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Field Note N°: Felling-6  
Previous Reference Sheet N°: None

## FELLER-BUNCHER ELECTRICAL AND FIRE-SUPPRESSION SYSTEMS

### INTRODUCTION

There are currently no universally accepted standards in Canada for the number of lights and other electrical components to be installed on harvesting machines. This is of particular concern to the forest industry where high machine production is required on double shift operations through a variety of environmental conditions. Also of concern are increasing insurance rates which are, in large part, due to fires blamed on faulty electrical systems. There is, therefore, a need for both equipment manufacturers and future equipment purchasers to know what are the common lighting, electrical component, and fire suppression configurations and what has been the experience with them.

To gain some insight into the addition of electrical components and on the use of automatic fire suppression systems, a survey spanning Nova Scotia to Saskatchewan was conducted in conjunction with regular FERIC field work. For each of the 17 feller-bunchers examined, the number of lights was recorded as well as any electrical add-ons such as radios and air conditioners. Also, the types of fire suppression systems in use were noted with the owners comments on their performance. The machines were all contractor owned and consisted of Case, Caterpillar, John Deere, Hitachi, Koehring and Timberjack Timbco feller-bunchers.

### LIGHTS AND ELECTRICAL COMPONENTS

The majority of machines were double shifted for at least part of their operating period. Those machines on single shift typically had 9 or 10-hour shifts and, therefore, also worked in the dark regularly. The lighting arrangement varied with the design of each machine. Table 1 shows a summary of the light positions and numbers. The types of lights in use included an equal proportion of 150 W sealed beam and halogen lights. In most cases, there were two tiers of lights on the front of the machine. One level was placed along the top of the cab and the other along the bottom of the cab and

on the opposite side of the boom. The upper level consisted of two to four lights and the lower level of zero to three lights. The majority of machines had six lights in total, pointing forward. To the right, where the boom generally obstructs vision to some degree, there were either no lights or one light in most cases. To the left, where the cab doors faced, there were generally one or two lights, but there were no lights in 30% of the cases. Similarly, to the rear there were generally one or two lights, but in five cases, there were no lights, including two cases where the operator had an unobstructed view. In five cases, lights were also attached to the boom to project toward the felling head. These boom mounted lights, however, were often damaged and tended to require frequent repairs. In most cases, one or two additional lights were installed in the engine compartment to assist maintenance work.

Table 1. Light placement on 17 feller-bunchers

Number of Lights	Number of machines observed					
	Front		Right	Left	Rear	Boom
	Top	Bottom				
0	-	2	8	5	5	12
1	-	2	8	9	4	0
2	3	11	1	3	8	5
3	5	2	0	0	0	0
4	9	0	0	0	0	0

Radios and air conditioners are other electrical components often added to feller-bunchers. The majority of the machines were equipped, at least, with AM radios and, often, with AM/FM cassette radios. Two-way commercial radios were installed in half of the machines and one of these also had a CB radio. Air conditioners were installed in seven machines with four reported to have worked well and three to have had mechanical problems.

## **AUTOMATIC FIRE SUPPRESSION SYSTEMS**

The use of automatic fire suppression systems is becoming widespread across Canada. Of the 17 machines surveyed, 12 were equipped with automatic systems (9 Walter Kidde, 2 AFEX and 1 Ansul). The users of these systems reported good experience so far. The oldest machine included in this survey was a 1986 model so these results only apply to systems installed in the last two to three years. Of the 12 systems encountered having a combined total of 41 000 operating hours, there were three accidental discharges and one fire put out by the automatic fire suppression systems. Maintenance of these systems, in all cases, consisted of regular visual checks by the owners and regular inspections by the system dealers.

## **DISCUSSION AND CONCLUSIONS**

Generally, six lights facing forward and one or two facing other directions where the operator has some view was reported to be sufficient. To improve visibility further, it was suggested that some lights be directed towards the tops of the trees in front of the machine since it is often difficult to differentiate between merchantable and unmerchantable trees without being able to see the tops. Operators also reported that lighting systems in current use do not allow for good depth perception. The use of halogen lights was regarded by some as unnecessary and too expensive, but it was agreed that halogen lights provide a higher quality illumination. As a safety feature, a light directed at the operators exit path from the cab was also highly recommended.

The majority of feller-bunchers have personal AM or AM/FM cassette radios installed. Many are also equipped with 2-way radios. This being the case, feller-bunchers should have 12 V receptacles installed in the cab as a standard feature.

Automatic fire suppression systems installed over the last 2 or 3 years on the machines included in the survey have proven acceptable. The reliability problems of the automatic fire suppression systems, reported in the past, seem to have been overcome by built-in electrical testing circuitry and regular inspection by dealer personnel.

Overall, there seems to be consistency in the amount of electrical components installed on feller-bunchers. While there are potential improvements to be made to the individual electrical components such as air conditioners, the first step should be to develop some industry standards for the desired elements of the electrical system. Working with manufacturers, it will

then be possible to maximize the safety and efficiency of the electrical system.

## **FURTHER INFORMATION**

**Ansul Fire Suppression Systems**  
Levett Safety Ltd.  
33 Laird Drive  
Toronto, Ontario  
M4G 3S9  
Tel. (416) 425-8700

**Lease AFEX Fire Suppression Systems**  
Cronan Fire Equipment Ltd.  
1705 Meyerside  
Mississauga, Ontario  
L5T 1B9  
Tel. (416) 677-5122

**Walter Kidde Fire Suppression Systems**  
Walter Kidde & Company of Canada Ltd.  
340 Traders Blvd. E.  
Mississauga, Ontario  
L4Z 1W7  
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