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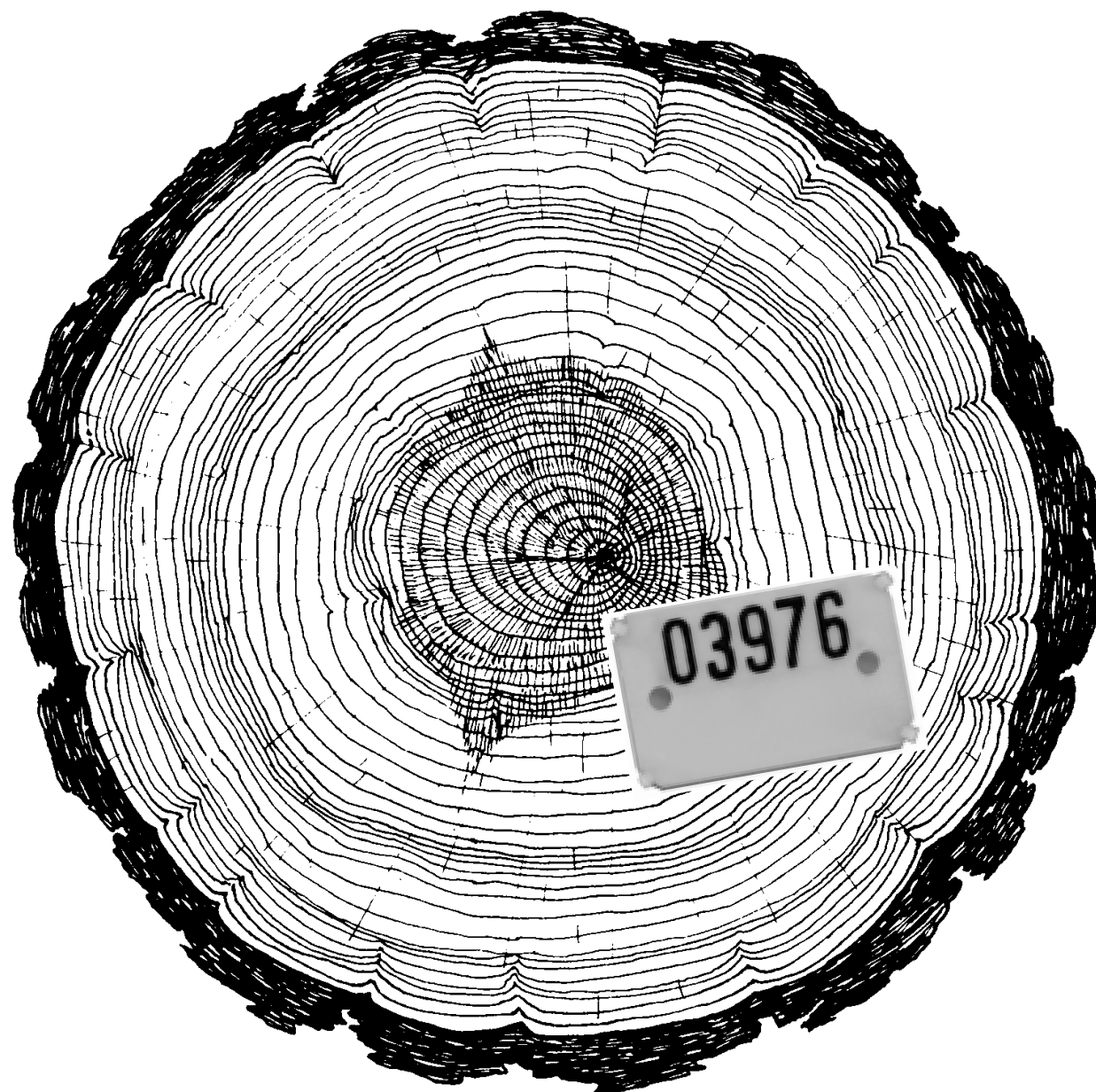
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Use of Tags for Identification & Improved Log Accountability

—*An Update*



Use of Tags for Identification & Improved Log Accountability —*An Update*



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BACKGROUND

Several years ago, the San Dimas Technology and Development Center was asked to investigate the use of tags to replace log branding and painting. This meant that the tag must be placed on the log prior to leaving the sale boundary. In July 1994 the Center reported on an initial trial where paper reinforced tags were stapled onto logs for several days at a woods landing.

In that document, *Use of Tags for Identification & Improved Log Accountability*, it was concluded that attaching tags to logs was easily done with existing and relatively inexpensive tools and methods; but, the process was slow and did not reduce hazards to the laborer. It was further concluded that because tags could be individually numbered or bar coded they were better identification; they were more easily read; could contain site specific information; and were visible from greater distances.

A need to become more familiar with the pulping process; to learn more about tag digestibility; and to evaluate an Austrian log tag were suggested as items of further pursuit.

This report documents progress since that time.

PULPING PROCESS

The pulping process can be grouped into chemical, semichemical, and mechanical. The latter two use heavy refiners and therefore, tags present no problems because the narrow disk openings of these processes disintegrate any tag. The first group however is of interest because the chemical process does not adequately disintegrate a non-digestible tag. The tag shows as a "fisheye" in the final product or causes a hole in the paper as a result of damage in the forming stage. It is therefore important to employ a dissolvable tag in timber marking so that the chemical pulp product is not adversely affected.

There are two basic processes sulfate (kraft) and sulfite. The kraft method liberates fibers by dissolving the lignin through high temperature reaction with sodium hydroxide and sodium sulfide. This process is basic. The acid sulfite process is acidic. Therefore, the ideal tag material would dissolve in an acid or base solution. The kraft reaction takes place within 90 minutes whereas sulfite takes about 5 hours. The tag must dissolve within these constraints.

After pulping, fibers are transported to a bleach plant where conditions are not favorable for tag material to dissolve.

Table 1—Pulp mills in the United States

STATE	KRAFT	SULFITE
ALASKA		1
ARIZONA	1	
ARKANSAS	7	
ALABAMA	16	
CALIFORNIA	4	
FLORIDA	9	
GEORGIA	7	
KENTUCKY	3	
LOUISIANA	9	
MAINE	9	1
MISSISSIPPI	6	
MINNESOTA	1	
MONTANA	1	
MICHIGAN	2	
PENNSYLVANIA	2	
NEW YORK		2
NORTH CAROLINA	10	
OREGON	4	
OKLAHOMA	1	
OHIO	1	
SOUTH CAROLINA	5	
TEXAS	6	
VIRGINIA	3	
WISCONSIN	2	8
WASHINGTON	3	6

While the major pulping process is kraft; the sulfite process is used to make specialty fibers in some states. Table 1 contains a summary of data collected from the 1991 International Pulp and Paper Directory and table 2 is the percentage of mills by FS region.

Table 2—Percentage of mills by Forest Service region.

FS REGION	KRAFT	SULFITE
1	100	0
2	0	0
3	100	0
4	0	0
5	100	0
6	55	45
8	97	3
9	62	38
10	0	100

MARKET SEARCH

A limited search revealed two suppliers of tags which claimed to dissolve. Avery Dennison, a major U.S. label manufacturer, markets two types—a wet strength paper substrate with either a 1 mil overlamine on one side or with scuff resistant varnish on both sides; and American Signumat Ltd., an importer, markets a plastic tag manufactured in Austria.

TAG DIGESTIBILITY

Technical investigation revealed that the Paper and Cellulose Industry of Switzerland had tested the Signumat tags extensively in 1988 and recommended to the Central Department of the Forestry that they be used in kraft mills. The Central Board of the Austrian Paper Industry had successfully tested Signumat tags for digestibility in 1990 and made similar recommendations.

In the U.S. the technical department of Crown Zellerbach at Camas, Washington tested the wet strength paper with plastic overlay in 1987 and reported acceptable digestibility when processed through a kraft digester.

The Timber Sale Technology Committee determined that Signumat tags should be tried on a Black Hills timber sale. As a first step, the technical department at Stone Container (where chips from the sale would be processed) was asked to approve a test procedure for determining digestibility. Based on this coordination, the University of Washington tested the digestibility of both the Avery Dennison and Signumat products. In August 1994 the University reported that all three tag materials dissolved

favorably under kraft pulping conditions typical for linerboard production.

SIGNUMAT TRIALS

Stone Container issued a letter to the purchaser indicating their approval to begin field trials in South Dakota in April 1995; however, legal complications resulted in the trial being aborted.

Since there are problems in branding logs fallen with a shear, rotary saw, or are frozen, it was determined to wait with field trials until winter.

1996 Inyo NF Trials

In January 1996, trials were arranged on the Inyo National Forest's Railroad Timber Sale. The loggers deck hands agreed to apply the tags. During the trial, tags were typically applied sequentially in the woods; however, after a woods sort, loading onto the trucks and then rolling out the load at the scale yard, the logs seldom arrived sequentially. To avoid adverse reaction from casual observers, and to comply with current Federal regulations, logs were also painted and branded. A total of 565 tags were installed with little difficulty.

The deck hand was given a tool similar in many respects to a hammer (see figure 1), a plastic holster containing 40 tags (see figure 1), and a case of 1000 tags in a cardboard box. The tags are designed with small hooks on the top of each corner and the "specialized" hammer is grooved around the head to grasp the hooks as the hammer is pushed into the holster. The 1 inch by 3/4 inch (25.4 mm x 19 mm) tags are cast with small barbs on the back side to grasp the log fibers as the

tag is hammered gently against the surface.

The tool and holster cost about \$100.00 and each tag costs 10 cents in 1 case lots. SDTDC personnel spent a short amount of time training and then photographed the operation. In previous trials, 3 cent paper tags were slower to install on the log than painting and branding. In this trial, the Signumat tags could be installed faster.



Figure 1—Signumat hammer.



Figure 2—Signumat tag in a log.



Figure 3—Frozen log with a tag.

There were no conditions encountered which would make the tags impractical to use. Logs were inspected after reaching the mill. None of the tags were missing or damaged.

On the negative side, the risk to the person installing the tags remained unchanged from a hammer branding operation. The tags can be removed with a knife or screwdriver, however, the time and effort required to do so is greater than that needed to remove stapled paper tags.

Flathead NF Trial

Although there was a skift of snow during the Inyo trial, the ponderosa pine logs were not frozen. In February a record cold spell hit the Northwest, and Center personnel traveled to the Tally Lake Ranger District of the Flathead National Forest to experiment with tags on lodgepole pine, western larch, and Douglas fir logs in the American Timber Co.'s yard and at one winter logging site. The majority of time, tags were placed on the sheared end of frozen logs. (The worst of all marking scenarios). Tags were installed as easily in Montana as in the Inyo NF tests.

The following comments were received from the Sale Administrator at Tally Lake:

“Signumat as I perceive it, is just a refinement of the existing B&P requirement. My concern is that you still have to physically get close enough to the log to hammer plant the tag.

CONCLUSION

The conclusion can be drawn that the Signumat tags will work in the vast majority of situations. Tags would be a clearer and more site specific identification than the existing hammer brand on logs; and the use of yellow paint for marking might be eliminated. There may be however, more efficient methods of tag application (pneumatic tools) that require further study. Overall though Signumat tags can be used at most pulp mills that do not utilize the sulfite process.

The Timber Sales Technology & Development (T&D) Program is soliciting ideas from field personnel. If you have an idea which you would like to see investigated or tested; have seen something utilized in another industry and wondered if it could be modified to help you do your job; or just think that there must be a system, method, tool, or new technology which could improve the way you do business—this is the time to let us know. With reduced budgets and staff, it is even more important to have the most efficient tools and methods. The inserted form is provided for your use as needed.

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