



Chuck Hastings

Modeling a Paper Mill

Myself

- President of Southern Maine Model Railroad Club (SMMRC)
- HO Scale modeler, mid-construction of layout (Moosehead & Millinocket subs)
- Life-long in the hobby, modeling CN, CP, CMQ (BAR), & NBSR
- Career in paper logistics & transportation



About this Presentation

- Overview of How Paper Mills Work
- Railcar Types Seen at Mills
- Rail Operations at Mills
- Will **NOT** Cover Politics Regarding Mill Closures (or questions regarding that topic)

Why Model a Paper Mill?

- They fit any era (paper mills around longer than railroads)
- Create 'trainloads' not just carloads (wide variety rolling stock)
- Adds complexity with layout operations, plenty of switching to be done but also branch/main line running of entire trains
- Can scale as large or as small as needed to fit space, or a centerpiece of a layout

Paper Mill Complex

~~A Paper Mill is a Paper Mill is a Paper Mill~~

- 'Paper mill' is a deceptive term, a mill complex may consist of focused or very broad assets & operations related to any paper of the paper making process
- Reality is, a mill **complex** consists of several separate smaller plants
- Examples of types of plants associated with paper making
 - Paper mill (non-integrated)
 - Pulp Mill/Refinery
 - Biomass/Wood Yard/Chipping Operation
 - De-Inking/Re-pulping Facility (recycled or CPW products)
 - Energy production/Utilities complex
 - Finishing or Off Site Facility

Fully Integrated Mill



- Wood Yard, Pulp Mill, Utilities Complex, Paper Mill in series – a high efficiency design
- Fully Integrated mills represent the highest railcar generators, but takes up the largest layout space

Non Integrated Mill



- Represents smaller railcar potential with smaller footprint but easier to model
- Ex. Gorham Paper & Tissue, produces paper
- Paper mill, utilities complex (derelict?), no pulp mill
- Rail or truck in loads of pulp (feedstock), some raw materials

Paper Making 101

- **Paper** (an industrially dried wood fiber matte surface) = **pulp** (chemically processed wood fiber) + **finishing surface** (chemicals/raw materials)
- So to run a paper machine I need...
 - Pulp (made on site or transported in as feedstock)
 - Pulp making on site requires raw material wood inputs + nasty chemicals
 - Slurry (wet clay used to fill and smooth surface)
 - Materials for strength, appearance, ect (chemicals, starches, latex, ect)

Let's bring these in by rail!

Remember: volume of inputs = volume of outputs

Raw materials mostly come in by rail (cost, efficiency and safety reasons), finished product will see more truck but still healthy volumes of rail

Rail Car Types (Inbound)

Woodyard, Pulp Mill & Utilities Complex

- Log Cars and/or Chip Cars (woodyard)
- Tank Cars of Chemicals & Raw Materials — Note they usually are marked or placarded!(Pulp mill, some to paper mill)
- Coal Cars & High Side Gons (Utilities)
- High Capacity PD Hopper Cars with dry chemicals (Pulp or Paper)



Rail Car Types (Outbound)

Paper Mill & Pulp Mill

- **Plate C** Boxcar (mostly pulp, some paper)
- **Plate F** (hi-cube) Boxcar (mostly paper, some pulp)
- Some boxcars may be vented



Where do I Start?

- Recommendation: Do not buy 'out of the box' paper mill kit
- Remember, mill complex consists of several smaller plants so you can mix and match smaller kits
- Kit-bashing and custom buildings work best
- Use a reference mill, there are several to pick from regionally with thousands of pictures readily available online

Other Considerations

- Trucks and intermodal
 - One boxcar = 4-5 truckloads/containers, truck yards typically have mix of many well known trucking companies
 - TOFC/COFC terminal to service paper mill nearby
- Specialty Moves
 - Oversize & one off rail moves of large equipment mill components, have been known to happen!
- Mill owned Shortlines
 - A lot of mills have their own yard switching RRs, a great chance to freelance a railroad without having to commit to a huge roster
- Sounds and lights
 - Mills produce a lot of sound and have a lot of lights—make yours vibrant and alive!
- Off Site Warehouses
 - Paper mills tend to own or contract with off site warehouse & finishing facilities



Questions?

Thank you !

