



PHOTOS BY JOE DENIG

## MEADOWS Mobile Sawmill

Reviewed by Joe Denig

For full-time sawyers looking for big-time production, there is little substitute for a circle mill. This month Joe Denig takes a look at a classic from a company that's been producing portable and stationary mills for nearly a century.



Crossing the Eastern Continental Divide, I knew I was getting close to Ralph Denny's portable sawmill operation in Ashe County, North Carolina. Ralph and his logging partner, Bill Sullivan, run one of the few remaining portable sawmill operations in North Carolina that purchases boundaries of timber, then harvests the trees and saws the logs into lumber all on site. On the boundary they were cutting when I visited to review the Meadows Mobile Sawmill, they were cutting eastern white pine that

**Top left:** Ralph Denny hand sharpens the bits in his 52-inch circular saw body.

**Top right:** Denny set up his Meadows Mobile Sawmill to make for easy slab and sawdust disposal at the logging site.

**At left:** The setworks on the Meadows are controlled by a set of cams.

would eventually end up as millwork and moldings. Their major market for higher-grade lumber is the furniture industry, while the lower grades go into railroad ties or pallet stock.

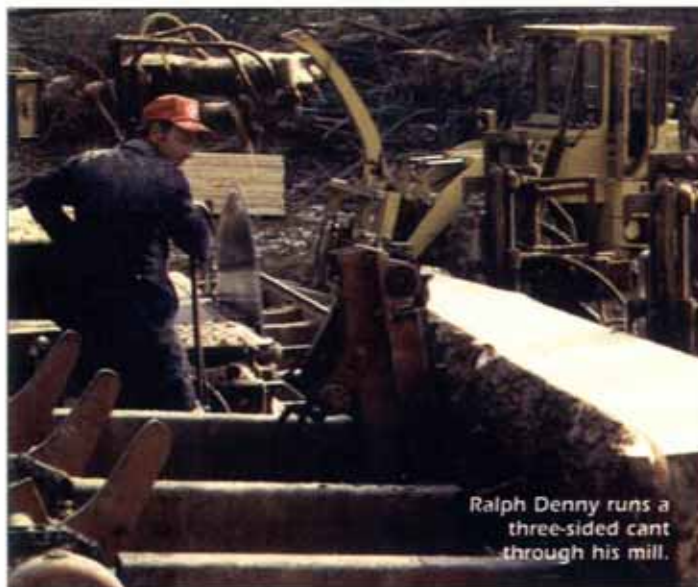
Denny and Sullivan's logging operation consists of one tree feller and skidder in the woods. Full-length stems are skidded to the sawmill site, where a Barko log loader and a C.T.R. machine are used to cut the long stems into log lengths. The loader then places the logs onto the sawmill log infeed deck. Their mill setup is a Meadows portable log deck, Meadows Mobile Sawmill and a Meadows edger. At the site I visited, the mill was located next to a small depression, which had been further excavated with a bulldozer to make waste handling and disposal easier.

The Meadows Mobile

Sawmill is a portable circular sawmill built for full-time use. Ralph Denny has been running his sawmill for four years and says he saws between 6,000 and 7,000 board feet of lumber a day, and sometimes up to 8,000 board feet of pine lumber a day. The sawmill crew doesn't usually work a full week because of the weather, so yearly production is approximately 1 million board feet. Ralph moves the mill to different sites about four times a year. When the sawmill is moved it must be leveled up on a temporary foundation. Ralph usually builds the foundation using wooden blocks. At least once a month he said he checks his mill with a level to make sure the foundation hasn't moved.

The Meadows Mobile Sawmill is made up of a carriage, carriage track,





Ralph Denny runs a three-sided cant through his mill.

carriage drive, saw husk, dust blower and hydraulic pump that are all mounted on one wheeled frame. During towing the carriage sits above the wheel axles, and the ends of the tracks can be disassembled to shorten the overall length of the towing package.

The carriage frame is manufactured from square steel tubing and is fitted with three headblocks. Ralph's mill is equipped with a chain log turner, push button setworks, and push button dogs, all hydraulically powered. With this setup there is little manual labor in operating the mill.

Logs were rotated and pushed up against the knees using the chain log turner, which worked well on the logs being sawn that day. The setworks and dogs are both electric over hydraulic, which means the sawyer pushes a button that sends an electrical signal to activate a hydraulic valve. The setworks on the Meadows are extremely simple and functional. To fine tune the size for a given set, you adjust the

position of a cam by using an allen wrench to loosen and tighten three screws holding the cam in place. There is a kill switch on the knees that prevents the sawyer from moving the knees and dogs in line with the saw, preventing the accidental sawing of the dogs. Taper sawing is accomplished by using manual taper set outs on the knees. The hydraulic dogs have a straight up and down action without a cinch-back feature. To mill parallel faces on the cants it is important for the sawyer to get cants square against the knees.

Ralph's typical sawing sequence on the day I visited went as follows: First the log was loaded, dogged and the first face sawn. A single board was milled from this first face, then sent to the edger. The log was then rotated 180 degrees and another opening face and board were sawn. The two-sided cant was then laid down and boards were sawn to the depth of up to about half the width of the cant. The

<b>DATA SHEET</b>	
<b>NAME &amp; MODEL NUMBER</b>	<b>NETWORKS</b>
Meadows Mobile Sawmill	Method of Setwork Drive: Chain drive
<b>MANUFACTURER &amp; ADDRESS</b>	Set Display: Scale boards
Meadows Mills, Inc. 1352 West D Street PO Box 1288 North Wilkesboro, NC 28659 1-800-626-2282	Automatic Sets?: Optional 8-point electronic setworks
<b>MILL OVERVIEW</b>	<b>ALIGNMENT</b>
Band or Circle Mill: Circle	How is Alignment Done at Factory?: The sawmill is one-piece design. When set up it is level.
Stationary or Portable: Portable	Alignment Guides for User: None
Options: Hydraulic feed, log loader, log turner, dogs and tapers	<b>POWER PLANT</b>
Cutting Capacity: (diameter and length): Up to 36-inch diameter and 16-foot length on 15-foot carriage	Standard: Diesel or gas 4-Cyl., 120HP
Weight: 8,000 lbs.	<b>LOG TURNER</b>
Length & Width: 42 feet long by 8 feet wide	Optional, hydraulic
<b>FRAME &amp; CARRIAGE</b>	<b>LOG LOADER</b>
Size and Construction of Frame: 8-inch channel iron frame with 4-inch x 6-inch box tubing cross members	Optional, hydraulic
Tracks are Made of: 12-pound rail	<b>LOG DOGS</b>
Are the Tracks Replaceable? Yes	Hydraulic or hand-operated available
Wheels are Made of: Ductile	<b>CARRIAGE FEED DRIVE</b>
Size of Bearings on Carriage: 1 7/16-inch pillow blocks with 208 inserts	Type (hydraulic, electrical, mechanical, or manual): Optional hydraulic feed
Carriage Support System: Box frame	Forward Speed: 200 fpm
<b>CIRCLE SAW HUSK</b>	Reverse Speed: 250 fpm
Maximum Saw Diameter: 56 inches	<b>TOWING</b>
Arbor Shaft and Bearing Size: 2 7/16 inches	Wheels and Trailer: 16-inch wheels, no brakes
Saw Speed (RPM): 600	Towing Weight: 8,000 lbs
Recommended Saw Blade: F or B pattern, 9/32 bits	Tongue Weight: 500 lbs
	<b>GUARANTEE:</b>
	90 days on parts
	<b>LIST PRICE AS SEEN</b>
	\$24,983

cant was then rotated 180 degrees and Ralph would place his first saw line of this last face so that he could saw the last board to the desired thickness without a shim.

The portable log deck supplied by Meadows used three transfer chains tied into a common head shaft, which was powered by a hydraulic drive. A hydraulic stop and loader was located

at the end of the log deck, next to the carriage. The purpose of a stop and loader is to prevent logs from rolling off the deck during sawing. When activated, it will kick a single log onto the carriage. The hydraulic power for the deck was supplied by a central hydraulic unit powered off the main drive.

An off bearer belt is included with the mill to



move slabs and boards away from the headsaw. The Meadows also has a saw-dust blower to move saw-dust from underneath the saw to the dust pile.

Ralph's mill is powered by a 250 horsepower, six-cylinder diesel engine built by Caterpillar. The engine has an integral electrical generator to supply power for the controls of the set-works and dogs. A set of pulleys supply power from the power plant to the mill unit. The hydraulic pump works off of this drive, as did Ralph's edger.

One problem diesel or gas-powered mills often have during heavy cuts is the engine begins to lug, slowing down the headsaw rim speed, forcing the sawyer to slow down the

feed. I sure didn't see that happening with the Meadows, and Ralph said that is why he chose a larger six-cylinder power unit instead of the standard four-cylinder engine.

Ralph uses a 52-inch diameter saw blade with 48 B pattern inserted teeth, turning at 605 revolutions per minute. On white pine he uses 5/16-inch kerf "Stand-all" saw bits. When sawing hardwoods he switches to 9/32-inch kerf bits. The reason for the larger bits for softwoods, and thus the wider kerf, is that pine tends to spring back more than hardwood when sawn. A wider side clearance is needed between the top of the saw tooth and the saw blade to prevent the saw body from

rubbing, which heats up the saw and causes it to lose tension.

Ralph believes that keeping the saw well sharpened prevents him from having many of the accuracy problems some sawyers experience. To "keep the saw right" he sharpens it approximately three times a day with an 8-inch mill bastard file. He has used electric grinders but believes he gets a sharper saw by hand filing. The teeth are swedged a couple times a day as well. Because he often saws logs that are muddy and does not debark them, Ralph built himself a debarking head that fits in front of the circular saw. The debarker is basically a wide saw head that cuts a shallow path approximately

3/4-inch wide ahead of the main saw. By removing the bark in front of the saw, Ralph says he saves considerable time resharping it. The debarking head is hydraulically driven and uses carbide teeth.

The lumber thickness from the mill was consistent and the surface quality, considering an inserted-tooth circle saw, was excellent.

Ralph said that he has not had any problems with his Meadows mill except for routine maintenance. After four years he has replaced some wear parts including belts, hydraulic hoses and electrical lines. His maintenance routine includes greasing the mill twice a week. He maintains one extra saw blade in case

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of damage to the saw he is currently using.

A 52-inch saw blade does not come cheap, selling for about \$2,300. But if a sawyer keeps the saw true, replaces bits on a regular basis and is careful, it should last a good long time.

"As long as you don't hit a big, old nail, the saw body will last a long time," says Bob Hege, owner of Meadows Mills. "I hear guys tell me they've been sawing with the same body for their whole lives."

One of the negative points of a circle mill compared to a band mill is the heavy kerf, which lowers the recovery of the mill. However, the heavier kerf contributes to the ability of the saw to withstand a heavier feed speed. I

watched Ralph saw many smaller logs that would be passed up by larger, commercial bandmill operations because they could not be sawn economically.

To edge the boards, Ralph uses a Meadows three-saw edger that is run off the main diesel engine. The edger has two fixed blades and one movable blade. The distance between the fixed blades is adjusted depending on the orders Ralph has for various fixed-width products. The movable blade is set by the operator through a mechanical linkage. The edger did not have any edging guides such as overhead lasers or shadow lights to assist the edger operator in making decisions. Despite the lack of guides, Ralph's operator did a good job. In addition

to running the edger, the edger operator was also responsible for getting rid of the slabs. At the outfeed of the edger and the main rollcase were two men who were responsible for separating the edging strips from the edged boards and piling the lumber.

One item that really impressed me was the enthusiasm of Ralph and Bill's crew and their work ethic. The mill cut at a steady rhythm and the employees had an excellent attitude. I think much of this comes from the fact that Ralph and Bill work at the job site with the crew,

run the mill and logging job, and understand what keeps their employees motivated.

Ralph started sawing more than 20 years ago on a hand-set circle mill and he really appreciates the conveniences an updated portable mill has brought him, such as the hydraulic turning and dogging of the log. The Meadows Mobile Sawmill serves Ralph well. ■

*Joe Denig is a Wood Products Extension Specialist at North Carolina State University's College of Forest Resources. He is author of "The Small Sawmill Handbook—Doing It Right and Making Money."*

#### MANUFACTURER'S COMMENTS:

The Meadows Mobile Sawmill is easy to use, sets up quickly, and will produce 5,000 to 10,000 board feet of lumber a day. The simple, dependable setworks produces an accurate board. This is a production mill—not a hobby unit. Patented by Meadows in 1956, the Mobile Sawmill has been in continuous production since that time. Prices range from \$24,000 to \$55,000.

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