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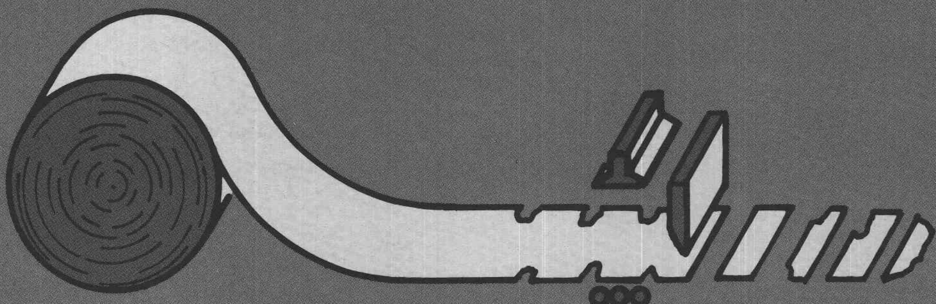
THE EFFECT OF SCANNER SETTINGS ON GREEN VENEER RECOVERY



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The Effect of Scanner Settings on Green Veneer Recovery

OVERVIEW

HISTORY

Several studies have pointed to the clipper as the source of greatest wood volume loss in the production of green veneer. But direct measurement of veneer losses was difficult and the measurement process disrupted normal operation of the green end.

In 1977 Oregon State University began a series of studies on clipper performance. Work progressed from studies of knife speed to measurements of green veneer recovery and losses at the clipper. An overhead filming technique was developed which gave accurate recovery figures yet did not interfere with green end operations.

The filming technique allowed data from the scanning and clipping of hundreds of ribbons to be computerized.

THIS STUDY

When scanner settings are changed, veneer recovery will change. By using the data from actual ribbons, proposed changes in the scanner settings can be tested, and the effect on veneer recovery shown. The figures given in this report are based on computer analysis of 1/10″ veneer peeled from sixty blocks.

In your mill, the change you see in recovery will not be the same as in this report — even if your scanner settings happen to be identical. But the *trends* will be similar. For example, if you can reduce the margin or minimum strip settings in your mill, you'll clip more recoverable veneer.

FURTHER DATA

Only the scanner changes which produced sizable annual savings are reported here. The original report, which includes much more data, is available from the authors or from Plywood Research Foundation.

ECONOMIC IMPACT

Simply changing scanner settings costs nothing. This study shows that mills with peel conditions similar to those in this report might expect the following:

Potential annual savings for 100 MM sq. ft./yr., 3/8″ basis

Reduce full sheet width from 54″ to 53″	$140,000
Reduce margin setting from 2″ to .5″	$255,000
Reduce minimum strip setting from 6″ to 4″	$ 53,000

One option — clipping for center-cut fishtails — does require a double fishtail saw and a man to operate it. But you might be losing veneer worth $97,000 by ignoring that option.

FUTURE WORK

This report covers computer-simulated clipping of veneer peeled from blocks in the 10-15″ and 15-20″ diameter classes. Similar information on 20-25″ and 25-30″ blocks will be available soon.

New green end data will be recorded by mid-1987 in southern and western mills equipped with state-of-the-art lathes and rotary clippers. We'll check the accuracy of the computer simulation program by filming two batches of ribbons: one batch *before* actual changes in a mill's scanner settings, and another batch *after*.

An analysis of clipping for grade is also in the works.

HELP!

If you have questions about clipping strategy, more data, or new studies, call Jim Funck (503-754-4207) at Oregon State University.

OBJECTIVES

The objectives of this study were to find the effects on 1) green veneer recovery, 2) sheet size mix, and 3) mill revenue when clipper scanner settings were changed. The scanner settings examined were:

1. Sheet size
2. Margin limits
3. Minimum strip limits
4. Clipping for double fishtails
5. Clipping for panels vs. randoms
6. Across-grain flaw limit

PROCEDURE

In this study, the veneer was filmed from squarely overhead and just behind the clipper. The movie camera frame rate and strobe flash were synchronized to the green chain belt speed to give blur-free images of all veneer clipped from each ribbon.

After the film was developed, each frame was projected onto a computer digitizing platen. Tracing the image with a wand caused the computer to record the size and shape of every piece of veneer clipped (including the size and location of all defects). When all the veneer peeled and clipped from a block was traced, the original ribbon of veneer was reconstructed in computer memory. Any natural ribbon breaks were left in.

The reconstructed ribbons were run through another program which simulated the clipper and scanner. This allowed the scanner logic and scanner settings to be changed and the effects on recovery shown. The first computer run used the same settings as the study mill, giving a check on the accuracy of the clipping program and data files. Next was a base run using the control settings (see Study Constants). The effect on veneer recovery and mill revenue when scanner settings are changed are compared to the control runs.

These results are based on sixty #2 or #3 sawlog grade Douglas-fir blocks peeled at one mill. Thirty blocks had small-end diameters (inside bark) of 10-15" diameters, and thirty had 15-20" diameters. The blocks were heated, peeled on an X-Y charged lathe, and transferred on a close-coupled chain to a scanner controlled clipper.

LOGIC AND TERMINOLOGY

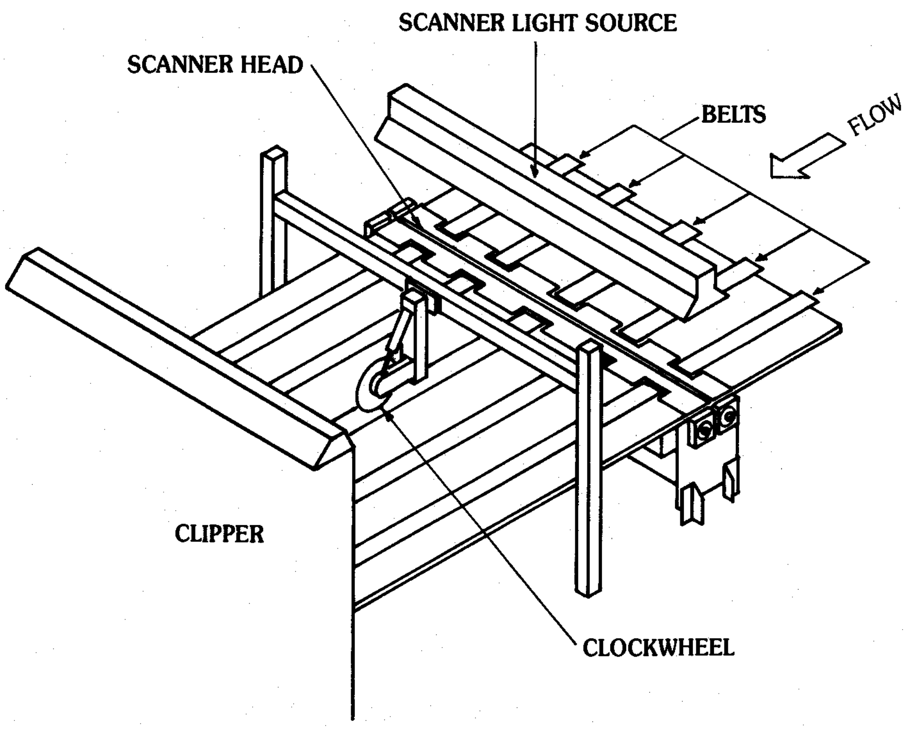
The Scanner

Scanners use light-dark messages to find open flaws and measure lengths. A row of lamps is mounted above the clipper infeed, so the photocells in the scanner head beneath the veneer can detect light shining through voids. Light signals are collected from the left and right sides to clip left and right fishtails. This information is combined with knife position and veneer speed (measured by the clockwheel) to control clip timing.

The scanner has several settings which control clip decisions. These include sheet sizes, flaw limits, and clip placement adjustments. Understanding these terms and the scanner logic will help you in choosing the best clipping strategy.

Most settings are put in terms of with- or across-grain dimension. The with-grain direction is parallel to the scanner head. Flaw length is measured (with 1/2" accuracy) by the number of adjacent photocells receiving light. The across-grain width of a void is computed (with 1/10" accuracy) by tracking the veneer speed and timing how long the photocells receive light. Bad photocells, worn clockwheel tire, belt slippage, and veneer slippage will cause clipping errors.

FIGURE 1



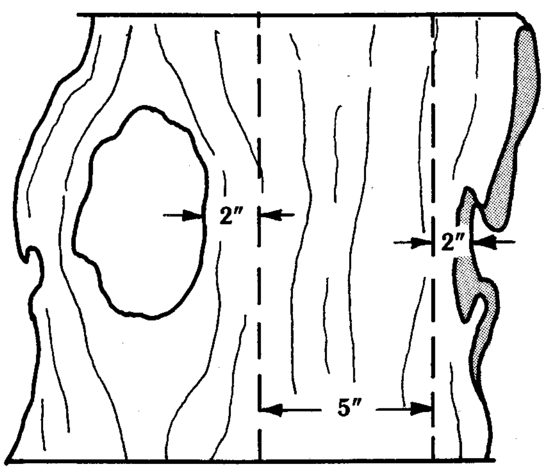
Margin

The margin adjustment moves the clip line away from the edge of a void. The margin setting was originally included in the scanner logic because early clippers weren't very accurate. The setting also allows for wane. All clips adjacent to flaws or at the edges of round up will be moved the set distance away from the flaw. If the margin setting is 2″, the clips will each be moved 2″ away from the edge of the void (Figure 2). Note this may not remove all of the actual wane.

Two margin settings are used. The scanner will switch from the *alternate* margin to the narrower *normal* margin after a given number of consecutive fulls are clipped (usually two).

The minimum strip and margin settings have a big effect on the recovery of randoms and fishtails: If the margin setting is 2″ and minimum strip is 5″, there must be 9″ between defects before a 5″ random will be clipped. If the distance between voids is only 8″, a random will not be clipped. Clearly, if smaller margin and minimum strip settings are used, the chance of clipping recoverable veneer is increased.

FIGURE 2



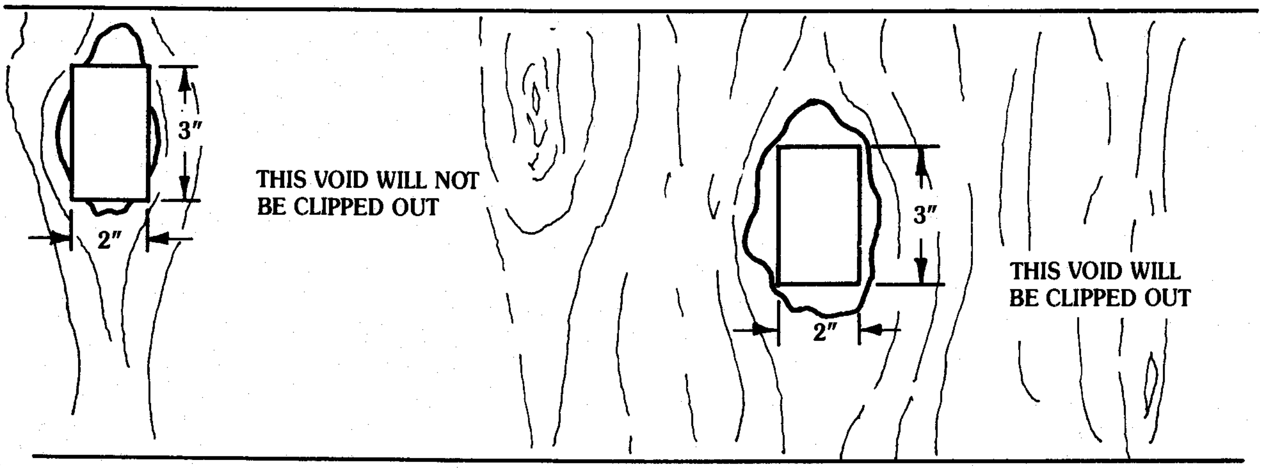
Flaw Limits

Flaw limits include cracks (splits), voids, and edge defects. A void must exceed the flaw limit settings in *both* the with-grain and across-grain directions before it will be clipped out. If the flaw limits are 2″ across-grain, and 3″ with-grain, no voids are clipped out until a hole is scanned which is big enough for a 2″ x 3″ rectangle to drop through (Figure 3).

Highest priority is given to clipping full sheets, then halves, randoms, fishtail, and trash. Fulls and halves are clipped when sheet length and width settings are met, and no oversize flaws are scanned. When flaws are clipped out, randoms, fishtail, and trash are generated.

The minimum strip setting prevents clipping out pieces which are too narrow to use. So the actual widths of randoms generated will range from the minimum strip setting up to the half panel setting.

FIGURE 3

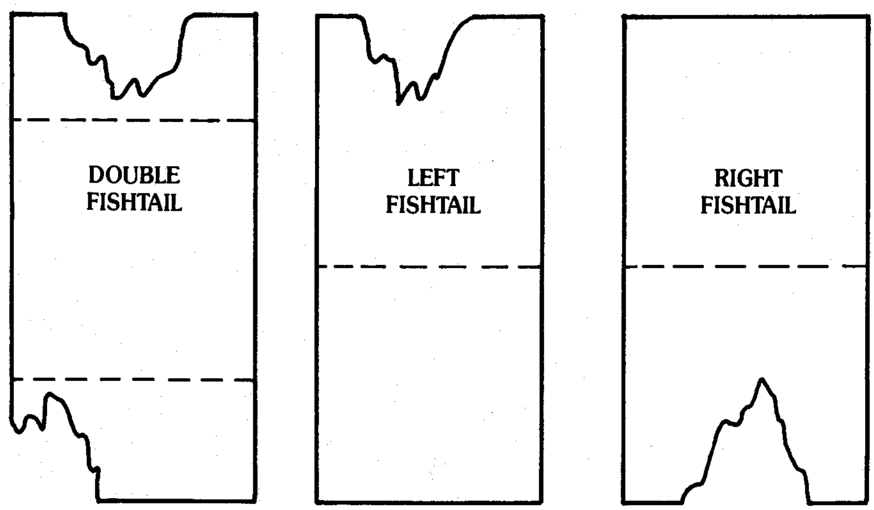


Fishtails

Two types of fishtails were considered. Standard left and right fishtails have one good end. Double fishtails have both ends flawed (Figure 4), but all fishtails must meet the same length setting. The minimum and maximum clip width for fishtail is the same as for randoms.

Double fishtails are considered separately because not all scanners have the double fishtail feature, and because each piece of veneer must be hand fed into a double saw trimmer.

FIGURE 4



Panel/Random Option

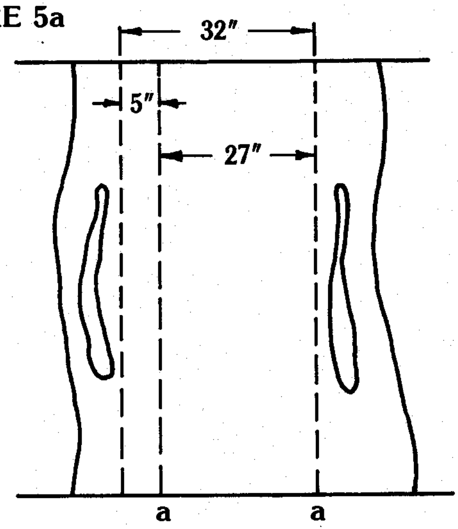
The panel/random feature allows the manager to opt for either higher value but potentially lower recovery (panel) or for higher recovery but potentially lower value veneer (random). For example, if the scanner settings are:

margin	2.0″
half panel width	27.0″
minimum strip width	6.0″

In Figure 5 there are 36″ between flaws. The 2″ margins at each flaw reduce the recoverable veneer to 32″: deduct 27″ for the half panel, and 5″ remain.

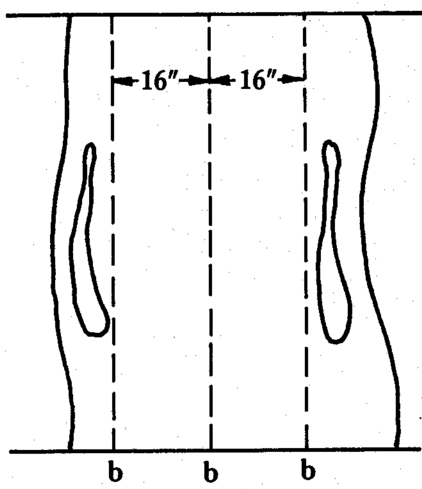
1. Under the panel option (Figure 5a) the scanner would place clips at **a**. The half panel (27″) is recovered and the remaining veneer is chipped.

FIGURE 5a



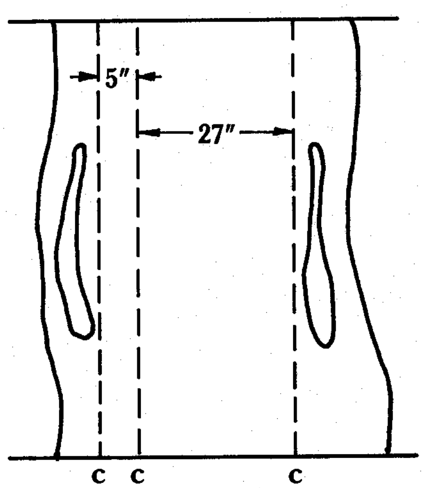
2. Under the random option (Figure 5b) the scanner would place clips at **b**. Two 16″ randoms are recovered and the remainder is chipped.

FIGURE 5b



3. Reduce the minimum strip setting to 5″ (Figure 5c) and the scanner would place clips at **c**. A half panel *and* the 5″ random are recovered, regardless of panel/random setting since there is enough veneer between margins to clip both the half panel and the random.

FIGURE 5c



Under the price structure assumed in this study, the third option offers the greatest dollar return to the veneer producer. Additional gain is possible by reducing the margin.

STUDY CONSTANTS

The same sixty ribbons were computer-clipped after each change or combination of changes in the scanner settings. "Perfect" clipping was assumed (clipping error due to veneer or belt slippage, or erratic clipper response time was non-existent).

The value of the veneer products recovered was:

1/10″ C-D Douglas-fir veneer

Fulls	$25.50
Halves	24.25
Randoms	14.75
Fishtail	12.00

Chip price ($/O.D. ton, FOB mill) $45.00

Initial Scanner Settings:

Full sheet size	54.0″
Half Sheet size	27.0″
Minimum strip	6.0″
Margin	2.0″
Panel/random	Panel
Fishtail length	51.0″
Double fishtail option	No
Across-grain flaw	0.6″
With-grain flaw	3.0″

Initial Sheet Distribution:

Block diameter	10-15″	15-20″
Full sheets	69%	77%
Half sheets	6%	8%
Randoms	21%	12%
Fishtail	4%	3%

RECOVERY & REVENUE

The recovery figures given in this report are only accurate for #2 and #3 sawlog grade Douglas-fir blocks peeled at the mill studied. Actual recovery values will vary by species, log grade, and each mill's scanner settings. But the strategies used here apply in any mill. The dollar figures are accurate only for the hypothetical mill described and are given simply to gauge the potential effects of new scanner settings. Mill managers should do similar calculations using their own figures.

Dry panel recovery factors for the control runs were:

10 to 15″ diameter blocks:
3.27 Veneer Recovery Factor
0.53 Cubic Recovery Ratio

15 to 20″ diameter blocks:
3.43 VRF
0.63 CRR

$$\text{where: VRF} = \frac{\text{M sq. ft., 3/8 inch basis, veneer}}{\text{M bd. ft., Scribner, logs}}$$

and

$$\text{CRR} = \frac{\text{cubic feet of veneer}}{\text{cubic feet of logs}}$$

RESULTS AND DISCUSSION

Changes in scanner settings and their effect on veneer recovery and revenue are individually addressed in the pages following. What is not addressed is the increased risk of:

1. More or bigger defects in the veneer sheets (due to larger flaw limits or reduced margins).
2. Increased falldown due to narrow sheets (from clipping error or shrinkage after a reduction in clip width).
3. Lower efficiency at the dryers or layup line when minimum strip widths are reduced.

The challenge is to balance the benefits of higher recovery with the risk of greater falldowns and loss of efficiency in other departments. For the veneer producer this compels improvements and innovation at the green end. The veneer user may consider new ways of handling the narrower strip and fishtail veneer.

YOUR SCANNER

Scanner manufacturers offer several features not mentioned in this report. Your scanner may allow a maximum strip width setting (to allow graders to easily distinguish wide strip from halves) and another setting for maximum fishtail width. Settings for special-case margin and flaw limits may be included, or flaw limits may be entered in terms of area (square inches) instead of with-grain and across-grain settings. Read your scanner operation manual.

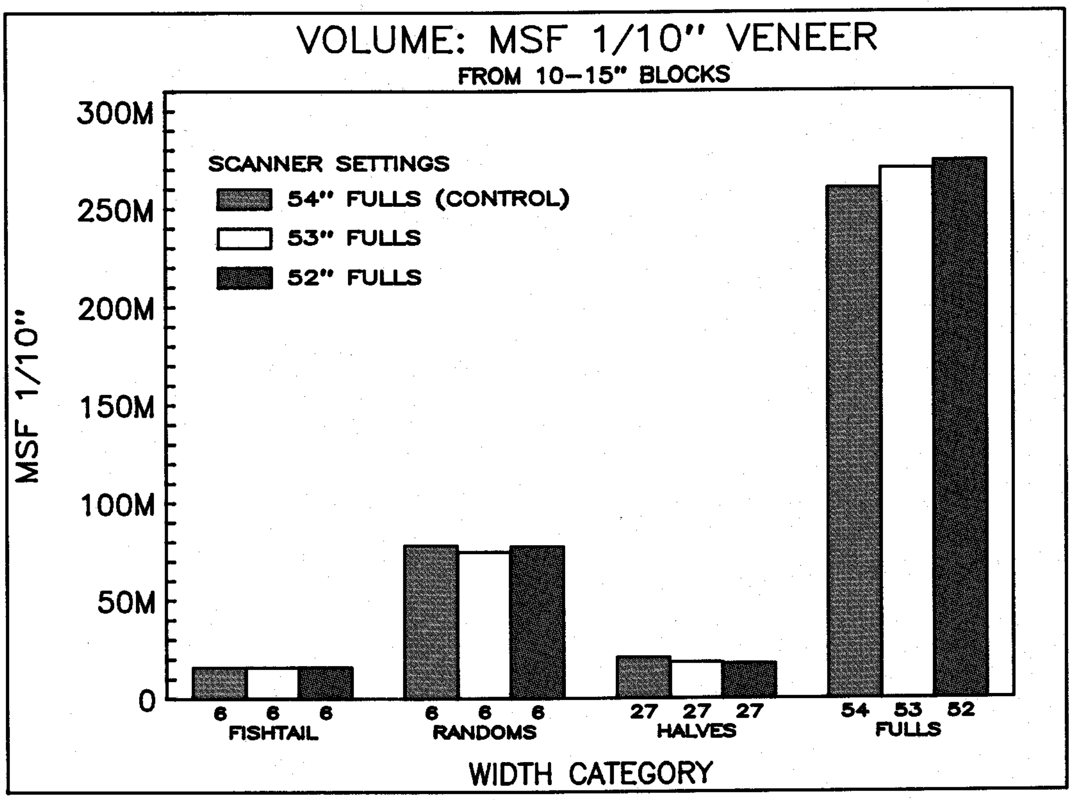
REDUCTION OF FULL SHEET WIDTH:

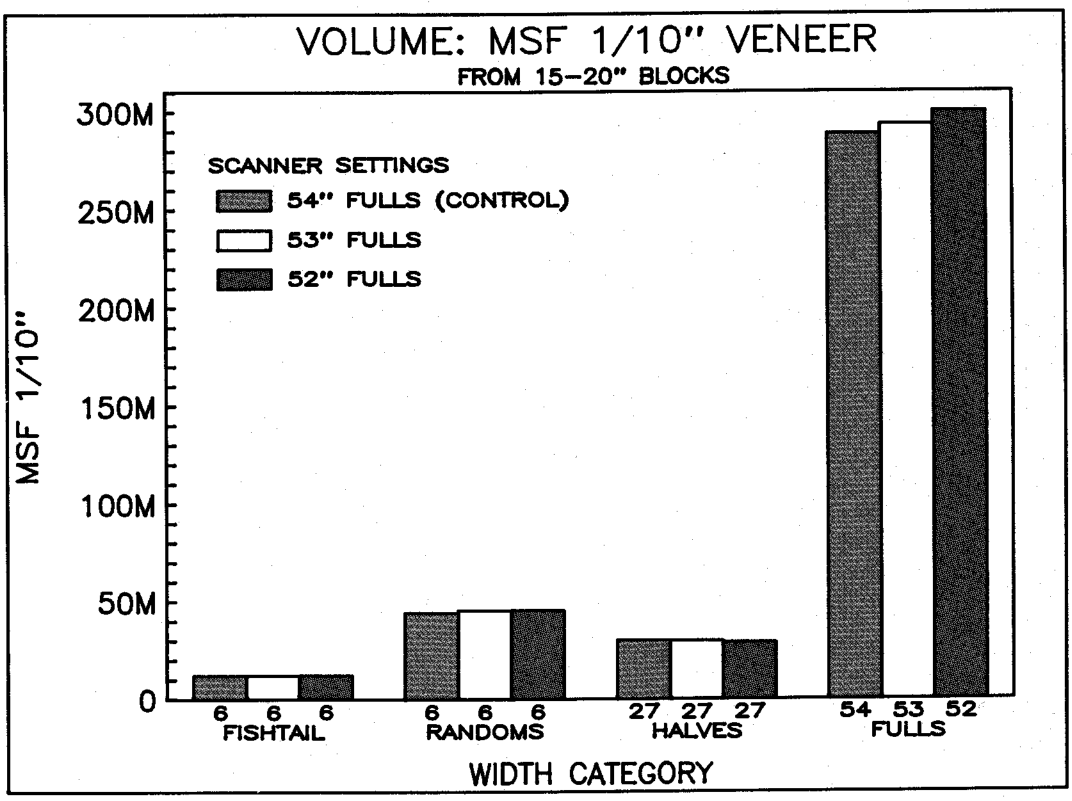
Reducing the full sheet clip width from 54" to 53", and then 52" caused a significant increase in the number of fulls, with some reduction in halves, and no effect on fishtails. The effect on randoms was not the same for both block diameter classes: In the 10-15" diameter category, decreasing the full sheet clip width to 53" caused a drop in the volume of randoms, but a further reduction of clip width to 52" caused the volume of randoms to rebound. The randoms from 15-20" diameter blocks showed a small increase with each reduction in clip width.

The dollar effect was similar for both diameter classes: There is a large economic incentive to reduce full sheet clip width (assuming the reduction in clip width still produces usable full sheets after drying). The big dollar effect results from the increased volume in the highest value veneer category.

Sheet distributions for 10-15" dia. blocks:			
FULL SHEET WIDTH:	54.0"	53.0"	52.0"
Annual production (M sq. ft., 1/10"):			
Fulls	260,224	270,165	273,990
Halves	20,665	18,369	17,605
Randoms	78,170	74,856	77,537
Fishtails	15,941	15,941	15,941
	375,000	379,331	385,073
Veneer Increase per year: (M sq. ft., 1/10"):			
Fulls		9,941	13,766
Halves		-2,296	-3,060
Randoms		-3,314	-633
Fishtails		0	0
Increased veneer revenue per year:		$148,936	$267,491
Change in chip revenue per year:		$ 769	$ -183
Increased mill revenue per year:		$149,705	$267,308

Sheet distributions for 15-20" dia. blocks:			
FULL SHEET WIDTH:	54.0"	53.0"	52.0"
Annual production (M sq. ft., 1/10"):			
Fulls	288,487	293,276	299,911
Halves	30,066	29,883	28,590
Randoms	44,278	45,314	45,332
Fishtails	12,169	12,169	12,169
	375,000	380,642	386,002
Veneer Increase per year: (M sq. ft., 1/10"):			
Fulls		4,789	11,424
Halves		-183	-1,476
Randoms		1,036	1,054
Fishtails		0	0
Increased veneer revenue per year:		$132,963	$271,066
Change in chip revenue per year:		$ -323	$ -545
Increased mill revenue per year:		$132,640	$270,521


VOLUME: MSF 1/10" VENEER
FROM 10-15" BLOCKS
SCANNER SETTINGS
54" FULLS (CONTROL)
53" FULLS
52" FULLS
MSF 1/10"
300M
250M
200M
150M
100M
50M
0
6 6 6
FISHTAIL
6 6 6
RANDOMS
27 27 27
HALVES
54 53 52
FULLS
WIDTH CATEGORY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FROM 15-20" BLOCKS
SCANNER SETTINGS
54" FULLS (CONTROL)
53" FULLS
52" FULLS
MSF 1/10"
300M
250M
200M
150M
100M
50M
0
6 6 6
FISHTAIL
6 6 6
RANDOMS
27 27 27
HALVES
54 53 52
FULLS
WIDTH CATEGORY

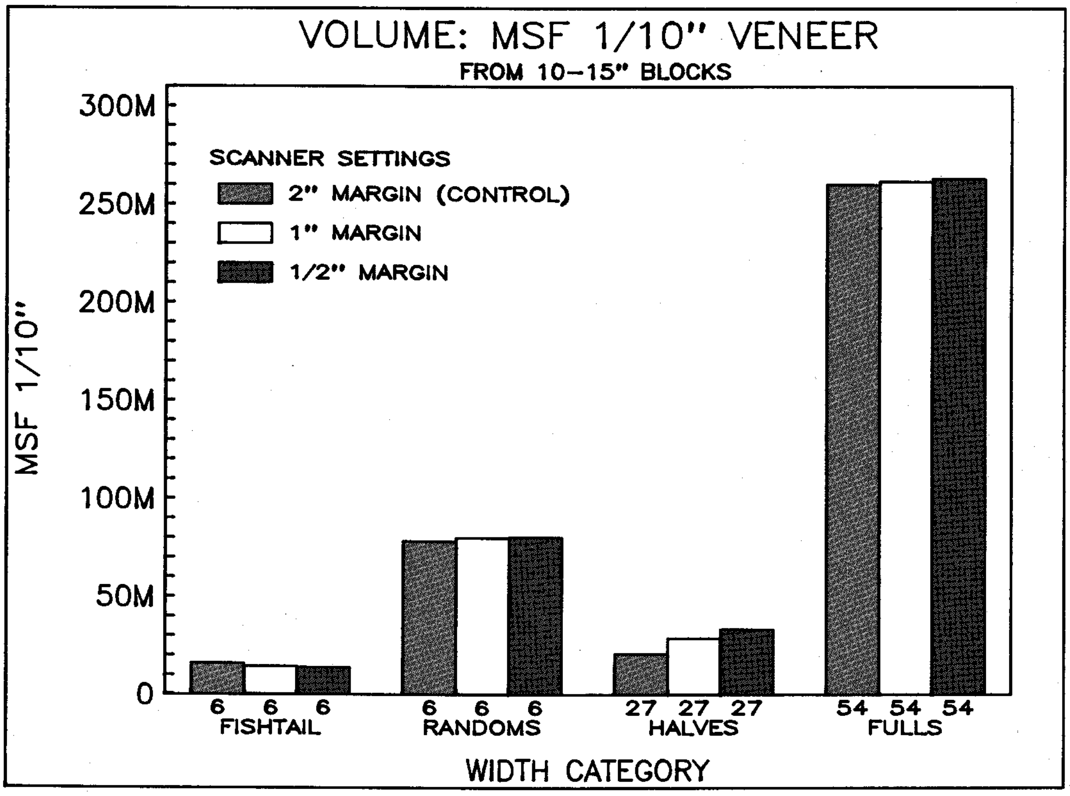
REDUCTION OF MARGIN:

By far, the greatest effect (on recovery *and* revenue) was from the reduction in margin setting. Fulls increased slightly, with a substantial increase in halves, a modest increase in randoms, and a decrease in fishtails.

Reducing the margins shifts wood from the chip and fishtail products into the random, half, and full sheet products. The increase was greatest in the smaller blocks.

Sheet distributions for 10-15" dia. blocks:			
MARGIN SETTING:	2.0"	1.0"	0.5"
Annual production (M sq. ft., 1/10"):			
Fulls	260,224	261,759	263,295
Halves	20,665	28,702	33,293
Randoms	78,170	79,890	80,249
Fishtails	15,941	14,372	13,719
	375,000	384,723	390,556
Veneer Increase per year: (M sq. ft., 1/10"):			
Fulls		1,535	3,071
Halves		8,037	12,628
Randoms		1,720	2,079
Fishtails		-1,569	-2,222
Increased veneer revenue per year:		$240,582	$388,541
Change in chip revenue per year:		$-49,943	$-80,186
Increased mill revenue per year:		$190,639	$308,355

Sheet distributions for 15-20" dia. blocks:			
MARGIN SETTING:	2.0"	1.0"	0.5"
Annual production (M sq. ft., 1/10"):			
Fulls	288,487	288,487	289,237
Halves	30,066	35,231	37,997
Randoms	44,278	47,988	48,684
Fishtails	12,169	10,927	10,653
	375,000	382,633	386,571
Veneer Increase per year: (M sq. ft., 1/10"):			
Fulls		0	750
Halves		5,165	7,931
Randoms		3,710	4,406
Fishtails		-1,242	-1,516
Increased veneer revenue per year:		$165,070	$258,248
Change in chip revenue per year:		$-36,791	$-56,344
Increased mill revenue per year:		$128,279	$201,904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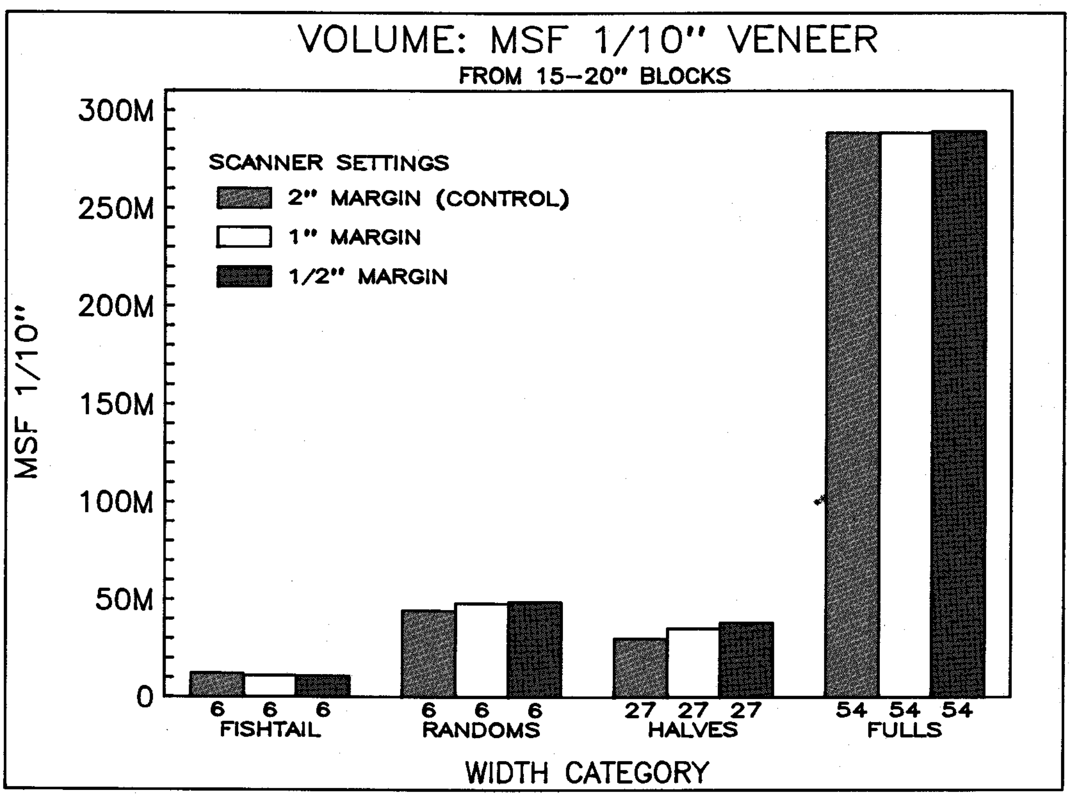
FROM 10–15" BLOCKS
SCANNER SETTINGS
2" MARGIN (CONTROL)
1" MARGIN
1/2" MARGIN
MSF 1/10"
300M
250M
200M
150M
100M
50M
0
6 6 6
FISHTAIL
6 6 6
RANDOMS
27 27 27
HALVES
54 54 54
FULLS
WIDTH CATEGORY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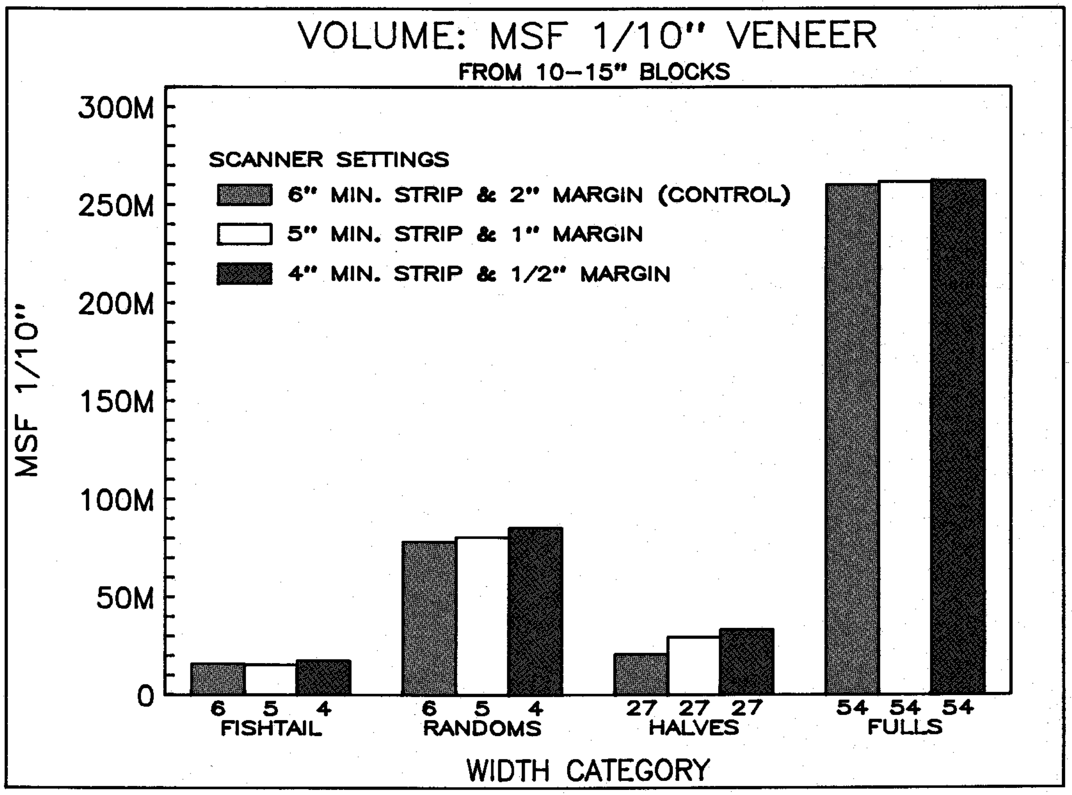
FROM 15–20" BLOCKS
SCANNER SETTINGS
2" MARGIN (CONTROL)
1" MARGIN
1/2" MARGIN
MSF 1/10"
300M
250M
200M
150M
100M
50M
0
6 6 6
FISHTAIL
6 6 6
RANDOMS
27 27 27
HALVES
54 54 54
FULLS
WIDTH CATEGORY

COMBINED MARGIN AND MINIMUM STRIP WIDTH REDUCTION:

Combining smaller settings for both minimum strip and margin had a big effect on recovery and income. The increase in full and half sheet volume was driven mainly by the reduced margin setting. The random and fishtail increase was driven mainly by the minimum strip setting. The dollar effects were almost additive. Except for the overall "best case" settings, these combined changes gave the greatest improvement.

Sheet distributions for 10-15" dia. blocks:			
COMBINED MARGIN AND MINIMUM STRIP SETTING:	2.0" / 6.0"	1.0" / 5.0"	0.5" / 4.0"
Annual production (M sq. ft., 1/10"):			
Fulls	260,224	261,759	262,514
Halves	20,665	29,466	33,293
Randoms	78,170	80,578	85,330
Fishtails	15,941	15,466	17,435
	375,000	387,269	398,572
Veneer Increase per year: (M sq. ft., 1/10"):			
Fulls		1,535	2,290
Halves		8,801	12,628
Randoms		2,408	7,160
Fishtails		-475	1,494
Increased veneer revenue per year:		$282,385	$488,162
Change in chip revenue per year:		$-61,631	$-114,535
Increased mill revenue per year:		$220,754	$373,627

Sheet distributions for 15-20" dia. blocks:			
COMBINED MARGIN AND MINIMUM STRIP SETTING:	2.0" / 6.0"	1.0" / 5.0"	0.5" / 4.0"
Annual production (M sq. ft., 1/10"):			
Fulls	288,487	288,487	289,237
Halves	30,066	35,231	37,997
Randoms	44,278	49,215	51,867
Fishtails	12,169	11,961	12,343
	375,000	384,894	391,444
Veneer Increase per year: (M sq. ft., 1/10"):			
Fulls		0	750
Halves		5,165	7,931
Randoms		4,937	7,589
Fishtails		-208	174
Increased veneer revenue per year:		$195,576	$325,478
Change in chip revenue per year:		$-46,468	$-77,223
Increased mill revenue per year:		$149,108	$248,255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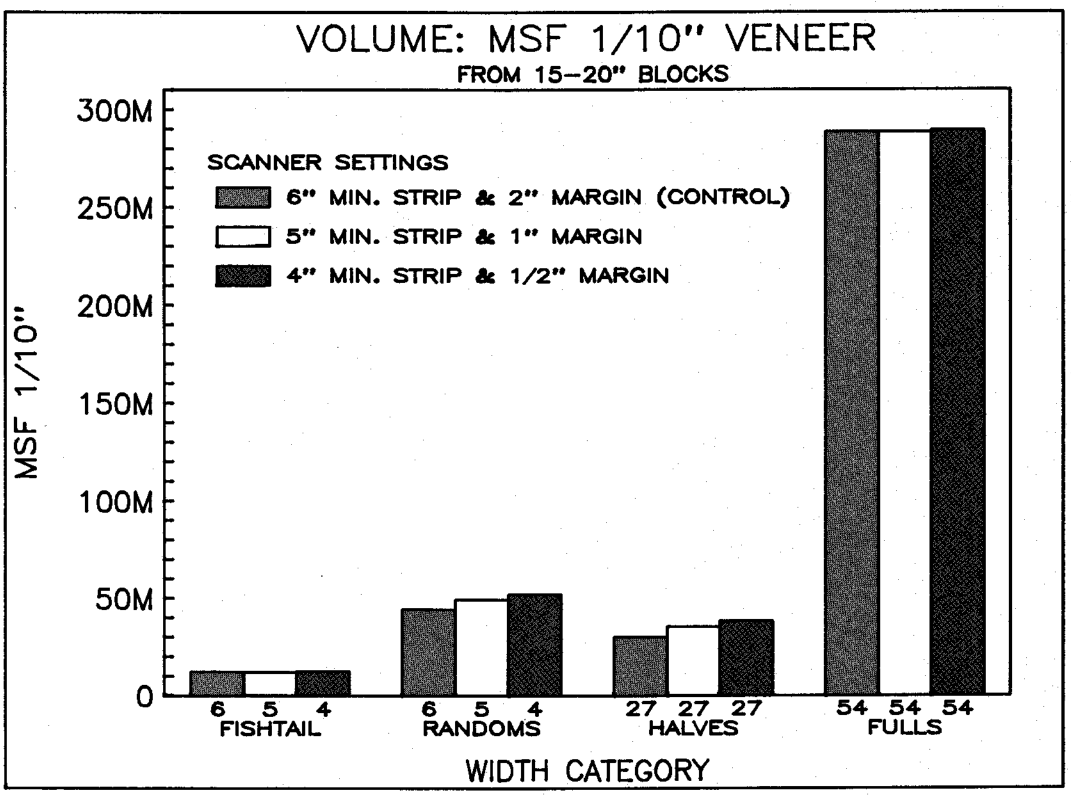
FROM 10-15" BLOCKS
SCANNER SETTINGS
6" MIN. STRIP & 2" MARGIN (CONTROL)
5" MIN. STRIP & 1" MARGIN
4" MIN. STRIP & 1/2" MARGIN
MSF 1/10"
300M
250M
200M
150M
100M
50M
0
6 5 4
FISHTAIL
6 5 4
RANDOMS
27 27 27
HALVES
54 54 54
FULLS
WIDTH CATEGORY


VOLUME: MSF 1/10" VENEER
FROM 15-20" BLOCKS
SCANNER SETTINGS
6" MIN. STRIP & 2" MARGIN (CONTROL)
5" MIN. STRIP & 1" MARGIN
4" MIN. STRIP & 1/2" MARGIN
MSF 1/10"
300M
250M
200M
150M
100M
50M
0
6 5 4
FISHTAIL
6 5 4
RANDOMS
27 27 27
HALVES
54 54 54
FULLS
WIDTH CATEGORY

PANEL/RANDOM OPTION:

Changing the panel/random option from a priority on panels to one on randoms caused a slight improvement in recovery. The volume of fulls and fishtails didn't change, but the volume of halves fell sharply. Randoms increased. Despite the increase in veneer recovery, this mill lost money since the market price for randoms is much less than for halves.

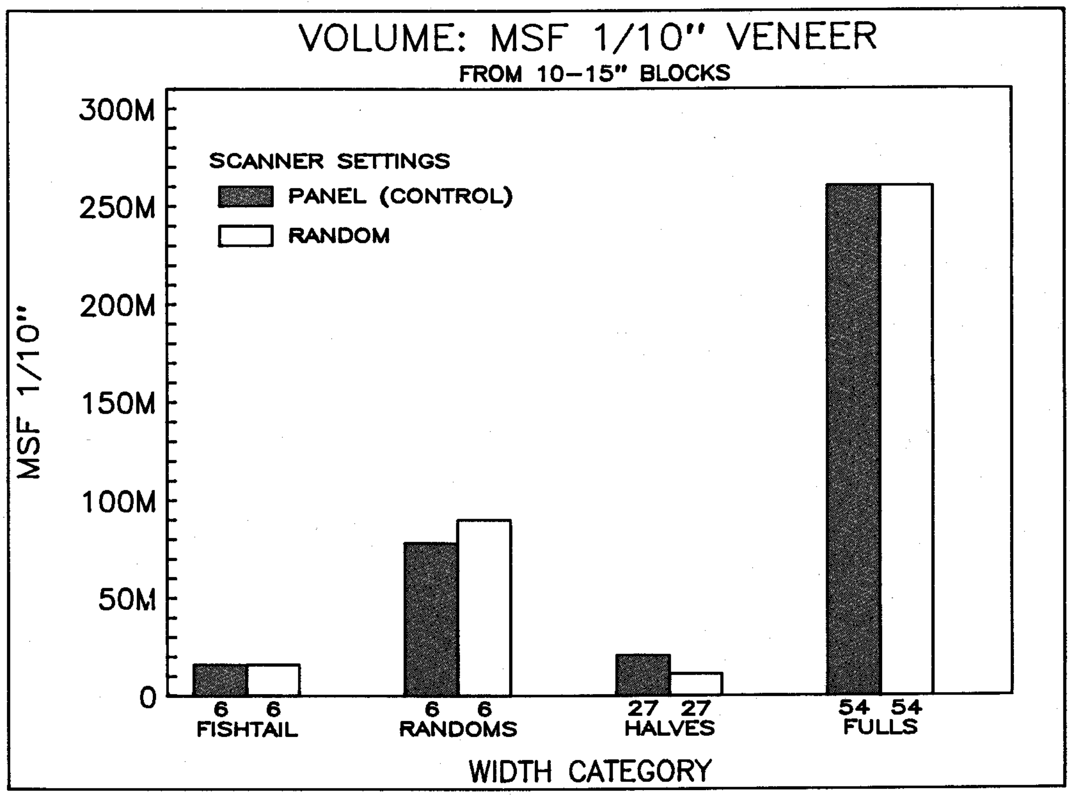
But not all producers sell their veneer on the open market. Before dismissing the random option, consider that this increment of randoms is composed of strip about 13-17″ in width (the actual widths depend on the half panel and minimum strip settings). For instance, if there is enough veneer between defects, the scanner will clip both a half panel and a random, recovering all the "usable" veneer. If the distance between defects is less than the half panel plus minimum strip settings, the scanner will clip only the half panel (under the panel option) or clip all the usable veneer by dividing it into two randoms (random option). Clip decisions outside this window are unaffected by the panel/random setting.

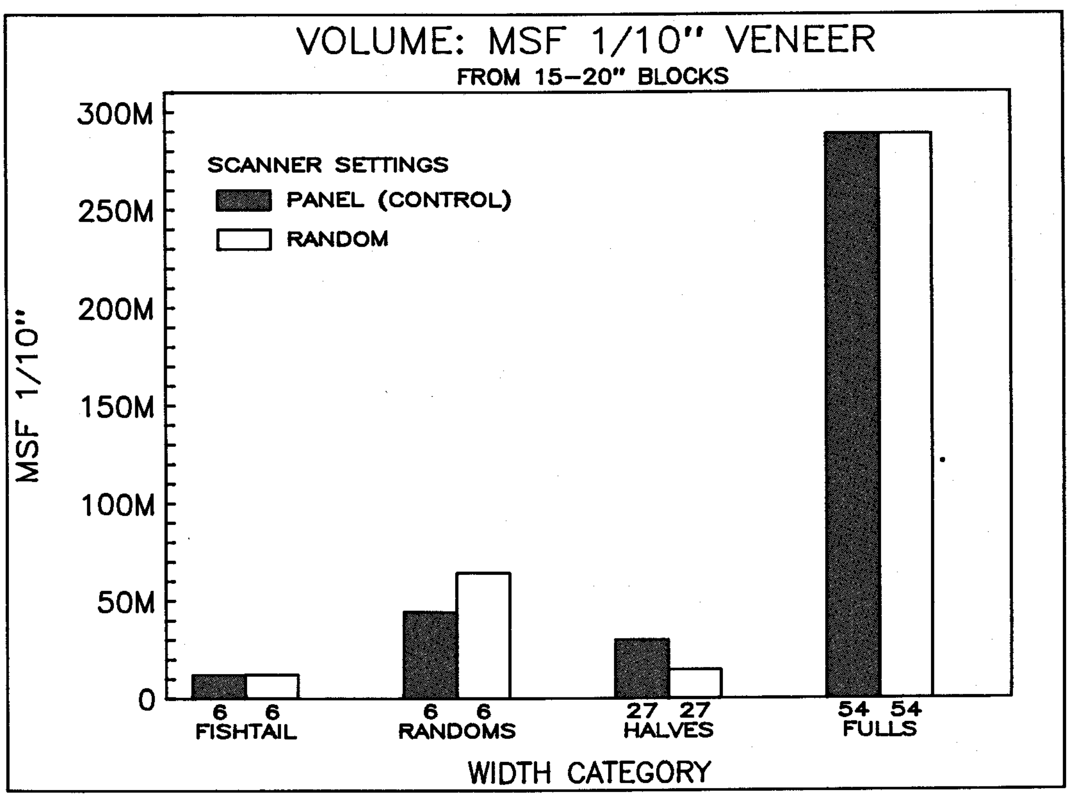
Sheet distributions for 10-15″ dia. blocks:

PANEL/RANDOM OPTION:	**Panel**	**Random**
Annual production (M sq. ft., 1/10″):		
Fulls	**260,224**	**260,224**
Halves	**20,665**	**11,097**
Randoms	**78,170**	**90,013**
Fishtails	**15,941**	**15,941**
	375,000	**377,275**
Veneer Increase per year: (M sq. ft., 1/10″):		
Fulls		**0**
Halves		**−9,568**
Randoms		**11,843**
Fishtails		**0**
Increased veneer revenue per year:		**$ −57,340**
Change in chip revenue per year:		**$ −2,273**
Increased mill revenue per year:		**$ −59,613**

Sheet distributions for 15-20″ dia. blocks:

PANEL/RANDOM OPTION:	**Panel**	**Random**
Annual production (M sq. ft., 1/10″):		
Fulls	**288,487**	**288,487**
Halves	**30,066**	**14,756**
Randoms	**44,278**	**64,340**
Fishtails	**12,169**	**12,169**
	375,000	**379,752**
Veneer Increase per year: (M sq. ft., 1/10″):		
Fulls		**0**
Halves		**−15,310**
Randoms		**20,062**
Fishtails		**0**
Increased veneer revenue per year:		**$ −75,353**
Change in chip revenue per year:		**$ −8,357**
Increased mill revenue per year:		**$ −83,710**


VOLUME: MSF 1/10" VENEER
FROM 10–15" BLOCKS
300M
250M
200M
150M
100M
50M
0
MSF 1/10"
SCANNER SETTINGS
PANEL (CONTROL)
RANDOM
6 6
FISHTAIL
6 6
RANDOMS
27 27
HALVES
54 54
FULLS
WIDTH CATEGORY


VOLUME: MSF 1/10" VENEER
FROM 15–20" BLOCKS
300M
250M
200M
150M
100M
50M
0
MSF 1/10"
SCANNER SETTINGS
PANEL (CONTROL)
RANDOM
6 6
FISHTAIL
6 6
RANDOMS
27 27
HALVES
54 54
FULLS
WIDTH CATEGORY

DOUBLE FISHTAIL OPTION:

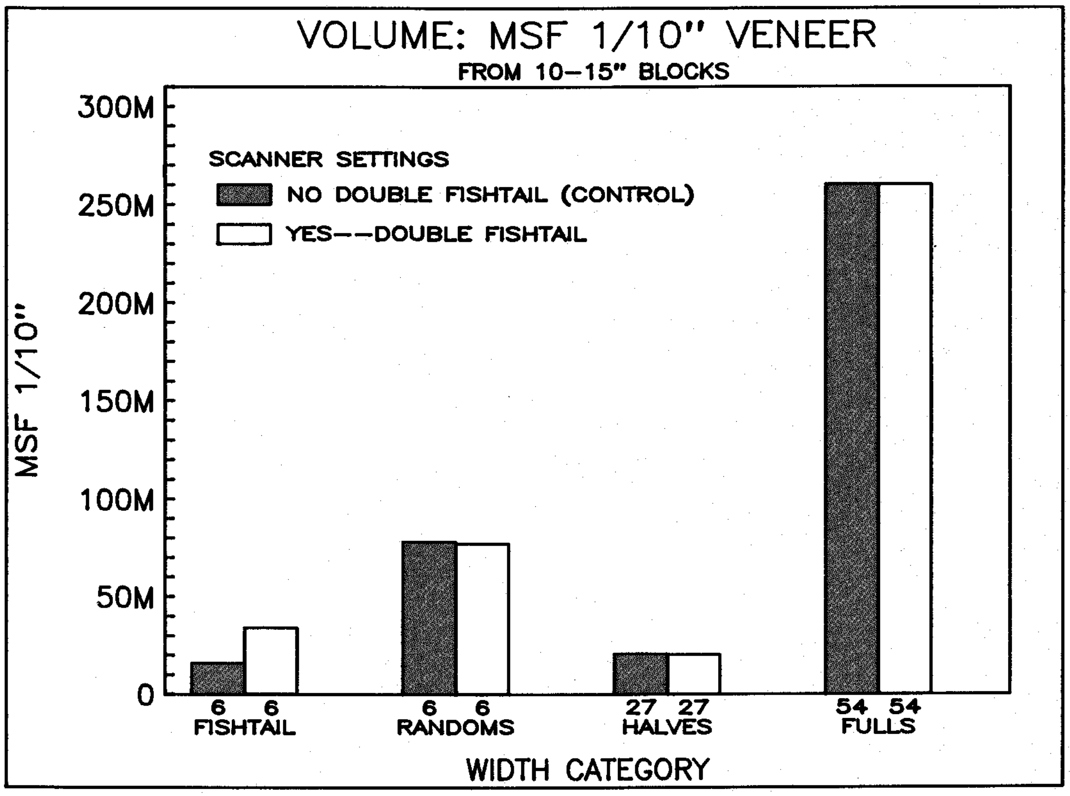
Opting to clip double fishtails roughly doubled the volume of fishtails and slightly reduced the volume of halves and randoms. Full sheet production was untouched. The decrease in halves and randoms was more than offset dollarwise by the increase in fishtails. Again, the greatest improvement occurred in the 10-15″ diameter blocks. Not considered in this analysis are the extra handling and equipment costs needed to process double fishtails.

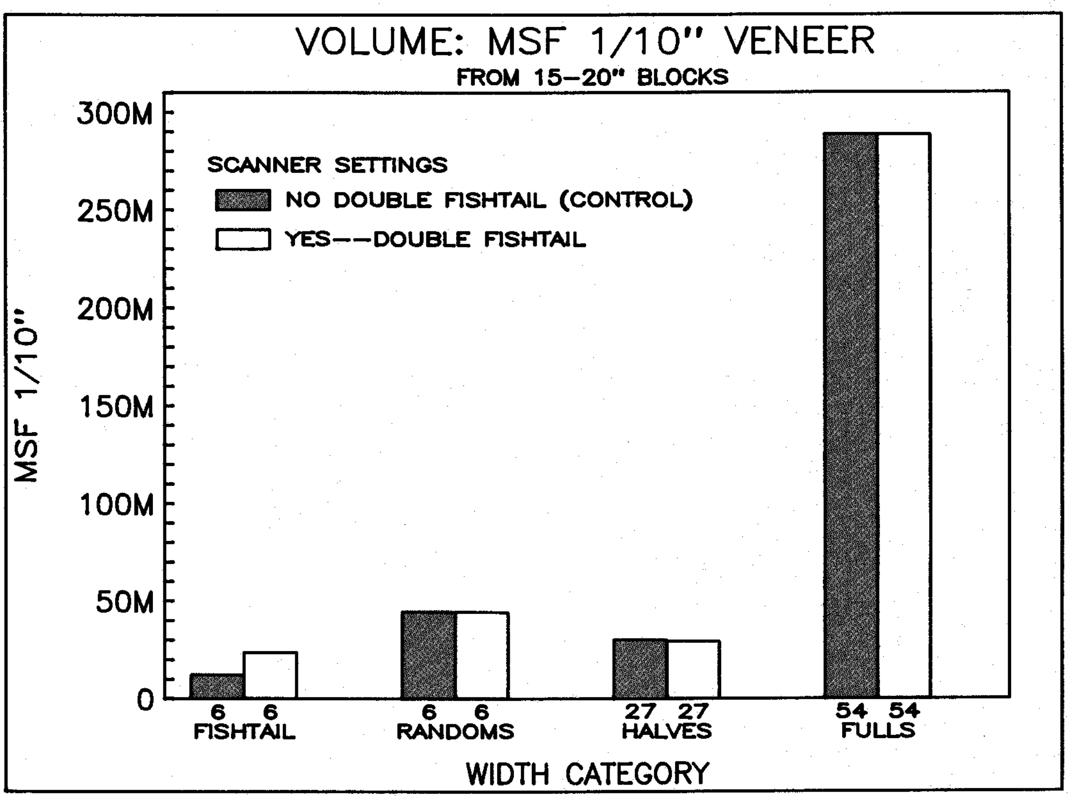
Sheet distributions for 10-15″ dia. blocks:

DOUBLE FISHTAIL OPTION:	No	Yes
Annual production (M sq. ft., 1/10″):		
Fulls	**260,224**	**260,224**
Halves	**20,665**	**20,283**
Randoms	**78,170**	**77,177**
Fishtails	**15,941**	**34,139**
	375,000	**391,823**
Veneer Increase per year: (M sq. ft., 1/10″):		
Fulls		**0**
Halves		**-382**
Randoms		**-993**
Fishtails		**18,198**
Increased veneer revenue per year:		**$194,466**
Change in chip revenue per year:		**$-72,909**
Increased mill revenue per year:		**$121,557**

Sheet distributions for 15-20″ dia. blocks:

DOUBLE FISHTAIL OPTION:	No	Yes
Annual production (M sq. ft., 1/10″):		
Fulls	**288,487**	**288,487**
Halves	**30,066**	**29,329**
Randoms	**44,278**	**44,274**
Fishtails	**12,169**	**23,597**
	375,000	**385,687**
Veneer Increase per year: (M sq. ft., 1/10″):		
Fulls		**0**
Halves		**-737**
Randoms		**-4**
Fishtails		**11,428**
Increased veneer revenue per year:		**$119,205**
Change in chip revenue per year:		**$-45,164**
Increased mill revenue per year:		**$ 74,041**


VOLUME: MSF 1/10" VENEER
FROM 10-15" BLOCKS
SCANNER SETTINGS
NO DOUBLE FISHTAIL (CONTROL)
YES--DOUBLE FISHTAIL
MSF 1/10"
300M
250M
200M
150M
100M
50M
0
6 6
FISHTAIL
6 6
RANDOMS
27 27
HALVES
54 54
FULLS
WIDTH CATEGORY


VOLUME: MSF 1/10" VENEER
FROM 15-20" BLOCKS
SCANNER SETTINGS
NO DOUBLE FISHTAIL (CONTROL)
YES--DOUBLE FISHTAIL
MSF 1/10"
300M
250M
200M
150M
100M
50M
0
6 6
FISHTAIL
6 6
RANDOMS
27 27
HALVES
54 54
FULLS
WIDTH CATEGORY

BEST CASE SETTINGS:

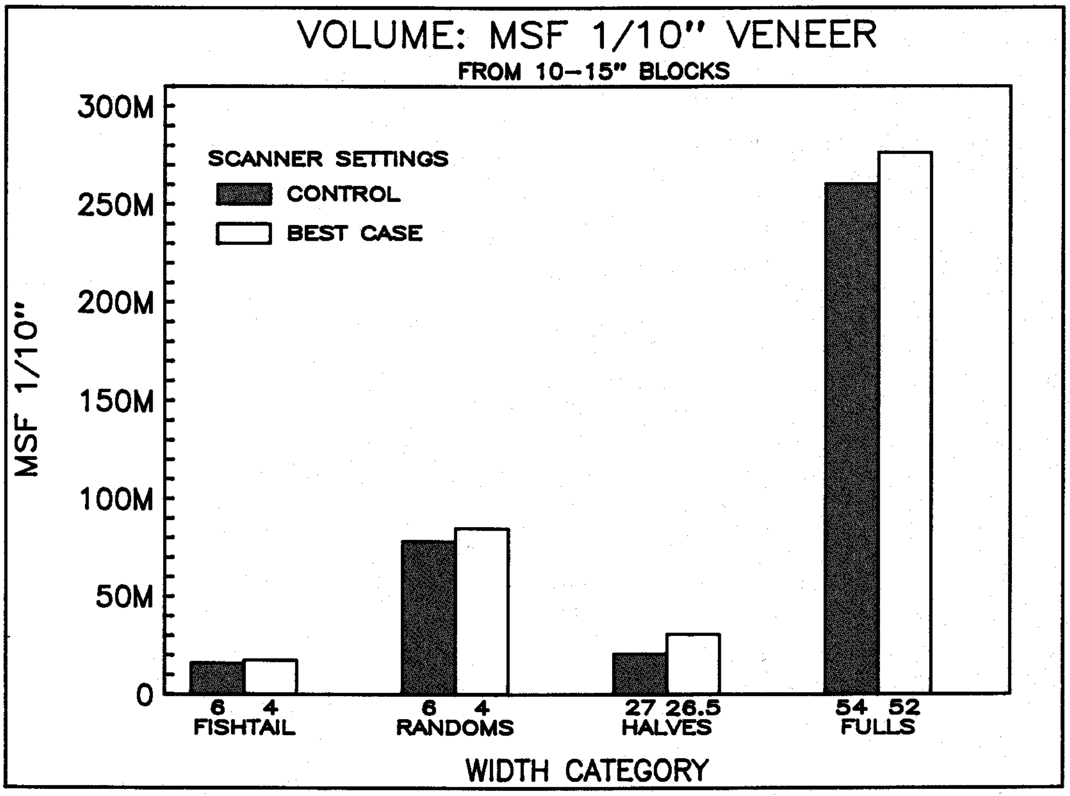
The combined effect of using all the "best" settings was tested. A big increase in fulls, halves, and randoms resulted, along with a slight increase in fishtails. For simplicity, the double fishtail option was not used, so the increase in recovery and revenue is from scanner setting changes which require no new machinery or labor.

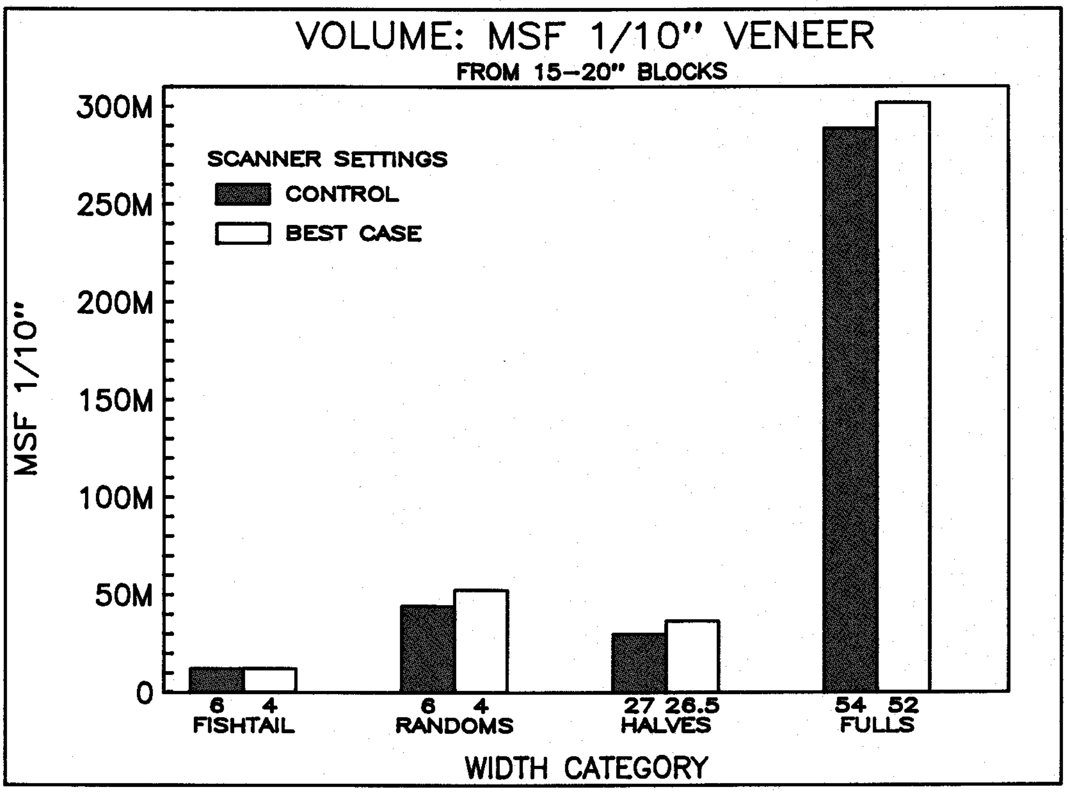
Sheet distributions:

SCANNER SETTINGS:	Initial	Best Case
Full sheet width	**54.0″**	**52.0″**
Half sheet size	**27.0″**	**26.5″**
Minimum strip	**6.0″**	**4.0″**
Margin	**2.0″**	**0.5″**
Panel/random	**Panel**	**Panel**
Fishtail length	**51.0″**	**50.0″**
Double fishtail option	**No**	**No**
Across grain flaw	**0.6″**	**1.2″**
With grain flaw	**3.0″**	**3.0″**

Annual production (M sq. ft., 1/10″):

	10-15″ blocks		15-20″ blocks	
	Initial	**Best Case**	**Initial**	**Best Case**
Fulls	**260,224**	**276,306**	**288,487**	**301,757**
Halves	**20,665**	**30,615**	**30,066**	**36,708**
Randoms	**78,170**	**84,924**	**44,278**	**52,540**
Fishtails	**15,941**	**17,336**	**12,169**	**12,175**
	375,000	**409,181**	**375,000**	**403,180**
Veneer Increase per year: (M sq. ft., 1/10″):				
Fulls		**16,082**		**13,270**
Halves		**9,950**		**6,642**
Randoms		**6,754**		**8,262**
Fishtails		**1,395**		**6**
Increased veneer revenue per year:		**\$767,740**		**\$621,390**
Change in chip revenue per year:		**\$ – 113,869**		**\$ – 76,323**
Increased mill revenue per year:		**\$653,871**		**\$545,067**


VOLUME: MSF 1/10" VENEER
FROM 10-15" BLOCKS
MSF 1/10"
300M
250M
200M
150M
100M
50M
0
SCANNER SETTINGS
CONTROL
BEST CASE
6 4
FISHTAIL
6 4
RANDOMS
27 26.5
HALVES
54 52
FULLS
WIDTH CATEGORY


VOLUME: MSF 1/10" VENEER
FROM 15-20" BLOCKS
MSF 1/10"
300M
250M
200M
150M
100M
50M
0
SCANNER SETTINGS
CONTROL
BEST CASE
6 4
FISHTAIL
6 4
RANDOMS
27 26.5
HALVES
54 52
FULLS
WIDTH CATEGORY

OTHER CHANGES

For the sake of brevity the production figures and graphs for the following scanner changes were not shown. Call if you need them.

Reduction in Half Sheet Width

Reducing the half sheet width from 27 to 26.5″ had a very small effect on recovery (actually negative for the 10-15″ diameter blocks) yet a positive dollar return (about $20,000/yr.) was shown. In effect, the 26.5″ wide randoms were shifted into the higher-priced half sheet category, and the shift occurred more often in the smaller blocks.

Reduction in Minimum Strip Width

Changing the minimum strip setting from 6″ to 5″ had no effect on fulls or halves. Recovery of randoms and fishtail increased (revenue went up about $20,000/yr.). Reducing the setting to 4″ had no effect on fulls (halves dropped slightly in the 10-15″ blocks), randoms and fishtail increased: value was about $53,000/yr.

Across Grain Flaw Limit

Increasing the across grain flaw limit caused a slight increase in the volume of fulls, and a slight decrease in halves, randoms, and fishtails. A modest increase in revenue (about $28,000/yr.) resulted. However, since a defect will not be clipped out unless it exceeds the flaw limits in both directions, some sheets will contain larger voids. This decline in grade would tend to reduce the value of some fulls, and may reduce the real market value of the veneer.

CLOSING COMMENTS

WHERE ARE YOU NOW?

Before changing your scanner settings, the existing performance of the clipper should be checked and documented.

Accuracy: Are actual sheet widths as set?
More importantly, are sheet widths consistent?

Are actual margin widths as set?
Are they consistent?

HOW FAR CAN YOU GO?

Halves: Many mills use half sheets only for tailor-made core stock. Clipping half sheets tends to give you one wide piece and one narrow piece of veneer. Can you improve your overall drying and layup efficiency (and recovery) by clipping 18's instead of 27's? The 18's would probably stack on carts and feed into the dryer with about the same efficiency as 27's — but offer a greater volume of tailor-made core stock. And maybe it would significantly reduce the amount of 4″ and 5″ strip you now handle.

If anyone is interested in the concept, let us know and we'll run a computer analysis for you.

Sheet Width: Moisture-tolerant glues are allowing many mills to press higher MC veneer. Can you safely reduce full sheet clip width a few tenths?

Double Fishtail: Nobody likes double fishtail. But can you profitably run a double fishtail saw part time? Stack the veneer on a cart and have the utility man feed the saw periodically.