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Scaling and Check Scaling in the
U. S. Indian Service

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Practically all timber cut from Indian land is sold by actual scale, so the scaling is one of the most important parts of every timber sale. Large sales are often made, requiring several years to cut and necessitating several camps in operation all the time. Each camp requires a scaler, so several scalers are usually employed all the time. The men who fill these positions are chosen from the best scalers in the community and have usually had several years' experience. This would seem sufficient precaution to take to obtain a good fair scale to all parties concerned, but it has been found true in all lines of work where a man does the same thing day after day that he becomes more or less mechanical in its performance, and this is true in scaling logs the same as in other work. To obviate this tendency and to keep the scalers alert at all times, the U. S. Indian Service has inaugurated a system of scaling and check scaling which brings out the best efforts of the men at all times and incidentally gives as nearly a correct scale of the logs as it is possible to obtain.

Timber sold from Indian lands falls into one of two classes—Allotted timber or Tribal timber. If the timber is cut from allotted lands the allottee receives all the money from the sale of timber on his own allotment, so it is necessary to keep a separate scale for each Indian. If tribal timber is being cut, each land sub-division is kept separate when scaled, even though the money goes into a fund for the tribe, and is either used for some help to the tribe as a whole or divided pro rata among them. Each sub-division is kept separate to make the handling of the funds easier, for all the money is usually held in trust by the government for the individual Indian, or the Tribe, and can be spent only under supervision. This will show the reason for the scaling units referred to later.

Paragraph 9 of the timber contract used in Indian Service timber sales reads as follows:

"Timber will be scaled, measured, or counted by officers selected by the officer in charge. The cost of scaling and of supervision by the United States officers shall be paid from the proceeds of the sale of the timber. Timber will be scaled by the Scribner rule, Decimal C, and if required by officer in charge, shall be piled or skidded for convenient scaling. The maximum scaling length of all logs will be . . . feet. Logs over . . .
feet in length will be scaled as two or more logs in length not less than . . feet when practicable, and with the proper allowance for the increase in diameter at the points of division. Upon all logs 3 inches additional will be allowed for trimming. Logs overrunning this allowance will be scaled as though 2 feet longer. Diameters will be measured inside the bark at the small end of the log and recorded at the nearest inch above or below the actual diameter. Proper deductions will be made for defects in logs.”

The blanks in the above form are filled out differently in different localities, depending on the nature of the timber. At the La Pointe Agency the maximum scaling length under the latest

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**Fig. 1.**

<table>
<thead>
<tr>
<th>Township No.</th>
<th>46 N</th>
<th>Range No.</th>
<th>3 W</th>
<th>Mes.</th>
</tr>
</thead>
</table>

---

*Note: The table contains data that is not transcribed here for readability.*
Lot number end, showing this load containing logs from two descriptions, No. 29 and No. 25.

Scale number end of another load.
Series 2235 to 2262—white pine.
Series 1820 to 1831—hemlock.
Series 962 to 966—balsam.
contract is 18 feet. Logs over 18 feet in length are scaled as 2 or more logs in length not less than 12 feet when practicable.

The timber cut from Indian lands is always scaled before it is removed from the cutting area, usually on the land from which it is cut. In some cases, however, it is not practicable to scale on land, because of loading conditions in sleigh or dray haul camps, in which case the logs are scaled on the landing before they are put into the river or stream down which they are taken to the mill.

When a camp foreman receives his cutting list for the season he confers with the scaler assigned to his camp, and they designate each allotment, or sub-division of 40 acres, by a number as shown in the accompanying diagram (Fig. I.). The reason the descriptions to be logged here are scattered is because the area has been logged previously and all other timber removed from the locality.

As the area is cut over and the logs are skidded the number of the description from which each log is taken is placed on one end of the log, usually on the left hand end when facing the front end of the skidway. These numbers are put on the logs with black lumber crayon by the men who "tail down" at each skidway. The teamsters and foreman keep the logs separated as much as possible so only one description is logged at a time, but when logs are skidded to one skidway from more than one description the skidway man is always told what description the log comes from so he can number it correctly.

The logs from each description are recorded separately in regular scale books, the lot number always showing the description from which the log was cut. Sometimes a scaler is compelled to carry 8 or 10 scale books with him every day, especially in railroad logging, when one branch crosses several descriptions and loads are taken from each.

When the logs are scaled, each log must be numbered again with the scaling number, on the opposite end from the lot number, and the number on the end of the log must correspond to the number in the scale book opposite which the scale is recorded. This brings the scale number on the right hand end of the log when facing the front end of the skidway. Of course, this exact method may not be followed but it is easier for the scaler to put the scale number on the right hand end, and it is usually done that way.

Several species of timber are usually found on each description and in order to make the work of recording and reporting the scale easier, each species is given a series of numbers, or the leading species is given one series, and all others are grouped under another series. In the latter case the mixed logs are grouped under one series but each species is recorded on a separate page, or in a separate column of one page. For
example, if white pine predominates on one description, the white pine logs will be numbered beginning with 1, consecutively, until all are numbered or until the number 10,000 is reached, when the series again begins with 1, but with a line beneath as 1, 50, 697, etc., thus doing away with writing large numbers. All other logs from this description are classed under another series, exactly as above in numbering. The species, however, may be arranged as follows: Norway Pine, 1 to 100; Hemlock, 101 to 200; Spruce, 201 to 220; Balsam, 221 to 240; Birch, 241 to 260; Maple, 261 to 280; Oak, 281 to 300, etc., depending on the amount of each species on the description. The scale books used contain 75 sheets or 7,500 logs in each book. When one book is filled on one description another one is started, taking the numbers beginning with the next number above the last one in the old book, continuing until all the logs are scaled.

The actual scaling of the logs is done with the Scribner Decimal C rule. Deductions are made for defects and this, of course, is the place where judgment is necessary. Various defects, such as sap rot, stump rot, punk, shake, fire scars and damage, ant holes, dry rot, etc., all require different methods of figuring deductions, and the scaler must be sure of the scale of every log before he records it, for the inspector may decide to find out how much he gave for it. Lengths should be measured often for the sawyers sometimes make mistakes of a few inches in length, which often increases the scaling length of the log.

The scaler must be very careful to always record the scale of a log opposite its number for his book is his only record. It would be easy to get the scale mixed if the scalers were not always open to inspection and required to keep their books correct.

When the logs are being hauled by rail, and often in sleigh haul camps, they are moved or loaded so fast that it is impossible for one man to number and scale them, and keep ahead of the crew. In such cases a marker is provided for each scaler who numbers the logs as they are scaled. This gives the scaler time to inspect each log and be sure of his scale. A good scaler, with a marker, can scale from 125,000 to 200,000 feet of timber per day if necessary, varying, of course, with the size of logs and the average amount of defects.

Each scaler reports at the end of each week all timber scaled by him during the week, a separate report being required for each description from which logs were taken. Four copies of each report are required, one to go to the purchasing company, one copy to the Indian Agent's office for the use of the clerks in figuring the value of the timber, one copy to the Indian allottee, if land is allotted, or to the inspector if the land is tribal, and one copy for his own reference, in making the next report from
SCALING AND CHECK SCALING IN INDIAN SERVICE

That description, or for reference in case any trouble ever comes up regarding the report.

These reports are made on regular forms. The first column represents the number of logs of each species scaled on the particular description during the week; the second column, the scale for that number of logs. The two columns headed “Previous scale” show the number of logs and the scale for all timber previously taken, and the last or “Total scale” gives the total of the first two, or the total number of logs and total scale up to the date of the report. It is easy to figure from these reports the value of the timber removed at any given date, and if the original estimate is known, approximately the amount of timber is left on the area.

SCALER’S REPORT

For Week ending May 13th

Allotment on the

of Section 12, Town 46, Range 13, West, on the St. Croix River Reservation, Wisconsin.

for J. S. STEARNS LUMBER CO., by

<table>
<thead>
<tr>
<th>Kind of Timber</th>
<th>Scaled During Week</th>
<th>Previous Scale</th>
<th>Total Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mer, Green White Pine</td>
<td>1,500</td>
<td>3,200</td>
<td>4,700</td>
</tr>
<tr>
<td>Green Norway</td>
<td>100</td>
<td>1,000</td>
<td>1,100</td>
</tr>
<tr>
<td>Green Hemlock</td>
<td>80</td>
<td>600</td>
<td>680</td>
</tr>
<tr>
<td>Basswood</td>
<td>50</td>
<td>500</td>
<td>550</td>
</tr>
<tr>
<td>Elm</td>
<td>41</td>
<td>1,000</td>
<td>1,041</td>
</tr>
<tr>
<td>Ash</td>
<td>2</td>
<td>20</td>
<td>22</td>
</tr>
<tr>
<td>Maple</td>
<td>10</td>
<td>100</td>
<td>110</td>
</tr>
<tr>
<td>Birch</td>
<td>4</td>
<td>100</td>
<td>104</td>
</tr>
<tr>
<td>Oak</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spruce</td>
<td>3</td>
<td>300</td>
<td>303</td>
</tr>
<tr>
<td>Tamarack</td>
<td>46</td>
<td>100</td>
<td>146</td>
</tr>
<tr>
<td>Balsam</td>
<td>47</td>
<td>1,000</td>
<td>1,047</td>
</tr>
<tr>
<td>Poplar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cedar</td>
<td>9</td>
<td>200</td>
<td>209</td>
</tr>
<tr>
<td>Totals</td>
<td>3,106</td>
<td>15,400</td>
<td>18,506</td>
</tr>
</tbody>
</table>

Each scaler’s work is checked up every week or ten days and the results reported to the Chief of the Indian Forest Service at Washington, D. C. Regular inspection forms are used, and are kept by the inspector, and are open to inspection at any time by the Chief or anyone from the Washington Office.

In checking up a scaler’s work the inspector selects the logs he will scale and puts the number of each log in the column headed “Log No.” and opposite this number in the column headed “Insp.” his scale of that log. Usually 100 or more logs are
taken for a check and these may be taken wherever the inspector chooses, or of any species or several species. When the desired number of logs have been recorded and scaled as described above, the inspector takes the scaler’s books and looks up the logs and records the scale found in the book for each log in the column marked “Scaler.” Each column is then added up and the total scale given by the scaler and inspector found. The difference of these two will show the difference of scale for the total number of logs, or the per cent of difference can be easily found. This variation may be as much as 1% in good timber, or even 2 or 2 1-2% in large, shaky hemlock, and be considered close, but if greater than that something is wrong.

The check scale often shows the variation on some individual logs to be very large in comparison with the total variation. This is due to differences in judgment of the seriousness of defects. It is impossible for two men, no matter how good scalers they may be, to agree on the scale of large, defective or partly rotten logs, but if several are scaled and one man’s scale varies back and forth with the other, the average will be very good and all that can be expected. The smaller differences are due to the reading of the rule. This is possible because of the system used of taking the nearest inch above or below the actual diameter as the scaling diameter. If the actual diameter is near the half inch, or the log is not exactly round, it is very easy for one to make a difference of one inch on the diameter, either above or below the other, thus making a difference of 10, 20 or even 50 feet on one log. These differences, however, always vary back and forth so they about balance if a large number of logs are taken as a check.

The method of checking up with each scaler every week or ten days 100 logs at a time is better than taking a larger number of logs at longer intervals. The usual 100 logs will be enough to equalize the difference due to reading the rule and if several defective logs are taken the scaler’s judgment of such logs can be obtained as well as if more were taken. This will always keep the scaler “on the job,” too, and doing his best, for he never knows when the inspector will be around or where he will select his logs for the check scale. A scaler can never slight his work or guess at the scale of the logs, for the inspector may find them. If a scaler averages too large a scale, even though it favors the Government, or the Indian, he is just as sure of being discharged as if his scale was too low.

When the area has all been logged over and the work is done for the season, several scalers are taken to each camp in turn, usually all of the scalers go together from camp to camp and make the “pick up” as it is called. This means that the crew goes over very carefully all of the area logged over during the
season and if there are any logs found that should have been taken they are scaled, stamped with the regulation U. S. hatchet and reported the same as the other logs. If the purchasing company wants to go over the area and remove these logs they have a perfect right to do so, otherwise they are left in the woods. This feature encourages closer utilization of the timber and insures cleaner work on the part of the company than could be gotten in any other way.

This does not complete the inspection, however, for the inspector may find an inspector from Washington in town any day, and have him go to the camps with him and check up both his work and that of the regular scaler. Usually the inspector and the Chief from Washington both scale the same logs, then check up with the scaler. If the scaler's scale does not agree with the inspector's scale, or with the Chief's scale, or the inspector's scale does not agree with the Chief's scale, something is wrong and someone will probably be fired, and you can be reasonably certain it will not be the Chief.