CALGARY DOWNTOWN 138-kV UNDERGROUND CIRCUIT REPLACEMENT AND UPGRADE

Sargent & Lundy Services:
- ❑ Program Management
- ❑ Underground Transmission Design
- ❑ Substation Engineering
- ❑ Commissioning
- ❑ Construction Management

ENMAX
Calgary, Alberta

To increase transmission capacity in downtown Calgary and reduce future maintenance costs by eliminating aging high-pressure and low-pressure (HPFF/LPF) oil-filled cables, ENMAX, a wholly owned subsidiary of The City of Calgary, Alberta, initiated a 138-kV underground transmission line replacement project.

The replacement program involves four existing 138-kV lines located under Calgary streets and sidewalks that tie into three downtown substations. Two are gas-insulated substations (GIS). The new lines will be XLPE (solid dielectric) cable. This is the first XLPE cable installation on the Calgary transmission system. The route of the new transmission lines will follow the same route as the existing circuits, however, the new lines occupy more space, making the design challenging in this congested area. Adding to the challenges, the route crosses under a Canadian Pacific Railway line and the Calgary Transit light rail system.

Factory Inspection of XLPE Cable

ENMAX selected S&L for the conceptual design in Fall 2008, which included preliminary routing, cable specification preparation, and development of project cost estimates and schedules. The S&L team was then authorized to proceed with detailed engineering and preparation of the construction bid package in February 2009. This phase of the work was completed in January 2010 with the award of the construction contract.

Existing Substation Cable Vault

Sargent & Lundy's scope encompasses Program Management, including project scheduling and procurement assistance, engineering, and construction management along with start-up and commissioning.

The project is being completed in two phases:

- Phase I
  - Replacement of two existing HPFF circuits 138 kV circuits and upgrade to 2000 mm2 XLPE.
- Phase II
  - Replacement of two existing LPFF direct buried 138 kV circuits and replace with 2000 mm2 XLPE.

Phases I and II are scheduled to be completed by December 2010 and November 2011, respectively.

Sargent & Lundy LLC

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