KILN DRYING LUMBER FROM DEAD TIMBER: A DISCUSSION PERIOD

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It is a pleasure to be here. The longer I work in the field of wood utilization the more interesting it continues to become.

In the last two years we have become quite involved in the Sawmill Improvement Program. The primary purpose of SIP is to measure the efficiency of the mechanical components of the log breakdown systems in sawmills. Every study we have run to date has been able to show sawmill management that lumber outputs from their mills can be increased without increasing log inputs.

The Sawmill Improvement Program does not follow the manufactured lumber from the green chain to the railroad car or lumber truck.

One phase of the lumber manufacturing process that is not studied is lumber stacking and drying.

I have felt for a long time that the management of many companies does not know just how their lumber is stacked, how it is dried, and how it is handled; before drying, after drying, and after finishing.

To me these are very important phases in the manufacture of lumber.

A sawmill can manufacture very accurate lumber, recover maximum volume and/or maximum grade from the logs and all of the gains can go down the drain because of poor stacking, poor drying, poor handling, and poor storage.

All phases of lumber manufacture, from tree felling in the woods to delivery of the finished product to the customer, must be done with care, accuracy, concern, and commitment by all to doing the best job possible with the resources and facilities that are available.

My topic this morning has been titled "Kiln Drying Lumber From Dead Timber: A Discussion Period".

Why this title? Because we are beginning to cut more lumber from a resource that has been little used in the past - dead trees. All trees, once severed from the stump are dead, but the dead trees I am referring to have been killed <u>on</u> the stump by insects, disease, and fire.

Recently, the U. S. Forest Service started changing its timber sale contract utilization standards. Instead of the old classifications of live, recently dead, and older dead the new contracts state that <u>any</u> log meeting the minimum merchantability specifications will be removed from the timber sale area--this includes sound, dead, logs that contain minimum merchantably sound wood.

In addition to the timber sale contract changes the Inland Empire area in particular has very large volumes of sound dead timber--the results of past and present insect and disease epidemics.

Large areas of Idaho, Montana and Wyoming supports stands of lodgepole pine which are overmature. Many of the stands have been heavily killed by past insect epidemics--some dating back to the 1920's and 1930's.

The thing about lodgepole pine, because of climate and precipitation timing, is that most of the dead lodgepole pine trees are still with us and most of them are still sound. There are billions of board feet of this material that could be harvested and manufactured into lumber.

The mature and overmature stands of western white pine are also experiencing extremely heavy mortality each year from the mountain pine beetle and white pine blister rust.

Our insect and disease specialists in Missoula have estimated that losses of western white pine, in north Idaho, approach 300 million board feet annually.

The Forest Service, the State of Idaho, and the large timber land owners are trying to salvage the green white pine before it is all killed but some of these salvage operations are leaving up to 40 thousand board feet per acre in dead, standing, white pine trees.

We have been trying for several years to get the sawmill industry to at least try cutting some of the sound, dead, timber to see if they could recover enough lumber to make the operation feasible.

Our requests were not favorably received and only an occasional dead log got to the sawmill--not enough for any kind of evaluation.

About two years ago one of the large forest land owners decided that they would see what types of recovery they could get from sound, dead, white pine. They were, and still are, losing large volumes of this species.

This company was very surprised at the recovery they were able to get. They did not bring in badly spiral checked logs but if the checks were fairly straight the logs were brought in and sawed.

As part of a Forest Service recovery batch study another company also cut lumber from a sample of sound, dead, white pine. They too were very surprised at the lumber recovery they got.

Last winter a large sawmill in western Montana utilized their night shift to break down sound, dead, logs so they could be chipped in the sawmill chipper for the pulp mill in Missoula. It was reported that the mill crew was amazed at what the logs contained and they wanted to saw the logs for lumber, not just break them down for the chipper.

The mills in Idaho that have cut lumber from the sound, dead logs suddenly discovered something--"How do we dry this stuff?"

That is the reason that this presentation has been labeled a discussion period--practically nothing has been developed or written about drying lumber manufactured from sound, dead, logs.

Discussions with kiln operators and mill managers in north Idaho resulted in the following:

> "All dead lumber was mixed with green, not enough dead lumber for a full charge. Five/four thickness was dried under a light 8/4 schedule for 100 hours with a conditioning period. The dead checked out with a 5% M.C."

> "Haven't dried much dead--use low temperature schedule and steam periodically. Have been mixing species (WWP, DF, WF) in 4/4 sizes and getting good results. We are mixing species in packages--not solid packages by species. For some reason there seems to be an equalizing effect."

> "We have been mixing the dead and green. The dead is coming out too dry and we are having problems at the planer."

Charlie Kozlik has mentioned that some of the kiln operators in western Washington and Oregon have also asked "How is lumber manufactured from sound, dead, logs dried?" The problem doesn't seem to be limited to the Inland Empire.

A discussion period followed and the highlights were:

1. J. M. McMillen, Forest Products Laboratory, Madison, Wisconsin, reported through Paul Bois that "It seems the key to the situation is operator ingenuity and the moisture content of the stock as it enters the kiln. If freshly killed or from sunken logs, handle like live timber. If dryer than normal, segregate by dryness and shorten early and middle schedule steps, but don't skip them. Don't be afraid to mix species to get sorts of common thickness and drying time together."

2. Harold Barfknecht, Brooks-Scanlon Lumber Co., Bend, Oregon. reported that his company mixes their dead ponderosa pine with green ponderosa pine and has no particular problems. They do run long kiln schedules and the dead usually comes out having moisture contents of 7 to 11% while the green lumber has moisture contents of 15 to 18%.

3. Sam Short suggested that, first sort lumber for moisture content and start kiln schedule with a closer temperature spread, then back off a little and dry more rapidly.

4. Bob Hiller suggested that in establishing kiln schedules in stock having surface checks present the kiln operator should be quite careful to come to initial set point without the use of steam spray. When steam spray is used it will close the checks and when they re-open later they will be larger and deeper than they were to begin with.

He also suggested that the kiln operators should start kiln schedules with a higher initial temperature than is normally used.

The suggestions received for drying lumber cut from sound, dead, logs can be boiled down to the following:

1. Kiln operators will have to use ingenuity in developing kiln schedules.

2. Segregate lumber by moisture content.

3. When drying lumber that has below normal initial moisture content, shorten the early and middle portions of the kiln schedule but don't skip any.

4. Start kiln schedule with a closer wet-bulb, dry-bulb spread, then back off and shorten schedule.

5. Don't use steam spray to come to initial set point temperatures.

6. Start kiln schedule with higher initial temperature than normally used.