EXPERIMENTS IN YARD SPACING
By: W. R. MacPherson

Mr. Chairman, Gentlemen:

The remarks I have to make on air drying supplement those of Mr. Lane and Mr. Petersen. First, I would like to define two terms that I will use.

Test Block - Those units of lumber piled on an individual set of pile bottoms between two access alleys.

Spacing - That distance of air space between the tiers of units in a test block.

In the latter part of 1950 and the early part of 1951 Mr. Clayton and Mr. Benjamin of Hammond Lumber Co, Plant 2, Eureka, Calif. tested the rate of air drying of 4/4 heavy uppers on $2\frac{1}{2}$, 3 and 5 foot spacings. The results of this test were so decidedly in favor of the 5 foot spacing that the management of Arcata Redwood Co. felt that further work should be done to determine the yard spacing that would yield the maximum drying rate and the best uniformity of moisture content at the least cost.

It was decided to test the rate and uniformity of air drying on 4, 6 and 8 foot spacings. The following grades and thicknesses were used as test blocks on each of the three spacings:

1. 4/4 heavy uppers
   light uppers
   heavy shop

2. 5/4 heavy uppers

3. 8/4 light uppers
   light shop

A drying yard of approximately 3.5 acres was developed on which the tests were to be conducted.

The five access alleys were located north and south, and those blocks along the edges of the yard were filled first using a four foot spacing. The blocks in the test alleys were filled next with the exception of the locations designated for the test blocks. This was done to block off the direct wind and to minimize any accelerated drying of a test block due to an exposed position in the yard.

Sample pockets were built into the units in the standard manner. After the test blocks were filled, the sample boards were placed in the pockets according to a predetermined location plan for each test block. These sample boards were weighed every month as near as possible.

The moisture content limits were set, for heavy samples at 175-250% and for light samples, 60-100%.

All of the test blocks were completed by the middle of September 1951. Data will be collected until the test blocks reach an average of 40% moisture content when they will be taken into the kilns.

The information compiled from the data so far is incomplete and inconclusive but it does give an indication of what the final results might be.

The 4 foot spacing dried so slowly and gave such a poor uniformity in moisture content compared with the 6 and 8 foot spacings that it will be discontinued and replaced with a 5 foot spacing.

The 6 foot spacing dried considerably faster than the 4 foot and approached the 8 foot spacing drying rate. Another check will be made with two more test blocks to determine if this isn't somewhat of a yard locational effect or an experimental error inherent in the data. A definite pattern of moisture content in relation to location in the test block was apparent in the 4 and 6 foot spacings.

The eight foot spacing dried the fastest, and based on maximum kiln production, and the rates of annual turnover for 6 and 8 foot spacings, rough calculations show that the 8 foot spacing would require less air yard area and would also be cheaper per thousand. There was no definite moisture content location pattern as there was in 4 and 6 foot spacings. Some factors other than location may exert more influence on moisture content uniformity in 8 foot spacing than on the 4 and 6 foot spacings.

The results of these tests will be made available through the California Redwood Association.

I have a few slides to show pertaining to these remarks.

1. Air view of plant-site and air yard.
2. End view of 4, 7 and 8 foot spacings.
3. Curve of drying from 200% on 4, 6, and 8 foot spacings.
4. Average corrected drying rate factor over spacing.
5. Moisture content uniformity.

Thank you.