

# Shortline Railways Offer Opportunities and Solutions

## Athabasca Northern Railway is a Prime Example of Highways, Railways and Industry Teaming Up for a Better Alberta

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Athabasca Northern Railway

Railways in Canada have largely disappeared from the public's consciousness in the last two generations. Rail lines have been torn up. Passenger train travel has become largely a tourist activity.

Declining employment means less community contact with people who know anything about railways. Children learn from their storybooks that trains go "choo-choo" - when in fact they haven't done so for more than 40 years.

But railways have evolved and are thriving in Alberta, and they provide some interesting employment opportunities for engineers. This article looks at one recent railway project, the engineering involvement in it, and how railways contribute to meeting some of the challenges Albertans face.

### Train Sense

North America's largest single-line kraft pulp mill is the Alberta-Pacific Forest Industries, or Al-pac, mill at Boyle. It consumes a vast quantity of pulpwood from its forest management area in northeastern Alberta.

Getting that wood to the mill puts many trucks on the road, especially during the winter haul season of January to March.

In mid-October 2002, Al-pac signed a 10-year contract with the Athabasca Northern Railway to haul logs by rail. This covered setting up permanent log terminals near Conklin and Fort McMurray, 220 and 360 kilometres respectively from the mill.

These off-site rail terminal alternatives offer Al-pac several operational advantages. First, the truck cycle times for deliveries of logs to the terminals from the nearby cut blocks are much shorter.

This means wood can be picked up from where it's cut more quickly in the limited time between freeze-up and thaw when trucks can actually get into the cut block areas. The shorter distance also reduces driver fatigue, as well as the number of long-distance logging trucks on provincial roads.

Second, while trucks cannot run all year round, trains can. With a substantial portion of the inventory in the remote terminals, the woodpile at the Al-pac mill is smaller. There are some months where there are no



A loaded ANY log train is ready to roll from the Conklin Terminal to the Al-pac mill at Boyle.

logging trucks at the mill at all; during these times, the trains hauling wood from the terminals can keep topping up the mill's on-hand inventory.

Third, the system just makes good economic and societal sense. Al-pac will save about \$800,000 every year by shifting some of its logs from road to rail. At the same time, overall greenhouse gas emissions drop, and fewer trucks on the road mean savings in highway maintenance.

### Making Tracks

Known by the reporting mark ANY, Athabasca Northern Railway is a modern shortline railway, running 320 km from Boyle to Fort McMurray. The company's headquarters is in St. Albert, while its operational centre is in Lac La Biche.

ANY hauls a lot of heavy machinery and pipe north to the oilsands region near Fort McMurray, and sulphur and petroleum coke south. Since the track from Boyle to the Al-pac mill belongs to another shortline, RailAmerica's Lakeland and Waterways Railway, ANY negotiated a running rights agreement on the 40-kilometre section so it can haul logs directly to Al-pac.

The trackage at the mill required some additions to adapt to the log haul. ANY's parent company, Cando Contracting of Brandon, Man., installed a wye for turning trains, and enough track under Al-pac's two gantry cranes to hold 40 log cars for

unloading. Canadian Weigh Systems of Oakville, Ont., installed a coupled in-motion rail scale to weigh log cars as

## ANY GUESSES?

Railways in North America all have one or more reporting marks. These are two-, three- or four-letter codes that indicate ownership. Railway cars and intermodal containers carry the reporting mark and an equipment identification number. Together these serve as a unique tracking ID for each piece of equipment as it may end up traveling far from its home tracks. When Athabasca Northern Railway was formed in the fall of 2000, the mark ANR was already used by another railway. The American Association of Railroads assigned "ANY" instead.

they roll over it slowly.

In the first season, ANY's remote log terminals are very simple. ANY cleared and leveled areas near the railway's main line, and set up unmanned truck scales.

In the longer term, once all the winter's wood decked in these areas has been shipped out, ANY will construct parallel tracks through the cleared areas. This will mean that logs can be offloaded from trucks on each side of the tracks and then loaded directly onto log cars, instead of being forwarded to the main line.

### Railway Engineers

Due to many uncertainties, neither Al-pac nor ANY could start work, purchase equipment or commit resources to the log haul until the contact was signed in mid-October 2002. This meant extremely tight timelines to get things running for the winter season. Even so, ANY's first computerized truck scale was operational in mid-December and the first trainload of wood arrived at Al-pac at the end of February 2003.

Three engineers, all members of APEGGA, were involved in setting up the Al-pac/ANY log-haul.

Hassan Farzadeh, P.Eng., of 3Log Systems in Richmond, B.C., wrote the software for the unmanned truck scales. The software takes the full and empty truck weights directly from the scale and stores them with the truck identification in a database, from where they are collected by Al-pac over a cell phone data link. Mr. Farzadeh also developed the interface to feed the rail scale output into Al-pac's accounting system.

Bob Feeney, P.Eng., the ANY manager of project development, was trained as an industrial engineer. A former western director of planning and administration at Canadian National Railway, Mr. Feeney was instrumental in economic analysis and log terminal development.

And there's me, Tim Green, P.Eng., the author of this article. I'm an electrical engineer and former Army signals officer, and now the

ANY projects engineer. I worked on setting up the computerized scales and developed operational procedures for the log haul.

The scale of operation of a modern shortline is generally not enough to justify a dedicated person to each specialized function. This means that some tasks such as track design, railcar modification, surveying and road construction are handled by ANY's parent company or contracted out to engineering firms in Alberta who specialize in these areas. It also means that the engineers inside ANY are generalists rather than specialists, and end up doing a much wider variety of work and developing a greater variety of new skills than they would in a larger company.

The two ANY professional engineers together cover a broad spectrum of functions, from the definition, negotiation and management of contracts through to business development, and even into interaction with regulatory agencies. For the log haul project, we took on diverse tasks such as conceptual design of rail yards, roads and computer systems, and on-site coordination for scale testing and log-loading procedures.

### The Rail Impact

Al-pac has estimated that about 20 per cent of its wood will move by rail. This will take about 10,000 loaded logging trucks off Alberta highways every year. The result is a net reduction of greenhouse gases by 50,000 tonnes over the life of the contract. It also means reduced highway maintenance costs.

The advantages of shifting from road to rail have come into sharp focus in the Toronto-Montreal corridor where highway planners struggle with increasing the capacity of overloaded public highways. Running parallel are under-used, privately funded rail lines. In Alberta, the Al-pac/ANY log haul is just one example of what is possible with a bit of forward thinking. To some degree, three other freight shortlines in the province also transport logs, logs that used to travel by road.

Moving everything from road to rail is not the answer. However, finding a better balance between the two transportation modes may pay big dividends - as it has for Al-pac and ANY, and for Albertans at large. Engineers will continue playing a key role in making that possible. ■