February 2017

FPInnovations Overview – Forest Operations Focus

Forest Operations/Fibre Supply – Ontario Team
Dean Caron - Background

- Born, raised and based in Kenora Ontario.
- Honours Bachelor of Science Forestry Degree and Forest Technician Diploma from Lakehead University.
- Previous RPF in Alberta and Ontario. Working to re-obtain RPF status in Ontario (now that I’m back in the industry).
- Worked in BC (Interfor Tofino - Engineering), Alberta (Canfor Hines Creek - Planning) and Northwestern Ontario (Weyerhaeuser Ear Falls – Area Leader, Weyerhaeuser Kenora – Aboriginal Business Development Leader, Boise Cascade Canada (Resolute) Fort Frances/Kenora - Student).
- Eight years with government (Ministry of Northern Development and Mines) doing economic development work (natural resources, First Nations and NOHFC evaluator).
- 29 years in the forest industry (direct and indirect).
- Been with FPInnovations since April of 2015 (Industry Advisor – Forest Operations/Fibre Supply).
Agenda

- What FPInnovations is.
- FPInnovations Ontario Team.
- FPInnovations Ontario Road Map.
- My Role as Industry Advisor - Forest Operations.
- Forest Operations Workshops/Fibre Supply.
- Other products and services of FPInnovations.
- What to do if you have an idea for study.

Please save questions for after the talk.
FPInnovations Created April 2007

Paprican (Pulp and Paper Research Institute of Canada)

Forintek (Wood Products)

FERIC (Forest Operations)

CWFC (Canadian Wood Fibre Centre)
FPInnovations, a global innovation organization

- Not-for-profit world leader specialized in the creation of scientific solutions in support of the Canadian forest sector’s global competitiveness.
- Unique forest R&D centre offering full value chain solutions, from forest management to consumer products.
- More than 500 dedicated employees of which 220 are scientists/researchers.
- World-class R&D facilities, pilot plants and satellite offices from coast-to-coast.
- Annual operating budget of approximately $90 million.
- Membership of approximately 210 throughout Canada, including industrial and government members.
- Many partnerships with colleges, universities and other institutions in Canada and abroad.
Meet the Ontario FPInnovations Industry Advisor Team!

Dean Caron
Forestry & Forest Operations Specialist
Kenora, ON

Peter Åsman
Sawmilling specialist
Timmins, ON

John Pineau
Provincial Leader
Mattawa, ON

Percy Champagne
General operations, Project management & First Nations Liaison
Barwick, ON

Kenora
Barwick
Timmins
Mattawa
Support To Ontario Team - Regular

Countless other FPI folks provide occasional support and advice.

Francis Charette
Associate
Research Leader
Pointe Claire

Nathalie Plante
Administrative Assistant
Quebec City

Mark Partington
Senior Researcher
Forest Roads
Pointe Claire
Ontario’s Forest Sector Roadmap

**Getting Costs Down**
- Lower Delivered Wood Costs
- Reduce Energy & Transportation Costs
- Increase Lumber Recovery

**Increasing Value of Products**
- Diversify Portfolio Through New Building materials & Sawmill of the Future
- Link North & South Through Bio-chemicals.

**Engaging Aboriginal Peoples in the Forest Economy**
- Capacity and Expertise Building
- Business Development & Technical Support

**Fostering Markets**
- Develop Markets for Wood
- Address Challenges to Market Access and Acceptance

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My Role – Industry Advisor Forest Operations (Ontario)

- I cover the entire province.
- **Finding innovative, practical, and cost-effective solutions.**
- When I get presented with a challenge, issue or opportunity from a client:
  - Despite nearly 30 years experience in the industry, I often have to go to one of the 220 scientists and researchers (specialists) we have for advice/solutions.
    - If our researchers do not have a solution, we can then study the challenge, issue or opportunity and come up with a solution.
  - Generally speaking I provide a network to other folks.
My Role – Member Relations, Industry Advisor Forest Operations

- I support capacity building (with support from the National Fibre Supply Team).
  - Contractor Business Skills Workshop.
  - Forest Roads Grader Workshop.
  - Forest Operations Contractor Diagnostic.
  - Erosion and Sediment Control Workshop.
- Many specific special projects associated with challenges/opportunities that clients experience.
- I’m part of the Ontario Team and the National Forest Operations/Fibre Supply Team.
Contractor Business Skills Workshop

- One day classroom session (five to seven hours).
- Facilitated, interactive, investigation of key skill sets required to run a successful modern day logging operation.
- Led by Peter Hamilton (former contractor and FPIinnovation’s Senior Scientist) with assistance from myself.
- Sessions are typically limited to 15 people.
Contractor Business Skills Workshop

- **DiagFor:**
  - Diagnostic for Forest Contractors.
  - Assessment and benchmarking tool.
  - Performance tracking tool.
  - Continuous improvement tool.

- Based on your input, DiagFor provides an evaluation of your operations, provides specific suggestions for improvement, and allows you to track your progress. It is free and it is private (web based).

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<tr>
<th>Entry Level</th>
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<td>Level 1</td>
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<td>Level 3</td>
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<td>Level 4</td>
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<tr>
<td>Level 5</td>
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</table>
Contractor Business Skills Workshop

- Machine Productivity:
  - Scheduled machine hours vs productive machine hours.
  - Machine costing.
  - Controlling the utilization factor and impact on production and costs.
  - Tools/methods for measuring productivity.
  - Productivity enhancement strategies.
  - How to use software/tools from FPInnovations.
Contractor Business Skills Workshop

- Fuel Management:
  - Review of fuel economy guide.
  - The importance of measuring fuel consumption.
  - FP Fuel and other measuring devices/strategies.
  - 10 tips for energy efficiency.
  - Tracking fuel usage and how to use this data.
  - Impact of fuel cost on operations.

“*You cannot manage what you do not measure*”
Contractor Business Skills Workshop

- Maintenance and Repairs:
  - Benefits of improved maintenance strategies.
  - Essential elements of a maintenance strategy.
  - Consequences of poor maintenance.
  - Approaches to maintenance:
    - Corrective/Preventative/Predictive.

- Increasing machine utilization through maintenance.

- Parts inventory management software.

- Value of maintenance and repair record keeping.
Contractor Business Skills Workshop

- Performance and Financial Management:
  - Measuring performance of forest harvesting operations:
    - Benchmarking performance indicators.
    - Key indicators of performance.
  - Financial Performance and DiagFor:
    - Cash flow.
    - Monitoring of expenditures.
    - Unit cost of production.
    - Break even point.
    - Monitoring systems.
Contractor Business Skills Workshop

- FPDat and onboard computers.
Forest Roads Grader Workshop

- We offer a one and a half day workshop.
  - Two half days in the classroom (or one full day).
  - One half day in the field.
- Limited to 15 people per session.
- Delivered by myself.
Forest Roads Grader Workshop

- Designed for new operators, experienced operators and their company/government supervisors.
- Goal of the workshop: upgrade the knowledge and skills of grader operators and supervisors.
- Strategies and techniques for maintaining/repairing roads safely and effectively, while maintaining the integrity of the surrounding environment, are showcased in the classroom and in the field.

**Knowledge**
- Road components
- Road design standards
- Best management practices
- Operator’s role

**Skills**
- Maintenance practices
- Operating techniques

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1. Entire road is softening
2. Water pools on road surface
3. Road is losing its original design

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1. Shoulders are eroding
2. Water cannot drain into ditch
Forest Roads Grader Workshop

- Introduces terminology design standards.
- This workshop also reinforces the concepts of professional conduct and due diligence and describes how effective communication between the grader operator, log haulers and supervisory staff is critical in maintaining an efficient flow of wood to the mill.

<table>
<thead>
<tr>
<th>Potholes</th>
<th>Causes</th>
<th>Maintenance Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Occurs where water pools</td>
<td>Locate and fix drainage problems</td>
</tr>
<tr>
<td></td>
<td>Poor drainage</td>
<td>Restore the area by cutting out the potholes</td>
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<tr>
<td></td>
<td>Inadequate crown</td>
<td>Place additional granular material</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blade and compact the area</td>
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</tbody>
</table>

Team Work

Grader Operators

Truck Drivers

Supervisors
Forest Roads Grader Workshop

- **Workshop Modules:**
  - **Module 1: Unpaved Roads**
    - Terminology, road components, road design standards, ditches and aggregates.
  - **Module 2: Road Surface Maintenance**
    - Safe work practices, road shape and its effect on drainage, grading techniques, surface distress, re-shaping the road and snowplowing.
Forest Roads Grader Workshop

- **Workshop Modules:**
  - **Module 3: Winter Maintenance**
    - Operator responsibilities, blades and cutting edges, safe work practices, plowing techniques, winter drainage, maintaining traction.
  - **Module 4: Environmental Protection**
    - Erosion prevention/sediment control, operations near watercourse crossings, best management practices for protecting and conserving natural resources when grading.
Forest Roads Grader Workshop

• Module 5: Operator Responsibilities
  - Maintenance planning, technology tools, communication and teamwork, case study review and professional conduct.
Forest Roads Grader Workshop

- **Field Visits:**
  - Discuss maintenance requirements under various conditions.
  - Identification of drainage problems and environmental issues.
  - Re-shaping a small section of road using a grader operated by a student from the workshop.
Forest Operations Contractor Diagnostic

- Completed by senior FPInnovations staff (Peter Hamilton – FPInnovations Senior Scientist / former contractor) and myself.
- Somewhat similar to an environmental or safety audit except instead of focusing on environment and safety, eight criteria are evaluated (including safety and environment).
Forest Operations Contractor Diagnostic

How is it done?

- Individual machine productivity studies.
- Staff interviews (all levels).
- Observation/evaluation of logging phase interactions.
- Assessment of the service and repair infrastructure.
- Variety of field measurements as required (i.e. scaling, mapping, stand inventory).
- Proxy evaluation of machine utilization.

Diagnostic on Red Lake Forest 2015
Forest Operations Contractor Diagnostic

- **Day #1**: Meet with contractor and key field staff, explain process, answer questions and field observations.
- **Day #2, #3, #4**: Field observations, data analysis, staff interviews.
- **Day #5**: Presentation of results, questions/answers (typically 3 to 5 hours).
Forest Operations Contractor Diagnostic

- Report to contractor:
  - At end of observations period (fifth day).
  - PowerPoint presentation to contractor and his/her invited attendees.
  - Based on DiagFor format and skill sets, the contractor is ranked against the industry average.
    - Key factors for ranking discussed.
    - Identify and explore action items to improve each skill set in order to move to a world class (top quartile) state.
Erosion and Sediment Control Workshop

- This approximate half day workshop can be delivered:
  - In the classroom only (can be a large class).
  - Combination in the classroom and in field (prefer small class).
  - In the field only (prefer small class).

- Delivered by FPInnovations staff (Mark Partington - Roads Scientist and/or myself) along with Neville Ward (former DFO and OMNF) by special arrangement.
Erosion and Sediment Control Workshop

- Target audience includes company planners, operation supervisors, road construction contractors, environmental / compliance monitors and government foresters / technicians.
Erosion and Sediment Control Workshop

Components:

- Fisheries legislation related to erosion and sediment control and habitat requirements for fish.
- Impacts of soil erosion and sedimentation on fish habitat.
- Erosion and sediment control best practice methods.
Erosion and Sediment Control Workshop

- Erosion and Sediment Control
  - Best Practices Content:
    - Erosion – what it is.
    - Sediment – what it is.
    - Soil identification.
    - Planning.
    - Control vs repair.
    - Soil preparation and cover.
    - Maintaining existing vegetation.
    - Machine operator techniques.
    - Containing and collecting sediment.
    - Ditch and water management.
    - Road surface management.
## Our Products and Services - Summary

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
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<tbody>
<tr>
<td>Fee-based Research Services</td>
<td>- Proprietary contract research for industry members and clients</td>
</tr>
<tr>
<td></td>
<td>- Non-proprietary (common-good) contract research for government members and clients</td>
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<tr>
<td>Specialized Testing &amp; Analytical Services</td>
<td>- Pilot plant facilities; special chemical analyses; environmental analyses; etc.</td>
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<tr>
<td>Specialized Tools</td>
<td>- For forest operations (FPSuite)</td>
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<td></td>
<td>- For sawmills/panel mills (Optitek, Pressman)</td>
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<td></td>
<td>- For pulp and paper mills (Control Loop Monitor)</td>
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<tr>
<td>Specialized Training, Extension and Workshops</td>
<td>- Contractor Business Skills, Operations Diagnostic, Road Construction/Maintenance, Silviculture Planning, Fire &amp; more</td>
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**Market Intelligence and Global Trends**
In Ontario, FPInnovations industry advisors have worked to provide technical support at the following levels:

Level I: Technical Enquiries

Up to $\frac{1}{2}$ day of complimentary service in response to telephone and e-mail enquiries about forestry or wood products operations, products, and markets.

Level II: Direct Technical Support (DTS) Project

Up to five days of free technical service to assist SMEs in developing new products and processes, and, in implementing new technologies.

Level III: Process & Product Development (P & PD) Study

More in-depth project to pursue new business ideas through technical investigation and market research. Upon approval by the Ontario Roadmap Committee, studies can be funded up to 75% and a maximum of $20,000.
What Do You Do If You Have An Idea Worthy of Study (Harvest, Haul, Roads, Silviculture)?

- Contact your company (SFL) representative.
- Work your idea through the company representative.
- The company representative will then contact myself.
- I will contact the appropriate researchers and we move on together from there.
Other Possibilities

- Audit shortcomings action planning.
- Standard operating procedure development, review and updates.
- Bridge inspection workshops.
- Water crossing installation workshops.
- Road construction workshops.
Thank You!
Dean Caron, 
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[Phone: 807-548-3098 (O), 807-464-4462 (C)]

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[Website: www.fpinnovations.ca]