed erosion control structure at the Sag River.

### **ALBERTA NATURAL GAS COMPANY (1992 - 1998)**

Survey, design and permitting of major and minor crossings for the 1067 mm looping project in southeastern B.C. Design input to fisheries enhancement measures at the Elk River crossing. Design of repairs for creek washouts following the major June 1995 flood. Design and field engineering of bank protection measures for two locations on Leach Creek (1996). Design and field engineering of temporary protection measures for Leach and Hawkins Creek (1997). Detailed design of pipe lowering for Leach and Hawkins Creek (1998).

### **CANADIAN WESTERN NATURAL GAS COMPANY LTD. (1980 - 1998)**

Design of crossings of the Kananaskis, St. Mary, Milk, Bow, Waterton, Willow and Rosebud Rivers. Hydrologic input, including the development of a K-T analysis to evaluate alternative pipeline routes from Seebe to Canmore in the front range of the Rockies in Alberta. Design of Elbow River crossing (1997).

### **EXPRESS PIPELINE, ALBERTA (1996)**

Hydrologic design and permit applications for the Red Deer, South Saskatchewan and 10 minor stream crossings from Hardisty to the U.S. border.

### **NOVA CORPORATION AND NOVACORP INTERNATIONAL (1978 - 1993)**

Project manager for hydrologic design and permit applications for river crossings on the 36 inch Grande Prairie Lateral, 48 inch Edson Loop, Husky's Cold Lake to Lloydminster line and the Liege and Algar Lake laterals across the Athabasca River. Design of remedial measures for exposed pipeline crossings of the Red Deer River and Smoky Rivers and One-Tree Creek. Design of crossings for the Athabasca and Red Deer Rivers. Prepared and presented a 2 day seminar to NOVA on the design of river crossings (1993) and the NOVA River Crossing Design Manual which was co-authored by Wim Veldman. Assisted in the preparation of conceptual designs and construction bids for pipelines in India (1986) and Pakistan (1992). Prepared typical designs for exposed creek crossings in Argentina (1993).

### **YUKON PACIFIC CORPORATION (1990 - 1991)**

Project manager for the preparation of a river crossing design manual and representative designs for a proposed 800 mile, 36 inch gas pipeline in Alaska. Design flows using the HEC-1 model were computed for all crossings.

### **EARLIER PROJECTS**

• Westcoast Energy	Vancouver Island Pipeline	1988-1991
• Tanzania Petroleum	Pipeline from Songo-Songo to Dar Es Salaam	1988-1989
• IPL	Norman Wells	1988
• SOHIO	Endicott, Prudhoe Bay	1983-1987
• CONOCO	Milne Point	1984
• EXXON	Point Thompson	1982

