MAINTAINING MICHIGAN'S WOODS LABOR SUPPLY

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ABSTRACT

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by

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Woods labor problems in Michigan have received considerable attention in recent years. This report presents the results of a detailed study of these problems. The study objectives were: (1) to determine the current and to project the future number of woods workers associated with current and projected levels of timber output; (2) to determine woods working conditions, both current and future, necessary to attract an adequate supply of woods labor; and (3) to evaluate the problem of maintaining an adequate woods labor supply in the face of projected increases in timber output. To meet these objectives, detailed interviews were held in 1967 with representatives of pulp mills in Michigan and what the mills considered their "best" producer suppliers. Ten pulp mills and 20 producers were interviewed.

Approximately 40 percent of the 8,924 full-time equivalent workers in logging in Michigan were involved in pulpwood production in 1966. Projected pulpwood labor requirements for 1980 indicate that approximately 3,530 workers will be needed to harvest the 3,180,000 cords of pulpwood expected in that year. Pulpwood labor requirements for 1980 will be approximately the same as present day employment levels because of (1) increased productivity of capital-intensive operations, (2) lengthening of the work year made possible by the introduction of new technology, and (3) potential use of chips from the waste of wood-using plants.

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Wood shortages occurred at pulp mills in Michigan at varying periods during 1965 and 1966. The cause of these shortages appears not due to a woods labor shortage in a physical sense, but to economic conditions limiting labor availability. Foremost among these conditions were low average annual earnings, the short work year, the hard physical work, and the lack of security.

The sampled pulpwood producers counteracted shrinking labor supplies by building capital-intensive, high volume harvesting operations. With increased productivity and hikes in production volume, producers have been able to improve working conditions by offering higher wages, providing some fringe benefits, utilizing less labor-intensive harvesting methods, and pursuing a longer work year. However, the pulp producer's inability to obtain regular and sufficient contracts over longer periods of time have complicated efforts to improve woods working conditions required to maintain an adequate and efficient labor force. Difficulty in securing long-term capital funds because of short and fluctuating wood orders also present problems for some producers.

A prerequisite to increasing the availability of woods labor appears to be a change in the wood procurement policies of pulp companies. Contracts of longer duration and larger size given to regular and reliable producers would be among the desirable actions.

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CHAPTER I

INTRODUCTION

Woods labor has recently become a subject of prime importance in the forest economy of the Lake States and other regions of the United States and Canada. Wood shortages experienced by pulp mills and other Lake States wood-using industries at varying periods during 1965 and 1966 were attributed largely to a woods labor shortage.

In 1967 an oversupply of wood production followed the previous wood shortage conditions. However, the causes of the wood shortage and the availability and requirements of woods labor for projected increases in timber output are still problems that face the forest products industry in Michigan and elsewhere.

The purpose of this report is to investigate future potential woods labor requirements in Michigan, and to determine what can be done to insure that requirements are met. The objectives of the study are:

1. To determine the current and to project the future number of woods workers associated with current and projected levels of timber output.

2. To determine woods working conditions, both current and future, necessary to attract an adequate supply of woods labor.

3. To evaluate the problem of maintaining an adequate woods labor supply in the face of projected increases in timber output.

Importance of Labor

Michigan's annual timber harvest requires close to 10,000 man-years of labor. About two-fifths of this labor is devoted to pulpwood production, which in 1966 totaled some 1,570,000 cords (Pfeifer, 1967).

The production by woods labor forms a base which contributes significantly to the state's economy. Excluding logging, value added by manufacture as reported by the 1963 Census of Manufactures for the wood-using industries in Michigan totaled $496 million. These industries provided employment for almost 47,000 people.

Despite the magnitude and the importance of the woods labor force, relatively little attention has been given to it until recently. Reliable data on the actual number of woods workers have not been available. And characteristics and working conditions of these people is not widely known.

Past statistics reveal a long term outflow of labor from the woods, similar to that which has been taking place in farming. It has been generally acknowledged that the opportunities in alternative employment have been better, and this influence helps to explain the flow of young and prospective woods laborers to other forms of employment.

A focal point of this study is the producer operation. Pulp mills receive their raw material supply from one or a combination of three sources: 1) wood purchased directly from independent producers, 2) wood purchased through pulpwood dealers, and 3) wood purchased from company owned harvesting operations or contractors harvesting company owned timber rights. Producers can be and are involved at all three levels.

By far the major source of supply for Michigan mills is direct purchases from independent producers. Thus, independent producers employ the major portion of the woods labor force. If current industry trends toward fewer and larger producers continues, it is here where many aspects of the labor problem must be faced. Until there is stability to our producers, little improvement can be made for their employees.

Procedure

The study area is the state of Michigan, with concentration in the pulpwood industry. Pulpwood is the leading product of the Michigan timber harvest. Much of the labor used in the production of pulpwood is also used in the harvesting of other timber products, and similar conditions and problems exist throughout.

Detailed interviews were held in the summer of 1967 with representatives of pulp mills in Michigan and a sample of their producer suppliers. Interview schedules, given in the Appendix, were standardized for each class.

All ten of the pulp mills in the state which actively purchase pulpwood were surveyed. Twenty producers were sampled. The sample was drawn by asking each of the pulp mills sampled to identify their "best" producer suppliers. Producers were selected on this basis to determine the qualities desired by mills among their suppliers, the economic and market conditions existing which contributed toward their success, and what these producers feel can be done to help solve problems normally confronted on pulpwood operations. The location of the sampled mills and the number of sampled producers by county is shown

in Figure 1.

Operations of the sampled producers are compared with results of other studies that have described the general nature of woods labor and pulpwood production systems that currently exist.

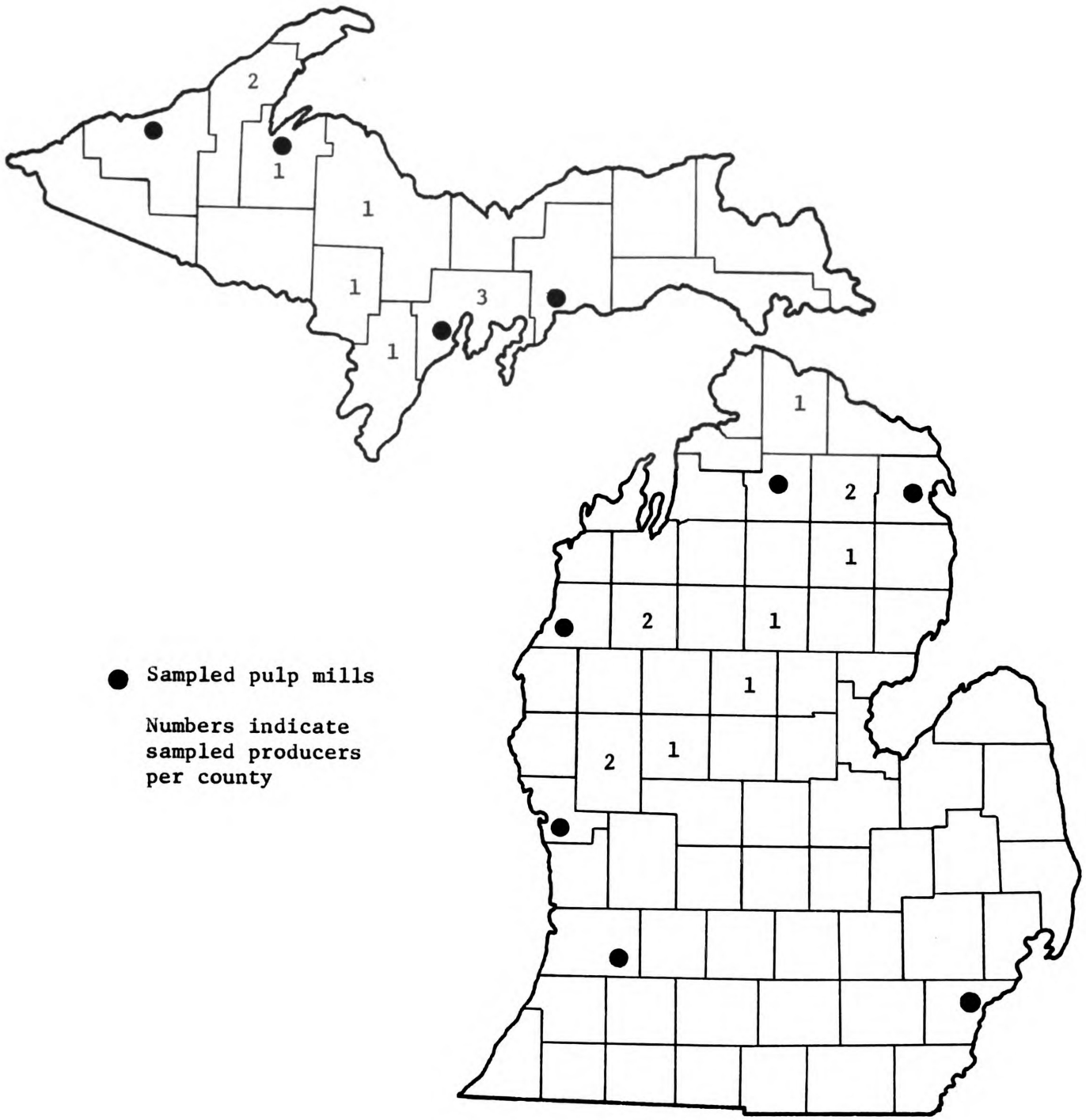

Figure 1. Location of sampled pulp-using mills and sampled pulpwood producers in Michigan.

CHAPTER II

THE PRESENT LABOR FORCE AND FUTURE LABOR REQUIREMENTS

During the 1965 and 1966 pulpwood shortage in Michigan, reports from many sources identified the cause of the wood shortage as an insufficient supply of woods labor. Descriptions ranged from an estimated shortage of 1,000 workers in Michigan's Upper Peninsula (Milwaukee Journal, February 13, 1966) to "The most critical woods labor shortage in 25 years" in the Lake States area (Northern Logger, January 1967). Similar pronouncements appeared in wood industry magazines, journals, local newspapers, and other media.

Concurrently with the woods labor shortage descriptions, reports were being issued indicating surplus manpower levels in many of these same areas. An adequate labor supply was found to be available for expanding wood-using industries in northeastern Minnesota (Blyth, 1964). One study showed substantial unemployment levels and a migration of surplus manpower from Michigan's Upper Peninsula (Northern Michigan University, 1965).

Indications are that timber was not a limiting resource input to the wood shortage situation. An example of this is given by Garland (1964) showing the actual cut of pulpwood in the Upper Peninsula has been only one-third of the allowable cut.

The implication to be reached from these sources is that the quantity of labor supplied to the woods is affected more by other factors than by the size of the labor resource. In other words, social, institutional, and economic factors (e.g., working conditions and wages) could be limiting the availability of the physical labor supply.

Present Labor Force

Population

Reliable data indicating the actual number of woods workers in Michigan are not available. Reports from various sources indicating population numbers are considerably below population estimates determined by the Forest Service (Hair, 1963) and James (1966). One reason for this discrepancy is because a large part of the woods labor force is composed of part-time workers.

The 1963 Census of Manufactures reported 531 establishments (logging camps and contractors) employing a total of 1,726 employees in Michigan (Table 1). Census data were gathered by report forms mailed to all establishments identified as loggers on Social Security Administration records. Excluded were employees engaged in trucking timber or in other forms of transport who performed no cutting operations. Also excluded were (1) employees of logging and woods operations conducted in combination with sawmills and pulp mills, (2) farmers and other part-time, self-employed operators, and (3) workers engaged in the collection of bark, sap, and other forest by-products. Thus, many woods workers included in other Census classifications (sawmills, pulp mills, veneer and plywood mills, etc.) were not identified as loggers in the Census. In many cases, part-time, self-employed loggers were not even identified as loggers.

A similar situation is apparent for estimates of the woods labor force derived from Michigan's unemployment insurance records. Prior to January 1, 1966, loggers were not required to carry unemployment insurance if they employed three or less workers. Workers reported

Table 1.--Logging establishments and workers employed in the Lake States, by state, 1963.

State	Establishments	All employees	Production Workers
Michigan	531	1,726	1,564
Minnesota	349	1,622	1,451
Wisconsin	329	1,269	1,119

Source: U. S. Bureau of the Census. Census of Manufactures, 1963. Industry Statistics: Logging camps, sawmills, and planing mills, MC63(2)-24A. Washington: Government Printing Office, 1966.

employed prior to this date--a monthly average of 1,058 workers in 1965--would indicate less than the actual number of workers for this reason. Beginning January 1, 1966, employers were required by law to report if they employed one or more workers. Even though an increase in the number of woods employees reported resulted (Table 2), the largest number reported for any one month in 1966 was 1,551 in June. Here, again, it would seem a large group of workers are not reported, either because they may be self-employed (independent), or, in some cases, because the employer does not comply with the unemployment insurance laws.

Due to the inadequacy of these statistics, an attempt was made in 1966 to estimate the number of workers in logging and pulpwood in Michigan by the Michigan Department of Conservation and the Departments of Employment Security and Economic Expansion. An estimate of the woods labor force was made by a direct count through industry contacts. This survey of the current work force estimated 4,500 Michigan workers in pulpwood cutting or in related positions. Approximately two-thirds

Table 2.--Woods employment reported under state unemployment insurance laws, 1965 and 1966.

Month	1965	1966
January	1,128	1,385
February	1,146	1,452
March	987	1,365
April	571	904
May	943	1,240
June	1,262	1,551
July	1,159	1,544
August	1,174	1,535
September	1,101	1,495
October	1,099	N.A.
November	1,050	N.A.
December	1,081	N.A.

N.A. Not available.

Source: Michigan Employment Security Commission, Detroit, Michigan.

were located in the Upper Peninsula and one-third in the northern half of the Lower Peninsula. A more detailed analysis for the Upper Peninsula estimated from 3,257 to 3,332 woods workers in 1966. While the estimate of 4,500 workers may represent the number of workers in pulpwood cutting or related-like work, additional workers involved in transporting the timber cut make the total woods labor force harvesting Michigan's timber products substantially more.

An alternative approach to estimating employment figures is to relate output of products per man-day or man-year to the total volumes of timber output. Employment estimated in this manner is in terms of full-time equivalent workers. The actual number of workers will be greater, depending upon what extent the labor force is composed of part-time workers.

The importance of part-time workers in pulpwood production, however, is decreasing. In 1947 it was estimated 85 percent of the work force harvesting Lake States pulpwood was composed of part-time, transient operators (McNutt). Since that time the availability of part-time workers, such as small farm operators, has decreased considerably as these marginal operators have shifted to other forms of employment, largely in urban areas. And increasing mechanization of pulpwood harvesting operations has required more full-time employment.

An example of the decreasing part-time employment is given by the producer operations which were sampled for this study. Whereas part-time employees made up 30 to 40 percent of their work force in 1962, they were only 8 percent of all workers employed in 1966. Forty percent of the pulpwood producers interviewed reported using part-time employees, but in only two instances did these workers contribute

significantly to the operations' output. With fewer and higher volume, stable operations in the future, the employment of part-time labor will be further minimized.

Employment estimates in terms of full-time equivalent workers have been determined by the Forest Service. Hair (1963) estimated employment in timber harvesting in the United States, by state, for the years 1954 and 1958. The estimated employment for Michigan was 9,850 workers in 1958.

Recent and projected employment in logging in Michigan in terms of full-time equivalent workers has also been reported by James (1966). The employment associated with each timber product for the years 1952, 1962, and 1980 as estimated by James is shown in Table 3. Full-time employment was calculated on the basis of a full work-year consisting of 200 work-days.

Logging employment in Michigan totaled more than 8,900 workers in 1966. This is indicated in Table 4. The employment level in each product group is based on different assumptions. The employment occurring in the sawlogs and veneer logs and other raw timber product groups is based on (1) employment figures determined by James, and (2) an assumption of a linear trend in employment between 1962 and 1980. The figure of 3,758 workers associated with the pulpwood category, however, is based on (1) Michigan's 1966 roundwood pulpwood output of 1,495,244 cords (Pfeifer, 1967), and (2) an average production of 2.0 cords per man-day for 200 work-days.[1]

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[1]The figure of 2.0 cords of output per man-day has been cited by the American Pulpwood Association as an industry-wide average for pulpwood productivity (Armstrong, 1966). If pulpwood employment was determined by assuming a linear trend in employment between 1962 and 1980, a larger figure would result than the 3,758 workers shown in Table 4. In other words this would imply a lower man-day productivity than what was recognized as the current industry average in 1966.

Table 3.--Recent and projected employment in forest management and logging in Michigan, as estimated by James, 1952-1980.

Product	1952	1962	1980
	(Full-time equivalent workers)		
Forest management and protection	2,600	3,100	4,200
Logging:			
Sawlogs and veneer logs	5,000	2,250	2,250
Pulpwood	3,240	3,350	6,490
Other raw timber	8,380	3,200	1,920
Total logging	16,620	8,800	10,660
Total management and logging	19,220	11,900	14,860

Source: James, Lee M. Michigan timber production--now and in 1980. Part I--Timber production. Mich. Agr. Exp. Sta. Res. Pap. 38, Natural Resources. 1966. pp. 1-16.

Table 4.--Full-time equivalent employment in forest management and logging in Michigan, 1966.

Product	1966
Forest management and protection	3,344
Logging:	
Sawlogs and veneer logs	2,250
Pulpwood	3,758
Other raw timber	2,916
Total logging	8,924
Total management and logging	12,268

While no meaningful average has been determined as to the length of part-time or seasonal employment (due to the high variance and difficulty of assembling such data), some descriptions have been made as to the employment of part-time labor. Massie (1965), describing characteristics of timber producers in the North Central region, found that sawlog producers who hire employees report an average of two full-time employees and nearly three part-time employees. Overall it was found 37 percent of sawlog producers hire full-time employees, 47 percent hire part-time employees and the remaining 16 percent work without any employees. Post, poles, and piling producers were found to have an average of one employee, usually seasonal in Michigan. Small pulpwood producers had either one part-time or full-time employee, and large producers (those producing more than 1,000 cords annually) generally employed four to five full-time employees. Veneer log producers had an average of more than two full-time employees and one part-time employee. Manthy and James reported the same averages for pulpwood producers as Massie in their 1964 study of pulpwood marketing in the same region.

The survey of producers included in this study revealed an average of almost ten full-time employees and slightly greater than one part-time employee per operation. All but one producer would correspond to what the previous studies classified as large producers. These figures are not representative as averages for the whole industry, but they indicate the decreasing importance of part-time employment in pulpwood production.

Working Conditions

It was suggested previously that social, institutional, and economic factors may be limiting the availability of the physical labor supply. This section will examine some of these factors which affect the labor force, and more specifically, the employees involved in pulpwood production. Of concern are the factors which comprise the areas of working conditions and characteristics of woods work.

Conditions Industry-wide.--Several studies have been made which describe various phases of woods work. Data which are representative of typical conditions of current pulpwood production activities are extracted from these sources and compared with the results obtained from the pulpwood operations surveyed. What is taking place on the "best" operations may be realistic goals for the industry in general.

In 1963 the United States Department of Labor studied small logging operations (12 or less employees) to obtain information for an evaluation of the exemption of such operations from the minimum wage and overtime provisions in the Fair Labor Standards Act. A survey was made in the South and Lake States regions to collect data on wage levels and weekly hours of work. In the Lake States--Michigan, Minnesota, and Wisconsin--354 establishments employing 1,754 nonsupervisory workers were surveyed. The sample of operations in Michigan included 158 establishments employing 758 workers.

Characteristics of the workers in Michigan determined from its survey were listed in the Department of Labor report:

1. The average number of employees was about five workers per operation.

2. Fifty percent of the employees worked less than 35 hours per week, and 75 percent worked less than 40 hours per week.

3. Three-fourths of the workers were paid on a piece-rate or incentive basis, while others were classified as time-rate workers.

4. Average hourly earnings varied by method of payment; $1.88 for piece-rate workers, $1.65 for time-rate workers, and $1.81 for all workers (Table 5).

Other characteristics of small logging operations, described on a regional basis in the Department of Labor report, showed pulpwood accounted for three-fourths of their production. In addition, in 81 percent of the establishments in the Lake States region employing 80 percent of the workers, there was some degree of supervision of the work performed by the employees. Generally, the characteristics listed for Michigan workers were similar to those for all workers in the Lake States region.

Table 5.--Average hourly earnings of nonsupervisory woods workers in the Lake States, by method of payment, spring 1963.

State	Average hourly earnings		
	All workers	Time-rate workers	Incentive-rate workers
Michigan	$1.81	$1.65	$1.88
Minnesota	1.82	1.67	1.83
Wisconsin	1.73	1.59	1.80
Lake States	1.79	1.63	1.84

Source: U. S. Department of Labor. Small logging operations. Wage and Hour and Public Contracts Divisions. 1964. 34 pp.

In evaluating the effects of eliminating the exemption for small logging operations from minimum wage and overtime regulations, the report showed relatively few woods workers in the Lake States earned less than $1.25 an hour. Eight percent of the workers in the region were found to earn less than this amount. And in Michigan, which had the smallest proportion of low paid workers, only 4 percent earned less than $1.25 an hour.[2]

Another study, which describes woods labor in Michigan, was conducted by the Michigan Department of Conservation and others in 1966. Reference to this source was made previously in the discussion of population numbers. Other topics covered in this study were recruitment of workers, methods of payment and wages, and average hours and days of work.

Descriptions of working conditions and characteristics of Michigan workers in the Department of Conservation study were similar to the joint areas contained in the Department of Labor report. Describing piece-rate workers only, the same average earnings of $1.88 per hour were found, or a weekly average around $76.37. Daily earnings of about $12 for a new or inefficient worker and $24 for an efficient worker were described as typical. Because of high transportation costs, power saw expenses, and lost days due to poor weather conditions, an average pulp-cutter received an annual income of less than $3,000 per

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[2]Although the exemption for small logging operations was not eliminated, it was reduced in size from twelve employees to eight employees in 1966. (U. S. Department of Labor. WHPC Publication 1167. Washington: Government Printing Office, 1966. 24 pp.)

year. Workers were reported as receiving no fringe benefits. The majority of workers were found to work in a range from 100 to 200 days annually. Owing to factors such as the strenuous physical work, weather conditions, and because piece workers usually set their own hours, five hours of actual, continuous work four days a week was considered normal. Recruitment of workers was described as unorganized and difficult, due to low average annual earnings, better opportunities in other work, the low status and image of woods work, and other factors.

The Department of Conservation study concluded by recommending several solutions to counteract a woods labor shortage. Among the immediate recommendations were for employers (producers) to pay workers' transportation costs, change to hourly rates of pay, service employees' equipment in producers' maintenance shops, and comply with workmen's compensation insurance laws. Longer-term recommendations included longer-term contracts between producers and product buyers, more awareness by top management in industry of woods working conditions and problems, worker training programs, and greater equipment research.

Conditions in the Selected Operations.--The results from the sample of pulpwood producers interviewed showed better working conditions compared to the previous descriptions given for Michigan woods workers. Within the operations surveyed, the best conditions appeared to occur on those operations using the tree-length or longwood method of harvesting. Six of the 20 firms were tree-length operations and 14 were conventional, shortwood systems.

The surveyed operations employed 194 full-time and 26 part-time or seasonal workers in 1966. Only eight of the firms actually employed

part-time help, and these workers usually worked in construction or farming when not employed in the woods. Sources of workers for these operations were from small town and rural areas.

The average earnings per week of all employees during 1966 were $106.55. This figure is $30 higher than the average weekly earnings reported for pulp-cutters in the Department of Conservation study. However, earnings for employees on the six tree-length operations were $138 per week, whereas earnings on the shortwood operations were $95.61 per week. This difference was due largely to the closer supervision of work performed by employees and the higher productivity existing on the tree-length operations.

Employees were paid according to the function of work performed (Table 6). Cutters on shortwood operations were paid on a piece-rate or per cord basis, due to the semi-independent status that is characteristic of these employees. Other workers on the shortwood operations, being under closer supervision, were paid on a per cord or time-rate basis, as were employees on the tree-length operations.

Where workers are paid by the hour, they are generally expected to meet certain informal, minimum standards of performance. On a tree-length operation, for example, a requirement of a truckload per day, wherein the capacity of the truck was approximately 16 cords, required four cords per man-day for four men. Employees on four tree-length operations and other employees (excluding cutters) on three shortwood operations were paid by the hour.

Eighty-three percent of the producers paid employees weekly, and 17 percent paid bi-weekly. Some producers expressed going to a greater frequency of paying employees then in the past to avoid

Table 6.--Method of payment of employees on sampled pulpwood operations, by function of work performed, 1966.

Method of Payment	Fellers or Cutters	Other employees[a]
	(Number of operations)	
Piece-rate	11	--
Per cord	5	12
Per hour	4	7
Per day	--	1
Total	20	20

[a]Includes truck drivers, skidder and tractor operators, and mechanics or maintenance personnel.

advancements in pay and to provide added convenience for workers.

A significant improvement in working conditions was a beginning trend toward the provision of some fringe benefits. Table 7 shows the number of operations providing the specified benefits.

Workers receiving fringe benefits were either equipment operators or employees on tree-length operations. Benefits were not provided to piece-workers except for one producer who had paid bonuses to these employees. Again, this is because these workers are "semi-independent" and largely set their own hours and work schedules.

As listed in Table 7, two producers provided means of transportation for employees. The average round trip distance to and from work for all workers was 35 miles per day, although it ranged up to 60 miles. Relatively few workers stayed in housing near their jobs.

While improvements are being made with the provision of these

Table 7.--Fringe benefits provided for employees on sampled pulpwood operations, 1966.

Benefits	Operations providing
	(Number)
Paid vacations and holidays	3
Health and hospitalization insurance	3
Paid bonuses	3
Life insurance[a]	1
Overtime	2
Retirement	1
Transportation	2

[a]Was provided beginning in 1967.

fringe benefits, there are some costly obstacles. Over and above the wages paid directly to employees, producers are required to pay social security, unemployment insurance, and workmen's compensation insurance. These requirements produced indirect labor costs averaging 28 percent of the sampled producers' payroll for 1966.[3] Those producers that provided some of the fringe benefits shown in Table 7 incurred indirect costs totaling over 30 percent. The requirement that workmen's compensation must be paid on fringe benefits paid directly to employees (such as bonuses or vacation pay as opposed to life insurance) further complicates intentions to initiate certain fringe benefits.

Another area constituting a disadvantage of woods work has been the shortness of the work year. Because of poor weather conditions, 200 work days or 40 weeks has been accepted as a full work year by the logging industry. Even though a worker may earn a good hourly or daily wage, annual earnings are lowered because of this factor.

The length of the work year in 1966 on the surveyed operations averaged 47 weeks or 235 work days. However, there was a significant difference between the two peninsulas. Surveyed producers in the Upper Peninsula reported working an average of 42 weeks--shutting down during the spring "break-up" and excessive rain periods in the fall. Except for one producer who had just started in business in 1966, all operators in the Lower Peninsula reported working at least 50 weeks (Table 8). Apparently, better site and soil conditions, the greater

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[3]The workmen's compensation rate for loggers in Michigan in 1966 was $19.17 per $100 of payroll. This rate was increased to $23.43 on December 1, 1966, and was raised again to $27.24 on December 1, 1967. Thus, currently, indirect costs would be much higher for these producers than the average 28 percent reported for 1966.

Table 8.--Number of weeks of work on sampled pulpwood operations, 1966.

Weeks	Number of operations
Less than 40[a]	2
40 - 44	6
45 - 49	2
50 or more[b]	10

[a]One producer started in business during 1966.

[b]All Lower Peninsula operations.

production of rough wood, more mechanized operations, and the good market situation contributed to the longer work year in 1966 in the Lower Peninsula. What is important is that given the market for their products, these operations can provide stable, year-round employment.

Concerning hours and days of work, these operations averaged seven and one-half hours per day, five days a week over the number of weeks worked. However, it was often necessary to work six days to make this average. Several producers reported longer hours for their workers, but piece-workers were generally below the average--down to 20 hours per week reported by one producer.

These improvements that have taken place within the sampled operations have been brought about both as a result of a decreasing availability of labor and a desire to increase production. That improvements in the working conditions for employees and the utilization of less labor-intensive methods will attract labor is revealed by two producers--both tree-length operators--who reported no difficulty in recruiting

workers. Both producers employed mainly young men, and had little difficulty retaining their workers as conditions were improved. Other producers also experienced less difficulty in recruiting workers as changes were made in their operations. The average age of all employees on the sampled operations was 38 years, and they had been employed an average of 5 years.

That improvements reported have been largely confined to employees on the tree-length operations and equipment operators on the other operations reveals the type of work in harvesting operations necessary to attract labor to woods work. These operations, as shown in the next chapter, are comparatively capital-intensive with high volumes of timber output. Promotion toward these types of operations can help increase the availability of potential workers. And, by increasing productivity, labor requirements can also be eased.

Future Labor Requirements

This section considers possible future levels of pulpwood labor employment in Michigan. Estimates for 1980 are made based upon the trends in labor requirements and the wood harvesting technology being employed on the pulpwood operations that were surveyed.

Technological Considerations

Since the surveyed operations provide the basic framework for the projection of future labor requirements, a brief description of the equipment used and the trends in wood production methods is desirable.

Generally speaking, the trend among the sampled producers was

toward increased production from capital-intensive operations. A reflection of the employment of new technology on the surveyed operations is that in the 5 year period between 1962 and 1967 one-half of the operations either increased timber production with the same level of employment or had the same level of production with fewer men. Others had increased or decreased both in varying degrees or had remained about the same. Three of the producers were new entries to the timber producing business during this 5 year period.

The greatest change in the use of new equipment was the shift to 4-wheel-drive, rubber-tired skidders. Several producers had two and even three such skidders. These included both the tree-length and shortwood machines. Only two of the operations did not have this type of skidding equipment. The use of larger trucking equipment was evident, especially in the Lower Peninsula where some of the larger tractor-trailer units had hauling capacities up to 25 cords, depending on the species of wood hauled.

Four producers had shifted to tree-length skidding of pulpwood, bringing the number of surveyed operations using this method of harvesting to six. In addition, two more producers were in the process of changing to this method at the time of the interviews.

In the tree-length method the number of operations performed by the cutter is reduced, making the harvesting process less labor-intensive. The bucking and piling by hand along skid roads is eliminated. Bucking is completed at a landing where loading equipment eases the handling of the wood. One surveyed operation used a high capacity slasher to buck tree-lengths at landings along their truck roads, but others did bucking by chain saws.

The extent to which the tree-length method will continue to increase on pulpwood operations is unknown. In the Eastern Canadian pulpwood industry, tree-length operations were estimated to account for 45 percent of all company limit pulpwood cut (which is two-thirds of all pulpwood production) during 1964-65 (Campbell and Power, 1966). This was up from about 10 percent from 10 years previous. Of course, the large company operations on large tracts of timber in Eastern Canada permit use of this method.

In Michigan, tree-length pulpwood harvesting will be more limited due to selective cutting of hardwoods, small ownerships, and the financial capabilities of pulpwood producers. Among those with greater financial means, its eventual use will be determined by developments in timber harvesters. As of late 1967, there were two Sirro timber harvesters being used on pulpwood operations in the Upper Peninsula (Escanaba Daily Press, September 29, 1967). If attempts to mechanize harvesting in the stump area (in the shortwood system) become more successful, the increase in tree-length harvesting of pulpwood may then be more limited.

The extent of which new technology is used is determined by many factors. Campbell and Power (1966), discussing the use of new innovations in the pulpwood logging industry of Eastern Canada, listed four factors which they considered most influential in a firm's decision to purchase a new technique:

> (1) the size of the firm, (2) the profitability of the investment, (3) the amount of investment necessary to purchase one unit of the innovation, and (4) the number of firms already using the machine.

In Michigan, the financial limitations of independent producers will probably slow and prevent any major changes in methods of operation,

unless additional support is received from some source. The use of more advanced technology will be, for the most part, confined to a few and large producers, such as were surveyed for this study.

Estimates for 1980

Several assumptions were made in setting the groundwork for projecting the future labor requirements.

First, it is assumed that producers will continue to be the primary source of wood supply for pulp mills. The effects of possible, future company-owned harvesting operations are not considered.

Second, the sampled producer operations which form the base for the estimates were selected on the basis of being the mills' "best" producer suppliers. It is assumed that these operations were the mills' most desirable and would be the type they would be most likely to encourage.

Third, it is assumed that the productivity of these better operations may be considered representative of average industry productivity in 1980.

With these assumptions in mind, three conditions are specifically considered in projecting the pulpwood labor requirements for 1980. These are the man-day productivity of the producer operations surveyed, the lengthening of the work year that has been made possible by the introduction of new technology, and the potential use of chips from the waste of wood-using plants.

The man-day productivity of the 20 sampled operations ranged from 1.5 to 6.0 cords per man-day. The average was 3.45 cords per man-day.

Table 9.--Average output per man-day on the sampled producer operations, 1967.

Method	Number	Output per man-day (cords)
Tree-length operations	6	5.1
Shortwood operations	14	2.75
All operations	20	3.45

Tree-length operations were consistently higher in productivity than the shortwood systems. The average output per man-day on the tree-length operations was 5.1 cords compared to 2.75 cords for the shortwood systems (Table 9).

The future labor requirements are developed by relating the average man-day productivity of all operations to projected levels of pulpwood production. An output of 3,180,000 cords of pulpwood in 1980 in Michigan has been projected by James (1966).

As noted earlier in Table 3, pulpwood employment has been previously projected at 6,490 men for 1980 by James in terms of full-time equivalent workers at 200 work days per year. In other words, this would mean an average output of 2.45 cords per man-day at that time.

Assuming the average productivity of the present best operations will be the industry average in 1980, the labor requirements in terms of full-time employment at 200 work days would be 4,609 workers. This is a reduction by almost one-third of the previous projection.

Earlier, it was shown that the sampled operations had an average of 235 work days per year. The employment of new technology has helped overcome some of the adverse conditions faced on harvesting

operations, particularly in the Lower Peninsula. Assuming the work year in 1980 would consist of 235 work days, labor requirements would then equal 3,922 workers at 3.45 cords per man-day for the projected level of pulpwood output.

The use of residual sawmill chips has been a relatively new source of wood supply for pulp mills in Michigan and the Lake States. Utilization of this source began in Michigan around 1960, and in 1966 it composed almost 5 percent of the total pulpwood production in Michigan (Pfeifer, 1967). Of the total pulpwood production in the Lake States in 1966, chips made up about 4 percent (Blyth, 1967).

Other regions have had greater utilization of wood chips, and it can be expected to increase in Michigan also. Several of the sampled mills were planning or beginning to increase their utilization of this source of wood supply. By comparison to the Northeastern region, the utilization of chips may increase to 10 percent of the total pulpwood production in Michigan by 1980. This would mean a 10 percent decrease in the amount of labor required to supply the 3,180,000 cords of pulpwood in 1980. The labor requirements would then be 3,530 workers, considering the 3.45 cords per man-day productivity and the lengthening of the work year. A summary of the labor requirements estimates are shown in Table 10.

The resulting effect of chip production in the projections of labor requirements considers only the utilization of waste material from wood-using plants. Chip production from roundwood could also have an effect, but, perhaps, more so on occupational distributions within the labor force.

While projections show labor requirements relatively equal to

Table 10.--Projected labor requirements for 3,180,000 cords of pulpwood production in Michigan, 1980.

Condition	Full-time equivalent workers
3.45 cords/man-day @ 200 work days	4,609
3.45 cords/man-day @ 235 work days	3,922
3.45 cords/man-day @ 235 work days with 10% of production composed of chips	3,530

present day levels, more mechanized operations will mean a reduction in pulpwood cutters and a required increase in the number of equipment operators and mechanics. Estimates of changes in the occupational distribution of pulpwood labor in Eastern Canada--due to technological changes--show pulpwood cutters would decrease from 54 percent of the labor force in 1964-65 to 22 percent in 1975 (Campbell and Power, 1966). Maintenance and service personnel were expected to increase from 9 to 17 percent. The increase in equipment operators was estimated at about 16 percent (depends on the harvesting system used). Thus, an implication for possible future training needs would be in the areas of equipment operators and maintenance personnel rather than pulpwood cutters.

As harvesting operations become more capital-intensive, they require more stable, year-round employment. Continuous operation of equipment is necessary to meet the large fixed costs of operations with substantial capital investments. Projected labor requirements in terms of full-time employment will more accurately reflect the actual number of workers required.

CHAPTER III

INDUSTRY ADJUSTMENTS TO CHANGING LABOR AND WOOD SUPPLY CONDITIONS

Pulpwood production and consumption in Michigan has been rising in recent years (Figure 2). While the long-term trend is upward, yearly fluctuations occur mainly according to the market conditions faced by the individual pulp mills for their products. Because of these fluctuations, mills express the difficulty of specifying exactly the amounts of pulpwood they will need from their suppliers, especially over longer periods of time.

However, pulp mills and pulpwood producers desire more stability in pulpwood production. Mills desire a steady, stable and reliable source of raw material supply. Producers desire a stable market in order to plan their operations, utilize their resources, and have a reasonable assured sale for their timber production.

Industry efforts toward greater stability and adjustments to changing labor and wood supply conditions are the concerns of this chapter. The following discussion will also point out what the pulp mills feel they can do to help pulpwood producers, their primary source of wood supply. Further elaboration will be given to producer harvesting operations, the problems producers face, and what their needs and desires are. And, in the next chapter, given the required cooperation between pulp mills and producers, it will be shown how these conditions will help maintain Michigan's woods labor supply.

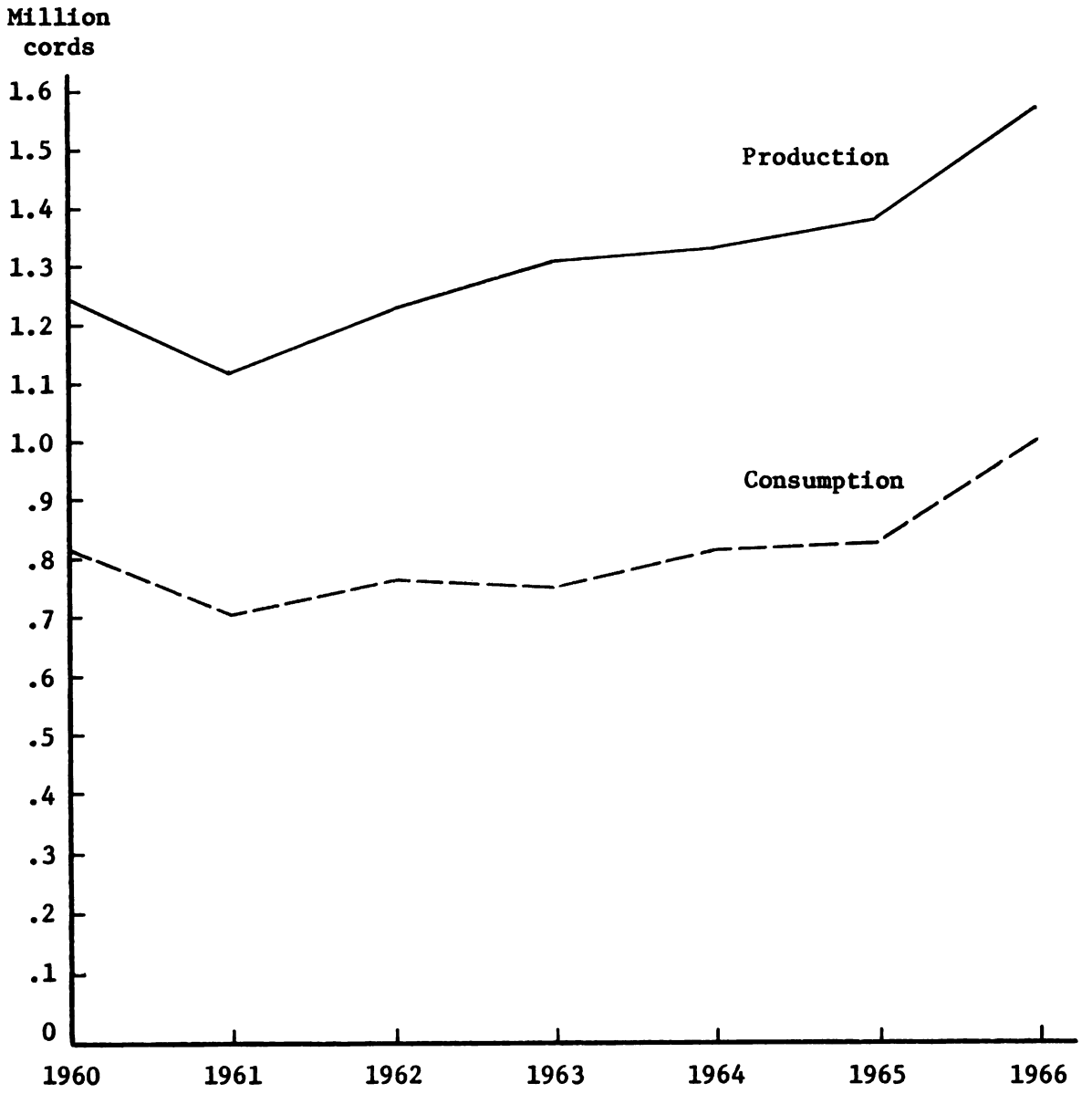

Figure 2. Pulpwood production and consumption in Michigan, 1960-1966. (Source: North Central Forest Experiment Station, U. S. Forest Service, St. Paul, Minn., Res. Note series.)

Pulp Mills

Adjustments have been made by the pulp mills to changing conditions in their wood supply, specifically the recent wood shortage situation. The following areas of wood shortages, wood procurement, and producer suppliers are analyzed to determine what changes are taking place and what mills feel can be done toward improving conditions.

Wood Shortages

Wood shortages or difficulties in procuring sufficient wood supplies occurred during two different periods among Michigan pulp mills. Lower Peninsula mills experienced wood shortage conditions at varying periods from January 1965 to March 1966. Tight wood conditions among Upper Peninsula mills occurred from March 1966 to March 1967.

The response among mills as to the causes of the wood shortages produced various opinions. There was general agreement that the main cause was due to a combination of many factors occurring at about the same time. Major factors cited were a high level economy which created a labor shortage in the woods, and new, higher workmen's compensation costs caused many small producers to drop out of business. Other contributing factors mentioned were weather conditions, an increased demand for wood due to the establishment of a new mill in the state and expansion among other mills, and low price levels which existed for wood. One mill attributed its shortage to the withholding of wood by producers until price levels increased. And one mill official attributed the overall wood shortage situation to the policies of pulp mills buying wood from many, part-time producers, a system which could not

stand a high level economy.

In a survey of the Wisconsin pulpwood situation, Burgy (1968) reported similar responses from mills to tight wood conditions that existed there in 1966. Again, the primary factor indicated was a general labor shortage in the woods due to better opportunities available in other forms of employment.

Woods labor shortages have been popular explanations for wood shortages that have occurred in regions outside of the Lake States also. Southern wood shortages in 1955 and 1959 were attributed to a scarcity of labor at the time of their occurrences. However, this view was discounted in a later study by Pikl (1960). Analyzing the 1955 wood shortage, he could find no scarcity in the labor supply. Instead, the wood shortages were due to the reluctance of mills to compete for wood on a price basis. Because of a sudden rise in consumption--due to many new mills and expansion in existing mills--nonprice competitive action failed to procure sufficient wood supplies. Once prices were raised, wood inventories returned to normal in a short period of time, and producers were "cut-off" to stem the flow of incoming wood.

Price increases appear to have been the compelling factor in the solution of the wood shortage in Michigan also. Among the measures undertaken to counteract the shortage situation, price increases were reported by all of the sampled mills. Specific data concerning prices and the size of price increases were not collected, but mills mentioned increases ranging from $2 to $5 per cord, varying by species and the location of the mills.

The extent of other measures reported undertaken toward reducing wood shortage levels was much less than the price increases. Four

mills increased or initiated financial assistance and mechanization aids. And one mill provided longer-term contracts as a regular practice. Although only one mill explicitly indicated providing larger contracts, several probably did so during the shortage period.

The increased price levels undoubtedly brought new producers into the industry, as several mills indicated buying from more than their regular number of suppliers. The financial and mechanization aids offered to certain producers permitted them to substitute capital for labor as an agent of production. These factors, plus the increased buying of wood by mills in anticipation of further shortages and a reported drop in paper sales, contributed mainly to the end of the wood shortage and brought a surplus of production in 1967.

The availability of woods labor was limited during the wood shortage period. However, the cause of the wood shortage was not due to a "labor shortage" in a physical sense. The cause of the shortage was due more to the economic conditions affecting the labor availability. Price increases have provided a solution, at least temporarily.

The elasticity of supply was much greater than what the mills expected when price levels were increased. Currently, price cuts for pulpwood are occurring, in some instances returning price levels close to those which existed when the wood shortages occurred. If the supply of pulpwood is as elastic as it appears, producers can be expected to drop production, especially smaller operators.

A surplus of wood production, a slump in paper markets, and large inventories may permit lower price levels. However, current mill expansion in both peninsulas and a change in paper markets will again increase the future demand for wood. Combined with increasing costs

being faced by producers and low prices for wood, industry may again find itself in the position it faced in 1965 and 1966. Price increases may again be required unless other action is undertaken.

What the sampled mills feel they can do to counteract or avoid wood shortages is shown in Table 11. Nine mills indicated raising prices as a solution, with mechanization aids and financial assistance to producers being cited as the next most important. (Mechanization aids would include financial assistance, but financial assistance was differentiated to mean loans or advances for working capital, etc.) Five mills mentioned producer training, which included bookkeeping aids, advice as to operational planning, and closer information channels. Company logging was indicated as a possible future action by four mills if other actions failed to provide an adequate wood supply. Other action receiving mention included larger and longer-term contracts, and greater utilization of different wood species.

Increasing prices would not seem to be a favorable course of action for mills, nor do fluctuating price levels contribute to the stability that is desired by mills and producers. Other actions that mills are undertaking or considering have been shown. (These actions, of course, would only be considered if they can augment wood supplies at reasonable costs. However, such actions as longer-term contracts and larger contracts would not require costs as much as a change in attitudes.) Problems and desirable actions on the part of pulp mills as viewed by the sampled producers will be examined under Pulpwood Producers.

Table 11.--What Michigan pulp mills feel they can do to counteract or avoid wood shortages.

Possible action	Number of mills
Raise prices	9
Mechanization aids	8
Financial assistance	6
Producer training	5
Company logging	4
Longer-term contracts	3
Larger contracts	2
Greater utilization of species	1

Wood Procurement

The volume of wood received at the sampled mills totaled almost 1,000,000 cords in 1966 (Table 12). Most of the wood received was produced in Michigan, but one mill imports a portion of its spruce-fir receipts from Canada.

The pattern of wood receipts was somewhat similar for all the sampled mills. Typically, the peak for pulpwood deliveries was during the summer months, and deliveries were at a minimum during the spring breakup period in late March and April. On a quarterly basis, the most common pattern of wood deliveries was as follows: first quarter-20 percent, second quarter-30 percent, third quarter-30 percent, and fourth quarter-20 percent. Generally, mills expressed a more steady and even flow of wood deliveries than had been the case in previous years. This has been made possible largely by the use of new machinery, such as the rubber-tired skidders, in wood harvesting operations.

A majority of mills reported their present pattern of wood receipts as desirable. Those expressing dissatisfaction desired a more steady flow of incoming wood then had been previously attained.

In an effort to help control and stabilize their flow of incoming wood (and to procure more wood), three mills buy wood roadside or at concentration yards and contract with common carriers to haul this wood to the millyard. Wood received at the three mills in this manner varied from 17 to 35 percent of total receipts.

Wood supplies for the sampled mills were from three sources: (1) producers, (2) dealers, and (3) by-products in the form of chips from sawmills. No mills interviewed conducted or received wood from company-owned harvesting operations.

Table 12.--Wood receipts at sampled Michigan pulp mills, by species, 1966.

Species	Lower Peninsula Mills	Upper Peninsula Mills	All Mills
		(Thousand cords)	
Aspen	430.0	65.9	495.9
Mixed hardwoods	145.5	49.5	195.0
Pine	153.1	4.0	157.1
Spruce-fir	62.5	42.0	104.5
Hemlock	2.5		2.5
Chips	29.1		29.1
Total	822.7	161.4	984.1

Producers are the most important agent source of wood, supplying 88 percent of total receipts (Table 13). Wood receipts from the other sources include 9 percent from dealers and 3 percent from chip suppliers. While chips are only a small percentage of receipts currently, those mills using chips (three) expressed a desire to increase this source of supply. In addition, a fourth mill had just started to purchase wood in this form.

Table 13.--Sources of wood supply to Michigan pulp mills, 1966.

Source	Amount supplied	Percent of total
	(cords)	
Producers	865,156	88.0
Dealers	89,924	9.1
Chip suppliers	29,055	2.9
Total	984,135	100.0

Although mills purchased wood from identified dealers, these dealers are merchant middlemen. They are paid exactly the same price for wood as are independent producers who sell directly to the mill. Rather than purchase through dealers, the sampled mills expressed a desire to have direct and closer relations with producers.

The most significant change among the agent sources of wood supply over the period 1962-1966 has been the trend toward fewer and larger producers. Six mills reported this change among their suppliers. It was generally felt, however, that although smaller producers were decreasing in number, there was a definite place for this type of

producer to harvest small woodlots. The type of producer most mills felt would disappear was the so called "middle-size" producer, one who required more and better equipment but did not produce enough to justify his investment. Increased mechanization was the explanation given for the trend toward fewer and larger producers.

Other changes among agent sources included one mill switching from a complete dependence upon dealers who acted as agent middlemen toward direct purchases from producers. This change was in process because dealers were unable to supply sufficient wood orders during the wood shortage period. Also, two mills had increased the percentage of wood orders from chip suppliers. This was an additional source during the wood shortage and was considered a more stable supply.

Recent changes in inventory and wood purchase patterns were also largely initiated because of the wood shortages. Longer daily hours, longer contracts, and larger inventories were various adjustments made among seven mills to better enable suppliers to deliver more wood and to provide a larger cushion against further anticipated shortages. To obtain a more even influx of wood, some mills have lengthened purchase periods and initiated monthly quotas.

Agreements by which wood purchases were obtained in 1966 varied among the sampled mills. Written agreements or contracts were used by five mills, informal or oral agreements were used by four mills, and one mill used both types of agreements.

The length of wood purchase agreements usually varies by the type of contract. As a rule, informal agreements were shorter, ranging from one to six months; and most written contracts were from six to twelve months in length (Table 14). One mill used both 6- and 12-month

Table 14.--Length of wood purchase agreements with producers by Michigan pulp mills, by type of agreement, 1966.

Length of Agreement	Written Agreement[a]	Informal Agreement
(Months)	(Number of mills)	
1	-	1
3	1	2
6	3	-
8-10	1	-
12	1	-
indefinite[b]	-	2

[a]One mill used both 6- and 12-month written contracts with producers.

[b]Usually twice a year.

written contracts, granting the latter as producers proved their reliability in making deliveries. Two mills, obtaining wood under oral agreements, did not specify any set time period (usually twice a year). But one of these, just beginning to purchase wood direct from producers, was planning to initiate yearly written contracts.

Agreements were usually the same for all agent sources, but three mills reported differences in contracts with different groups of agents. Two mills had longer agreements with chip suppliers, from two to three years in length (because they were considered more stable). Another mill had written contracts with dealers and oral agreements with producers.

Written contracts usually include conditions specifying the physical requirements of wood to be purchased, volume, price, and method and time of payment. In addition, whether or not contracts are written, mills in the Lower Peninsula require certification of compliance with workmen's compensation, social security, and federal and state unemployment insurance regulations. If satisfactory proof is shown, producers are paid an additional amount above the current purchase price. This procedure is absent among Upper Peninsula mills, however. Mills in this area pay the same price to all producers and do not require certification of compliance with the aforementioned regulations. The reason for this difference in procedure of payment for wood is probably the influence of the market for wood to the Wisconsin pulp mills. If a producer had not produced his wood in compliance with the required coverages and faced strict requirements on the part of local mills, he could, in turn, sell his wood to the Wisconsin market.

Payment for delivered wood was usually made weekly or within

a period of ten days at eight mills. Two mills paid producers by the truckload at the time of delivery.

Producer Suppliers

Since the most important agent source of wood for mills was from producers, more detailed information was sought concerning mill relations with producer suppliers.

The total number of producers selling directly to the Michigan mills in 1966 was 932. The average receipts per producer was 928 cords for all mills, although among Lower Peninsula mills it was 1,437 cords and among Upper Peninsula mills only 324 cords. These averages compare to only 236 cords per producer for all Michigan mills in 1954 (James, 1957), and 440 cords per producer among Lower Peninsula mills in 1959 (Manthy and James, 1964). Thus, the trend toward fewer and larger producers has been substantial, and most mills felt this trend would continue.

The importance of larger producers is shown in Table 15 by their number and the percentage of wood receipts obtained from this source. Large producers were defined as those supplying 1,000 cords of pulpwood or more.[4] The number of producers supplying this amount or more was 206, 22 percent of the total number of producers. These 22 percent accounted for 64 percent of total wood receipts at the mills, and 73 percent of the wood supplied by producers. The large producers are

[4]In view of the large average size, a producer supplying 1,000 cords would no longer be considered as large, especially at Lower Michigan mills. Also, the actual size of operations of some producers is larger, as some sell to more than one mill.

Table 15.--Wood receipts from large producers at Michigan pulp mills, 1966.

Area	Large producers		Volume obtained
	(Number)	(Percent)	(Percent)
Upper Peninsula	32	8	21
Lower Peninsula	174	34	73
Total	206	22	64

predominately in the Lower Peninsula where 73 percent of mill receipts are purchased from this source. Upper Peninsula mills purchased 21 percent of their wood from the large producer suppliers.

Eight mills offered producers prepayments (loans) in advance of the time of payment specified in the purchase agreements. All six of the Lower Peninsula mills provided this service for some of their producers, and this was reported as usual procedure by their firms. In contrast, two of the four Upper Peninsula made advances, and only one mill stated this as usual procedure. Those that did not offer such aids reported that producers had not requested financial assistance in this form from their firms.

There was no set policy among mills as to size limitations on prepayments that were made to producers. The reliability of the producers and a sufficient cut of wood to cover the amount of the advance usually determine the respective sizes. One mill specified a maximum of about $9 per cord advancement on wood that had been cut.

Other business aids for producers were also offered by eight of the sampled mills. Six mills reported helping producers procure stumpage, six mills helped in financing equipment, and five mills

provided advice as to the efficient use of equipment and operational planning. In connection with the latter form of business aid, two mills employed personnel on their wood procurement staffs specifically for this purpose. Other forms of business aids offered included two mills helping in the construction and plowing of roads on company-owned timber lands, and one mill sold safety equipment at their office to encourage greater safety practices on harvesting operations. Two mills charged a nominal rate of interest on financial aids offered to producers.

The number of producers receiving financial and other business aids from all mills in 1966 was 340 or 36 percent of all producers. This number was high for two reasons, however. Four mills suffered strikes in 1966 and advanced money to more producers than was usual. Another mill advanced money to more producers to help them pay the initial premium required for writing workmen's compensation policies. Thus, the number of producers normally receiving financial and other business aids is much lower than what was reported in 1966.

An item that has received considerable discussion in mill relations with producers is the subject of long-term contracts. This has been recommended as a solution for stability of employment on pulpwood operations and as a means of providing security for producers (Pfeifer, 1967).

Long-term contracts were defined as being greater than one year in length. Only one mill made two to three year contracts with producers who requested longer-term agreements for the purpose of showing security when arranging for the financing of new equipment. These contracts were a small minority, as only 5 percent of that mill's receipts were purchased under these agreements.

Seven mills report producers do not request or want longer-term contracts than what currently exist at the individual mills. Producers had requested long-term contracts at two mills besides the one which was granting a limited number of such contracts. Both mills expressed reluctance to meet these requests, however. Reasons cited were indications from past experience reveal producers do not always meet the long and large committments, and less complications arise when adjustments in wood purchases must be made when shorter and less formal agreements are used.

Pulpwood Producers

Some of the adjustments that have been made by the sampled pulpwood producers to changing labor supply conditions were previously described under the discussion of working conditions in the selected operations. A more detailed description of these producer operations, some of the reasons for their success, and a look at trends and problems to determine what improvements in conditions are needed are examined here.

As a group, the sample of 20 pulpwood producers had high volume, capital-intensive harvesting operations. They have been reliable, with a stable or increasing production level in recent years. The relatively large size of the producers is shown in Table 16.

Sampled producers have been operating as timber producers for an average of almost 15 years. Upper Peninsula operators have been in business longer--19 years--compared to an average of 10 years for Lower Peninsula producers. This is probably due in part to the newness of industry in the northeastern part of the Lower Peninsula.

Table 16.--Size class of sampled producers, 1966.

Size class	Number of producers
(Cords produced)	
1,000 or less	1
1,001 - 2,000	2
2,001 - 4,000	2
4,001 - 6,000	5
6,001 - 8,000	5
8,001 - 10,000	2
More than 10,000	3
Total	20

Although all producers had full-time woods operations, six were involved in other businesses also. Other businesses owned or operated included two sawmills, a store, a machine manufacturing shop, a farm, and a gas station. Except for the sawmill owners, all were primarily involved in their wood harvesting operations.

Sixteen of the operations were conducted as individual ownerships, and four firms were operated as partnerships. The corporate form of business organization was not present primarily because workmen's compensation must be paid for all corporation members.[5] Otherwise, the advantage of limited liability might make this type of organization desirable where the size of capital investment is large.

[5]Compensation coverage is optional for partnerships. (Informa- supplied by the Workmen's Compensation Department, Lansing, Michigan.)

Equipment Investment and Capital Requirements

Investment capital for equipment purchases has been a recognized problem area of independent timber producers. A 1959 report to the United States Senate by Stoddard, concerned with the problems of independent logging operations, listed credit availability among the major areas in which services and facilities were lacking compared to other small businesses. Since then the size of the capital requirements of producers has continued to increase as newer and more expensive equipment has been developed and put into use.

The average total equipment investment for the sampled operations was $66,475. This was the initial investment (cost) of the equipment being used on the operations. These figures are significant as this is what would be required to set up a comparable operation. The actual investment at a particular time would be less due to depreciation.

The range of total investments was from $20,000 to $226,000. Table 17 shows the spread of investment sizes among the operations. The largest groupings were six in the $20,000 to $30,000 range and six at $100,000 or over.

Not only is the size of equipment investment large on the sampled operations, but machinery maintenance is a costly item also. Because it was expressed to be cheaper than having repair work done elsewhere, 11 producers had additional investment in their own maintenance shops. Six producers employed full-time mechanics, although some of their time was spent on other than logging equipment. Eight of the producers reported doing major repairs in their shops, while essentially all producers do their own minor repair work.

Table 17.--Range of equipment investments on sampled producer operations, 1966.

Range	Number of operations
$20,000 - 29,999	6
30,000 - 39,999	1
40,000 - 49,999	2
50,000 - 74,999	3
75,000 - 99,999	2
100,000 or over	6
Total	20

The majority of sampled producers received most of their capital requirements from local banks or other credit institutions, sometimes requiring several sources to meet their needs. However, five Lower Peninsula producers received loans from pulp mills for financing equipment, and four producers overall received aids to purchase stumpage. Of those producers not receiving these aids, ten producers stated there was a need for such aids, even though some did not desire it personally. Thus, including the producers who were getting the specified assistance, 75 percent of the sampled producers stated a need for long-term capital funds from their product buyers.

Forty percent of the producers had received short-term loans or prepayments for working capital purposes from mills. Again these were all Lower Peninsula producers. Only two producers desired and three stated a need among those not receiving this type of aid. The less expressed need for this type of assistance, prevalent among the

Upper Peninsula producers, might be due to their longevity in business and, therefore, greater financial security. Producers that had been operating for shorter lengths of time expressed a definite need for credit aids from some source, whether from pulp mills or elsewhere.

Production and Costs

This section is concerned with the production of the timber handled by the sampled producers, their markets, and the costs and returns involved.

Timber Production.--The 1966 output of the sampled producers was 133,150 cords, an average of about 6,660 cords per producer (Table 18). Pulpwood comprised 88 percent of the total production, with Aspen being the major species cut. Aspen would be the largest component of the unidentified category, along with a significant portion of spruce and balsam-fir.

Included in the total production shown are 19,000 cords purchased by three producers, either at roadside or in the woods, which was hauled or skidded and hauled by them. This amount was 56 percent of the wood handled by these three operators. Labor problems were cited as the reason for supplementing their production with purchased cut wood.

Three producers subcontracted for all their hauling operations. Actually, two of these sold their pulpwood roadside, as the mills purchasing their wood wanted to buy at that location. The mills then contracted with haulers for the wood they purchased. The third producer did not want to invest the additional capital required for hauling equipment.

Even though the sampled producers were generally quite large,

Table 18.--Timber handled by sampled producers, 1966.

Product	Amount
	(Cords)
Pulpwood:	
Aspen	48,710
Pine	11,050
Mixed hardwoods	17,225
Spruce-balsam fir	620
Hemlock	1,500
Unknown[a]	37,700
Total pulpwood	116,805
Other Products:	
Sawlogs and veneer[b]	16,320
Posts	25
All products	133,150

[a]Some producers who handled two or more species did not give a complete breakdown by species handled.

[b]Figured at 500 bd. ft. per cord.

many did not specify a minimum size tract or volume of timber necessary for the profitable operation of their equipment. Producers stating a minimum volume or tract size were primarily tree-length operators. Some producers indicated the versatility of rubber-tired, shortwood skidders made many small, good stands of timber more available. The most often stated minimum was 40 acres, and three larger tree-length operations indicated a minimum of 160 acres. The largest operation encountered (14,000 cords), using a high-capacity slasher to buck tree-length wood, expressed a section of timber as a desirable size tract for their type of operation.

Only two producers expressed some difficulty in obtaining stumpage. Other producers had not experienced problems in this area so far, although a few expected stumpage availability at moderate prices to be more limited in the future.

The majority of wood handled by the sampled producers was sold directly to primary manufacturers, including pulp mills, sawmills, veneer mills, or other product manufacturers. Eighty-eight percent of total wood sales was sold direct, and 12 percent was sold to dealers (mostly in the Upper Peninsula).

Due to the smaller size of the Upper Peninsula pulp mills, sampled producers in that area sell their pulpwood to a larger number of outlets. Table 19 shows the number of mills and dealers sampled producers sold their pulpwood to in 1966. In addition, sawlogs and other by-products were usually sold directly to local markets as they were available.

Costs and Returns.--Costs of production are probably most often calculated by the different phases of harvesting--cutting, skidding,

Table 19.--Number of sampled producers selling pulpwood to different numbers of pulp mills and dealers, 1966.

Area	Number of pulp mills				Number of dealers	
	1	2	3	4	1	2
	(Number of producers)					
Lower Peninsula	8	2	1	-	1	-
Upper Peninsula	1	4	1	3	3	1

and hauling. Producers tend to be more familiar with costs figured on this basis. Labor and machine costs are then combined in each phase, and their effects are not explicitly distinguished.

With increasing mechanization and changing methods of wood harvesting (e.g., the trend toward tree-length harvesting where labor is often paid by the hour), calculating costs by labor and machine expenses per cord helps in effective cost control and in planning possible new harvesting methods.[6] Costs figured in this manner, along with productivity rates, help in the comparison of the profitability and the sensitivity to labor costs of different harvesting systems.

Table 20 shows costs and profits per cord of output for the sampled producer operations. The data obtained were averages for all wood products combined. The ranges and variance would be greater if shown by species. Because of the limited production of peeled wood by the sampled producers, costs for peeled wood were not included. Hand-peeled produced wood would add significantly to labor costs, and wood that is machine-peeled would add to both labor and machine costs.

[6]Examples of costs calculated in this manner to help analyze and plan operations in Michigan are recent publications by Gardner (1966) and Hartwig (1967). Complete references are given in the Literature Cited.

Table 20.--Costs and profits per cord of output on sampled producer operations, 1966.

Items	Range	Average	Percent
Labor cost	$6.00 - 10.50	$7.16	42.5
Machine costs	2.50 - 5.50	3.78	22.5
Stumpage costs	1.10 - 7.00	1.93	11.5
Miscellaneous and overhead costs[a]	1.00 - 2.50	1.75	10.4
Profit	.77 - 3.50	2.21	13.1

[a]Includes road building and maintenance, snow plowing and equipment, record keeping expenses, cruising, transportation facilities, buildings, etc.

The average profit figure shown in Table 20 includes the return to the producer for labor and management. Most producers usually do not figure their labor explicitly as part of their costs, and, therefore, the return shown is for both. Also, the figures are only for wood harvested by the producers themselves.[7]

Figures for the tree-length operations were about the same as for the conventional shortwood set-ups. While they had a higher productivity per man, higher wage levels produced similar labor costs per cord.

Seven of the sampled producers did the majority of their bookkeeping themselves. Five producers had their wives keep most of the records, six had outside accountants do their work, and two had full-time bookkeepers. Producers who did their own bookkeeping generally were more cost conscious and knew more precisely what their costs of production were.

Considering the average profit figure of $2.21 per cord and the average of about 5,700 cords harvested on the sampled operations (plus the income received from the handling of the purchased cut wood), these producers had fairly good returns for 1966. However, it must be remembered that (1) 1966 market conditions and prices were better than usual, and (2) these producers are above average in management, are quite efficient, and depend upon high volume production.

To stay in business profitably, sampled producers stated either a 10 percent net return per cord or $10,000 net annually was necessary.

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[7]Producers who supplemented their production with purchased cut wood reported an average return of about $1 per cord on that wood.

If the return was much less, it was considered hardly worth their time or effort, especially for the investment involved.

Wood Sales Agreements

The sales agreements or contracts by which producers sell their pulpwood to Michigan mills was discussed previously in the section on "Pulp Mills" under the heading of "Wood Procurement." A majority of the sampled producers, however, expressed dissatisfaction with currently existing contract agreements.

Of the producers interviewed, only two supplied less than their 1966 contract agreements. Of these, one was primarily a sawlog producer, and his annual pulpwood sales varied as a by-product of his sawlog production. The other had reduced production below his original agreement because a labor strike at the pulp mill had forced the mill to reduce purchases.

Fifty-five percent of the producers supplied mills with the amount of wood they had contracted for, and 35 percent supplied more than their agreements called for. Those that produced over generally did so either because they were encouraged by the mills because of the wood shortage situation, or they believed that such a performance would be favorable for them in securing larger future contracts.

At the time of the interviews (summer, 1967), 12 or 60 percent of the producers expressed current difficulty in getting sufficient wood orders. During the previous year, essentially no difficulty was incurred in receiving desired volume agreements. Because of increased investment and "geared-up" production levels, current reductions in wood orders were quite serious to some of the producers. Due to a

large proportion of fixed costs, a few producers reported just meeting expenses or credited 1966 income as carrying a portion of their costs.

The difficulties faced because of fluctuating wood orders explain largely the desire for longer-term contracts by a majority of the producers. Wanting primarily a more stable planning period, 13 producers desired longer-term contracts or agreements with their wood buyers. Table 21 shows the number of producers by the length of contract desired. Besides stability, another reason for desiring long-term contracts was for showing security when making credit arrangements.

Most of the producers agreed they would accept long-term contracts subject to established changes in market conditions. Also mentioned were conditions pertaining to possible price changes.

Of those producers not expressly desiring long-term contracts, three felt they had sufficient relations with their mills and were satisfied with present agreements. Two producers were indifferent, stating if such contracts proved to be meaningful, they would then accept them. And two did not want to commit themselves to long-term agreements.

A study of pulpwood producers in Wisconsin in 1966 by the Northern Great Lakes Resource Development Commission reported that producers generally did not desire long-term contracts. As indicated earlier, the majority of pulp mills sampled in this study similarly believe that most producers do not want long-term contracts. This may be true when one considers all pulpwood producers, since numberwise, small producers make up the majority. Small, part-time producers may not want to commit themselves, as they may desire to be free to switch markets as prices change.

Such a viewpoint is not prevalent among large, high volume

Table 21.--Number of sampled producers indicating length of longer-term contracts desired, 1967.

Contract length (Years)	Number of producers
1	5
2	3
5	2
Indefinite[a]	3
Total	13

[a]Did not specify a given length but wanted a continuing agreement over a longer period of time.

producers with large capital investments, as is exhibited by the sampled producers. Stable and secure markets are necessary and more important for and to these producers.

Trends and Problems

As has been shown, the sampled producers depend upon and require high volume production to assure a fair return for their efforts and capital investments. In spite of an overall trend of increasing production size, a large majority do not plan to expand their operations any further or will not unless certain conditions and practices can be remedied within the pulpwood industry.

For the most part, the producers sampled gradually expanded their operations through years of hard work and by establishing their credit and reliability with local credit institutions and major product buyers.

Nine producers had received financial assistance from mills and dealers in past years which helped build their organizations. Others had built their productive capacity by selling through many outlets or by establishing good relations with a particular mill which usually assured a market for their production. Also, a few had taken over and built upon organizations established by others, usually a father's.

Eleven of the sampled producers, however, expressed no plans to expand their present operations. The primary reason discouraging new expansion was the desire to limit further capital investment. The risk-bearing of such ventures was considered too great, due to previous experience with unstable markets. Also cited, as a dissuading factor in increasing employment, was the high cost of workmen's compensation insurance.

Among the 11 producers not planning to expand were three approaching retirement who desired to scale down the size of their operations. In addition, one other producer planned to phase out his own harvesting operation if current cutbacks in wood orders were not regained in the near future.

Four producers who expressed a desire to increase production levels could not because of current conditions. All stated an inability to get sufficient wood orders or an assured market for any possible increased production. It was believed by a few that some mills desired to limit the size that producers could attain.

Another four producers had definite plans for increasing timber output. Intentions were mainly to increase output per man, although two indicated increasing employment along with greater productivity per man. All but one indicated their added production would go to a single

mill, but financing for the expansion would not be aided from any of the product buyers. Thus, only 20 percent of the sampled producers were planning future expansion under existing conditions within the industry.

Of course, the current slump in markets being faced by producers would tend to dampen the outlook for possibly enlargening their operations. But setting aside what is presumably a temporary condition, producers feel certain practices and problems must be improved upon for satisfactory operating conditions in future periods.

The need for more stability in wood orders to attract an adequate labor force and to achieve efficient production was the overriding concern of the sampled producers. This is evident by their response as to what they feel pulp mills can do to help increase the production of wood to meet future increasing demands (Table 22). The large support for longer-term contracts followed by the response for larger contracts and closer relations with regular producers reveals this predominant problem.

The replies for closer relations between mills and regular producers concern both the desire for more accurate information involving current events and trends in market conditions, and mill policy toward buying from additional producers during higher demand periods. It was expressed that during periods of higher demand for wood, mills did not give proper consideration to the capabilities of regular producers in the industry of supplying the increased requirements. Rather, additional wood requirements are often purchased from new suppliers, resulting in inefficient volume orders for all producers, especially if markets happen to slump and orders are curtailed.

Table 22.--What sampled producers feel pulp mills can do to help increase wood production to meet future requirements, 1967.

Action cited	Number of producers
Raise prices	3
Financial and mechanization aids	5
Longer-term contracts	13
Larger contracts	5
Producer training	1
Closer relations with regular producers	5

Related to the area of closer relations with regular producers were the viewpoints expressed concerning price increases. Only three producers advocated price increases as necessary for increasing production, while most pointed out current prices were adequate. In fact, two producers thought recent price increases may have gone too high, since such action encouraged too many new producers to enter the industry and flood the market with wood. These new producers, it was pointed out, are usually less familiar with costs of operation. Therefore, they raise production costs by bidding higher for stumpage, and continue to produce wood when markets are full and prices drop as long as they cover operating costs (in effect, ignoring or underestimating fixed costs). Thus, over time, wood production costs are forced to increase.

Financial and mechanization aids by mills were put forth by five producers as an action to encourage future wood production. However,

some producers were already receiving such help, and more indicated a need for this form of aid as discussed in the section on "Equipment Investment and Capital Requirements."

Only one producer recognized producer training as a necessary course of action by mills. But, educating and aiding producers might perhaps be implied as a part of closer relations and information channels between the mills and producers.

Outside of what pulp mills could possibly do to help in the production of wood, one-half of the sampled producers stated a need for an investigation of workmen's compensation insurance costs. While some producers realized safety practices must be increased, many felt there were inequities in the present regulations that should be corrected. Specific areas mentioned were payments on fringe benefits, corporation members (meaning payments on the producer's earnings when the business is incorporated), and machine expenses included as labor. Also questioned was the possibility of having separate rates on different occupations within the overall harvesting operations.

One other area of necessary action referred to by a producer was training programs for equipment operators. Virtually all the equipment operators on the sampled operations had been trained on-the-job. Although several producers expressed on-the-job training as a costly procedure, there was no other alternative readily available.

CHAPTER IV

MAINTAINING THE WOODS LABOR SUPPLY

The pulpwood labor requirements projected for 1980 showed approximately the same levels of employment as estimated for the current labor force. However, certain conditions are necessary to insure that an available supply of woods labor is maintained.

For several years the pulpwood industry has been forewarned of a limited supply of woods labor. In 1957 Bromley pointed to a woods labor crisis as a more crucial problem for pulp mills to face, sooner than any possible shortage of wood supplies. Also in 1957, Levene noted developing manpower problems in pulpwood harvesting and a dwindling supply of woods labor.

Both Bromley and Levene recommended that steadier and more stable work be provided for woods workers. Also recommended were improved safety practices, the provision of fringe benefits, more recognition of unemployment and workmen's compensation insurance, and greater mechanization.

These warnings by Bromley and Levene were directed toward the industry at large, but most of the recommendations involve employer-employee relationships. Therefore, they directly have to be provided to woods workers by their employers--the producers. It is important to recognize that the woods labor supply be considered apart from producers. Producers are the employers of the woods labor force. And if producers face conditions that make it unprofitable to operate, this in itself will reduce employment, even if an adequate labor resource is willing to work. Indirectly, certain conditions may determine what

producers can provide for their workers.

In years previous to 1965 surpluses of wood and rural labor enabled pulp mills in Michigan and the Lake States to procure their wood requirements at fairly stable prices. Procurement policies led to a system of many small producers with a large part-time labor force. Manthy and James (1964), analyzing such policies in a study of pulpwood marketing in the North Central region, stated:

> Present policies which lead to widespread use of seasonal, part-time pulpwood producers can be viewed as socially desirable in that they offer some earnings to a great many of rural workers. In another sense, such policies contribute to the oversupply and underemployment of labor in the pulpwood producing regions. They may provide income which, when added to that available from other marginal forms of employment, is enough to hold an abundance of low-income labor in the area. In the long run, such labor supply may be lost in any case (at least the most productive part of it).

It is apparent from the interviews with both the pulp mills and producers that the availability of woods labor has become limited. The course of action that basically appears to be necessary to increase the availability of woods labor is a change in the wood procurement policies of pulp companies.

While the wage rate for woods labor has been fairly competitive if compared to other occupations, low average annual earnings, the lack of fringe benefits, the short work year, the hard physical work, and the general lack of security have made woods work less than attractive. However, the sampled producers have shown that it is possible to offset these disadvantages to a certain extent. By establishing capital-intensive (more mechanized), high volume operations, producers have been able to incorporate improvements in working conditions for employees while achieving a fair return for their investment and labor. But the producers are limited in their efforts to the extent that they have

a fairly stable and assured market for their volume production.

In the previous chapter it was outlined what the pulp mills feel they can do to counteract wood shortages, and what the producers feel the pulp mills can do to help increase future wood production. Longer-term and larger contracts, the major desires of the producers, did not receive as favorable response from the pulp mills. The high reliance upon price increases by mills perhaps reflects a more immediate solution to wood supply problems, and also may indirectly reflect a concern over reducing the number of producers.

Reducing the number of producers may be a question of social concern on the part of the mills. However, in the long run, greater efficiency in the industry is needed for it to remain competitive. And for efficiency to be achieved, better producer harvesting operations are needed. As pointed out by the sampled producers, prices for wood were not so much a problem as instability in wood orders. Producers believe long-term contracts will help reduce instability and permit them to create better employment conditions and reach more efficiency in production.

Of course, some degree of annual fluctuation in pulpwood requirements appears inescapable. However, the size of the fluctuations do not appear to be that large. A large proportion of the mills' pulpwood requirements could be reasonably assured of purchase over time.

A production system consisting of many small, part-time producers has not been able to provide the improvements in working conditions necessary to attract labor to woods work. Such a system is also more adversely affected by changes like the new workmen's compensation law in 1965, which made workmen's compensation applicable to producers

employing one man or more.[8] As reported previously, a number of the sampled pulp mills attributed the wood shortage in part to the forcing out of business of small producers who became subject to the high workmen's compensation costs.

A change, such as the elimination of the exemption of small logging operations from minimum wage and overtime regulations under the provisions of the Fair Labor Standards Act (which may be expected in the not too far distant future), could produce adverse effects among small operators similar to that which occured with the change in the workmen's compensation law. However, such action would hardly affect the operations of the producers sampled for this study. Particularly, the tree-length operations could accommodate such a change easily. The promotion of a pulpwood production system which can accommodate such changes is desirable for the stability of the whole industry.

Regarding the possibility of training woods workers as a means of increasing the woods labor supply, it would be necessary to be able to offer such trainees a fairly attractive job. Training a person to be a pulp cutter under working conditions generally existing today is not likely to attract many potential workers. The minimum requirements necessary would be conditions which exist currently in the "best" operations. Emphasis must be directed towards improving general working conditions before considering training programs (which, in some form, may be desirable for future equipment operators and maintenance men).

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[8]Currently, Michigan's loggers are legally required to carry workmen's compensation insurance if they employ one man 35 hours a week for 13 weeks (or three part-time employees 35 hours a week for 13 weeks). Prior to the change in 1965 the law applied to only employers of three men or more. (Information supplied by the Workmen's Compensation Department, Lansing, Michigan.)

CHAPTER V

SUMMARY AND CONCLUSIONS

The wood shortage of 1965 and 1966 has awakened concern over the problem of maintaining an adequate supply of woods labor for the forest products industry in Michigan. This study has focused attention on the present status and future requirements of woods labor for the pulpwood industry. Data and resulting conclusions are based largely on interviews with representatives of Michigan pulp mills and a portion of their producer suppliers. Interviews were conducted during the summer of 1967. Interest was centered on data for the year 1966.

The Woods Labor Force

In the absence of reliable data concerning the actual number of workers involved in the harvesting of forest products, employment figures were estimated by relating the average productivity per man-day and man-year of labor to total volumes of timber output. Using this method, it is estimated that in 1966 approximately 40 percent of the 8,924 full-time equivalent workers in logging in Michigan were involved in producing pulpwood.

The recent wood shortage conditions have been largely attributed to a woods labor shortage. Yet indications are that an adequate physical labor resource was present in wood producing areas during this same period. Factors other than the size of the labor resource were affecting the availability of the physical labor supply. Studies of woods labor reveal the following as typical woods labor characteristics and working conditions: The average Michigan pulp cutter earns

approximately $76 a week over a period of 40 weeks a year, or an annual income of less than $3,000; engages in hard physical labor for his earnings; receives no fringe benefits; and, in general, lacks any job security. Accordingly, during periods of high economic activity, opportunities in other forms of employment limit the availability of woods workers.

It is implicit, therefore, that woods work must be made more attractive than alternative work to bring entrants into the wood producing industry. With this in mind, working conditions were observed on the "best" pulpwood producing operations to determine reasons and conditions which contributed to the success of these operations.

By building capital-intensive, high volume operations, sampled producers considerably improved working conditions of their employees. Wages for the 194 full-time and 26 part-time workers employed on these operations in 1966 averaged $106.55 per week. Employees on the higher productivity tree-length operations earned $138 per week, and employees on the shortwood operations earned $95.61 per week. A longer work year--47 weeks--was averaged during 1966 compared to the usually cited industry average of 40 weeks. Also present was a beginning trend toward the provision of such fringe benefits as paid vacations and holidays, health and hospitalization insurance, overtime, retirement, and transportation. By building more capital-intensive operations (utilizing less labor-intensive harvesting methods) and increasing productivity and total output, these producers experienced less difficulty in hiring and retaining employees.

Assuming the sampled pulpwood operations will be representative of pulpwood operations in the near future, pulpwood labor requirements

for 1980 will be approximately the same as present day employment levels. This is so because of (1) increased productivity of capital-intensive operations, (2) lengthening of the work year made possible by the introduction of new technology, and (3) potential use of chips from the waste of wood-using plants. Specifically, 3,530 full-time equivalent workers will be required to harvest the 3,180,000 cords of output projected for 1980, assuming a productivity of 3.45 cords per man-day for 235 work days, with 10 percent of total production composed of chipped residues.

Adjustments to Changing Labor Supply Conditions

While labor requirements will not be greatly increased, the problem remains of maintaining an adequate, available labor supply. Recent industry adjustments to changing wood and labor supply conditions indicate, with some additional changes, that this problem can be solved.

The most notable adjustment that has been made by the pulp mills in response to the wood shortages experienced in 1965 and 1966 was an increase in the price paid for wood. Pulp mills interviewed view price increases as the most effective means of coping with possible future wood shortages.

Producers are the most important agent source of wood for mills, supplying 88 percent of total receipts in 1966. Contractual agreements for purchasing wood from producers were approximately equally divided between written and oral agreements among the mills. Oral agreements ranged from 1- to 6-months, and written contracts usually ranged from 6- to 12-months in length.

Contracts covering a period greater than one year in length are

provided to a limited number of producers by only one of the sampled pulp mills. Mills in general expressed reluctance to grant long-term contracts to producers because it was felt producers would not meet the long and large committments. And, less complications arise when adjustments in wood purchases must be made when shorter and less formal agreements are used. However, two of the three mills utilizing chips granted 2- and 3-year contracts with their chip suppliers, stating they were considered more stable and reliable.

The most significant change among the sampled producers was the trend toward increased production through the utilization of capital-intensive production methods. The average total investment in equipment for all operations was $66,475. Average output was 6,660 cords.

Producers have been forced to mechanize as the supply of labor has become more limited, particularly the availability of part-time labor. As capital investments have increased, output has increased to lower unit costs of equipment and achieve efficient production.

Characteristically, sampled producers have been reliable producers, with a stable or increasing level of production in recent years. Their operations have been gradually expanded through years of hard work and by establishing their credit and reliability with local credit institutions and major product buyers. They depend upon high volume production to assure a fair return for their efforts and capital investments. Through capital-intensive, high volume operations, producers have attempted and, to a limited degree, achieved improved working conditions for their employees.

However, the producers' inability to obtain regular and sufficient contracts over longer periods of time have complicated efforts

to improve woods working conditions required to maintain an adequate and efficient labor force. Primarily because of this problem, only 20 percent of the sampled producers were considering future expansion of their harvesting operations.

Sixty-five percent of the sampled producers definitely expressed the need for longer-term contracts. With high volume operations a longer planning period is needed. Stumpage should be obtained well in advance of harvesting to assure adequate cutting supplies. Longer-term contracts assist in securing long-term capital funds for equipment investment. And stability in wood orders is needed to maintain full-time employment for workers.

The pulp mills react directly to changing wood supply conditions by increasing or decreasing prices. However, the changing wood supply conditions result largely from changes in the availability of woods labor. And the producers--the employers of woods labor--face directly the changing conditions in the labor supply.

While the pulp mills indicated their major reliance upon price increases as a means to avoid wood shortages, the sampled producers pointed out that wood prices do not constitute a major problem for them. Longer-term contracts, larger contracts, closer relations with regular producers, and financial and mechanization aids received more favorable response by producers as desirable actions by pulp mills to help increase wood production to meet increasing demands.

Maintaining the Woods Labor Supply

With the trend toward fewer and larger producers, the needs expressed by the sampled producers will continue to grow in importance. What the pulpwood producer is able to do to improve working conditions for his employees is largely determined by the practices of the pulp mills. A prerequisite to increasing the availability of woods labor appears to be a change in the wood procurement policies of the pulp companies.

Greater stability in pulpwood production is needed. The reduction in the seasonal purchasing of pulpwood shown to date is a significant step in this direction.

To further achieve this stability, longer-term and larger contracts with regular and reliable producers would be a desirable action on the part of pulp companies. To a limited extent, action in this direction has been implemented. As an example, one of the sampled mills was using yearly contracts with producers, was allowing producers to establish their reliability, and was dealing with fewer and larger producers. Perhaps these policies were implemented because this mill was a new competitor and recognized changes necessary to attract new entries to the timber producing business.

One reason that has been voiced by pulp mills against large and long-term contracts is that past indications and experience reveal producers will not always meet large committments. However, the performance of the sampled producers would tend to counteract this position. Careful selection and close relations with good producers should provide a more reliable and stable source of raw material supply for the

pulp mills.

Greater financial and mechanization aids would also appear to be a desirable action by pulp companies. A willingness to increase and initiate this action was expressed by a majority of the sampled mills. Greater involvement by this form of action may also help control unwarranted development of productive potential, which happens when excessive encouragement is given to too many operators.

As shown by the sampled "best" producers, improved woods working conditions can be initiated when better relations exist between mills and producers. However, even these producers expressed a need for the stated changes. If further improvements for maintaining an adequate, available supply of woods labor are to be brought about, these basic changes would appear to be the focal point for initial action.

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LITERATURE CITED

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APPENDICES

APPENDIX A. PRIMARY MANUFACTURER QUESTIONNAIRE

CONFIDENTIAL

Date _____
Recorder _____

PRIMARY MANUFACTURER

Name of firm _____

Address _____

A. Wood Procurement

1. What was the total volume of wood receipts at your mill in 1966?

_____

_____

2. What was the pattern of wood receipts at your mill in 1966? (Indicate by season and amounts or %)

Season	Volume or %
_____	_____
_____	_____
_____	_____
_____	_____

3. Do you consider this pattern in volume of wood receipts at your mill in 1966 to be a desirable pattern?

Yes _____ No _____

If NO, what is your preferred pattern of wood receipts?

_____

_____

4. From which agent sources was your 1966 wood supply obtained? (Estimate volume of wood or percentage of total volume obtained from each source.)

	Volume	%
a. Own employees:		
1) From own land	_____	
2) From other land	_____	
b. Producer	_____	
c. Dealer	_____	
d. Other agent (specify)		
_____	_____	

5. Have there been any significant changes in the agent sources of your wood supply over the period 1962-1966?

Yes _____ No _____

If YES, what were the changes? _____

_____

If YES, what explanations can you give for these changes?

_____

6. Have you made any adjustments in your inventory and wood purchase patterns to accommodate wood suppliers during the period 1962-1966?

   a. Longer purchase periods _____
   b. Longer daily hours _____
   c. Larger inventories _____
   d. Longer contracts _____
   e. Other _____ _____
   _____ _____

7. What percentages of your firm's 1966 cut wood purchases were obtained under the following types of agreements?

	%
a. Written contract	_____
b. Oral contract	_____
c. No prior agreement	_____

8. How far in advance of the beginning of wood deliveries are contracts usually negotiated? _____

   _____

9. Are there any differences in the cut wood purchase contracts made with different groups of agents?

   Yes _____ No _____

   If YES, what are examples of these differences? _____

   _____

10. Are any long-term cut wood purchase contracts made with producers? (Greater than 1 year in length.)

    Yes _____ No _____

    If YES, what is the length of time of these contracts? _____

    _____

    If YES, what percentage of producer receipts are purchased under these contracts? _____

11. Do producers request or want longer term contracts?

    Yes _____ No _____

12. Does the standard cut wood purchase contract specify any conditions under which timber is to be harvested?

    Yes _____ No _____

    If YES, what are these conditions? _____

    _____

B. <u>Producers</u>

13. How many producers sell cut wood directly to your mill?

    No. _____

14. What number or percentage of these producers are large producers? (Large producers are defined as those supplying 1,000 cords of pulpwood or more.)

No. _____ _____%

15. What volume or percentage of total wood receipts are received from large producers?

Volume _____ _____% of total

16. How are producers paid who sell directly to the mill?

a. By load _____
b. Weekly _____
c. Other _____

17. Are any producers offered payments (loans) in advance of time of payment specified in a standard contract?

Yes _____ No _____

If NO, do producers request financial assistance from your firm?

Yes _____ No _____

If YES, is this the usual procedure adopted by your firm?

Yes _____ No _____

If YES, does the producer pay interest on such prepayments or loans?

Yes _____ No _____

If YES, what is the size limitations on the financial aids offered? _____

_____

18. Are any producers offered other business aids by your firm?

Yes _____ No _____

If NO, do producers request business aids from your firm?

Yes _____ No _____

If YES, is this the usual procedure adopted by your firm?

Yes _____ No _____

If YES, what are these business aids? _____

_____

19. What percentage or number of producers received financial or other business aids by your firm in 1966?

No. _____ _____%

C. Trends

20. To what degree does your firm perform the following functions in regard to wood procurement?

    a. Logging _____

    b. Hauling _____

21. Has your firm experienced any wood shortages or difficulties in procuring sufficient wood supplies to meet your demands in the years 1962-1966?

    Yes _____ No _____

    If YES, which years? _____

    _____

    If YES, what do you feel were the causes of these shortages?

    _____

    _____

    _____

22. What do you feel your firm can do to counteract or avoid wood shortages?

    a. Raise prices _____
    b. Financial assistance _____
    c. Longer term contracts _____
    d. Larger contracts _____
    e. Producer training _____
    f. Mechanization aids _____
    g. Company logging _____
    h. Other assistance or business aids _____

    _____

23. Has your firm taken action in any of these areas in relations with wood suppliers? _____

    _____

    _____

24. Firm's best producer operations.

Name	Address

APPENDIX B. PULPWOOD PRODUCER QUESTIONNAIRE

CONFIDENTIAL

Date _____
Recorder _____

PULPWOOD PRODUCER

Name _____

Address _____

A. General

1. How many years have you been operating as a timber producer in your present location?

_____ years.

2. Are you a full-time timber producer?

Yes _____ No _____

If NO, what other business or occupation are you engaged in?

a. Sawmill operator ___
b. Operator of other wood-using mill ___
c. Store operator ___
d. Farmer ___
e. Wage earner ___
f. Other _____ ___

If NO, what percentage of your gross revenues in 1966 was realized from your business as a timber producer?

_____%

3. What were the principal raw timber products you handled in 1966?

a. _____
b. _____
c. _____
d. _____
e. _____
f. _____

4. Is your timber producing business typically a year-round business?

Yes _____ No _____

If NO, why? _____

_____

_____

If NO, what are the typical months of operation? _____

_____

_____

5. Under what form of business organization is your business conducted?

a. Individual ownership _____
b. Partnership _____
c. Corporation _____

B. Employees

6. How many full-time and/or seasonal employees did you have in your timber producing business in 1966?

	Full-time	Seasonal
Employees	_____	_____

7. Do you hire part-time or seasonal employees for peak production periods?

Yes _____ No _____

If YES, what do these workers do after their period of employment with you? _____

_____

8. How many years have your employees been with you?

Average _____

Range _____

9. What is the age of your employees?

Average _____

Range _____

10. What was the average earnings for employees per week during 1966?

_____ per week

11. Your indirect labor costs amount to what percentage of your payroll?

_____%

12. How are employees paid?

a. Piece rate ___ c. Weekly ___ e. Other
b. Per hour ___ d. Per cord ___ _____

13. How often are employees paid? _____

14. Are employees flexible enough in skills to interchange most jobs if needed? _____

_____

15. Are there minimum standards of performance such as a specific number of cords per week that employees must meet?

Yes _____ No _____

If YES, what are these standards? _____

_____

16. Where are the sources of your employees?

a. Town or city ___
b. Rural ___

17. What is the average distance employees travel from home to place of work?

Average _____

Range _____

C. Equipment

18. What is your total equipment investment in your timber producing operation? _____

_____

_____

19. Have employees received any prior training or experience before operation of equipment, or do they receive on-the-job training?

_____

_____

20. Do you have your own machine shop for maintenance of equipment?

Yes _____ No _____

If YES, are both major and minor repair work done in this shop?

_____

_____

If YES, who does the maintenance work? _____

_____

If YES, is equipment owned by employees also serviced in this shop? _____

D. Production and Costs

21. What was the total volume, by product and unit of measure, of your timber product sales in 1966?

	Product	Volume
a.	_____	_____
b.	_____	_____
c.	_____	_____
d.	_____	_____
e.	_____	_____
f.	_____	_____

22. Does your production usually go over, under, or equal the amount you have contracted for? _____

23. What is your average output per man-day?

_____ cords per man-day

24. What is the average number of weeks of work per year?
_____ weeks per year

25. What is your average number of days of work per week?
_____ days per week

26. What is your average number of hours of work per day?
_____ hours per day

27. What costs per unit of output apply to the wood products in your present operation?

		Cost	Percent
a.	Labor cost	____	_____
b.	Machine costs:		
	1) _____ ____		
	2) _____ ____		
	3) _____ ____		
	4) _____ ____	____	_____
c.	Stumpage cost	____	_____
d.	Miscellaneous and overhead costs	____	_____

28. What profit per cord or annual income do you need to stay in business profitably? _____

_____

29. What profit per cord do you make on your present operation? ____

_____

30. What was the total labor cost for the timber products produced by you in 1966? _____

31. What was your total equipment expenses for the timber products produced by you in 1966? _____

_____

32. Do you subcontract any part of your timber producing operations?
Yes _____ No _____

If YES, did subcontracting apply to:

a.	Felling and bucking	____	Yes	____ No
b.	Skidding	____	Yes	____ No
c.	Hauling	____	Yes	____ No

If YES, what percentage of the volume handled was subcontracted?

a.	Felling and bucking	_____%
b.	Skidding	_____%
c.	Hauling	_____%

If YES, why didn't you handle all the logging operations yourself? (If more than 1 reason, check in order of importance.)

a. _____ Lacked necessary equipment
b. _____ Lacked logging or hauling experience
c. _____ Inadequate labor available
d. _____ Believed subcontracting to be the cheaper method
e. _____ Producer's time more valuable for other purposes
f. _____ Other (specify) _____

33. Is there a minimum size tract or volume of timber that is necessary for the profitable operation of your equipment?

Yes _____ No _____

If YES, what volume or size of tract is considered a necessary minimum? _____

34. Do you have difficulty obtaining stumpage? _____

_____

35. Who does the bookkeeping for your operation? _____

_____

E. Business Aids

36. Do you receive any loans or prepayments from any product buyers in advance of time of payment specified in a standard contract to facilitate your logging or hauling responsibilities?

Yes _____ No _____

If YES, which buyers? _____

_____

If YES, for what purposes? _____

_____

If NO, do you desire such aids? _____

Is there a need for such aids? _____

_____

37. Do you receive any other business aids from product buyers to facilitate your logging or hauling responsibilities?

Yes _____ No _____

If YES, which buyers? _____

_____

If YES, for what purposes? _____

_____

If NO, do you desire such aids? _____

Is there a need for such aids? _____

_____

38. Do you receive financial or business aids from other sources to facilitate your operations?

Yes _____ No _____

If YES, what sources and for what purposes? _____

_____

_____

_____

If NO, is there a desire and a need for such aids? _____

_____

F. Trends

39. To what product buyers or agents did you sell the wood products you handled in 1966?

	No.	% of total volume
a. Manufacturer	_____	_____
b. Dealer	_____	_____
c. Other (specify)		
_____	_____	_____

40. Do you encounter any difficulty getting regular and sufficient wood orders for the wood products you handle? _____

_____

41. Do you desire long-term contracts or agreements with your wood buyers?

Yes _____ No _____

If YES, how long? _____

If YES, with what conditions? _____

_____

42. What have been the significant changes in the organization and use of equipment in your operations in the years 1962-1966?

_____

_____

_____

_____

What were the reasons or causes for these changes? (Rank in order of importance.)

a. _____
b. _____
c. _____
d. _____

43. What changes in the number of persons employed in the production of your timber products took place in the years 1962-1966?

1962 _____
1963 _____
1964 _____
1965 _____
1966 _____

44. What fringe benefits do employees receive?

Paid vacation and holidays _____
Health and hospitilization _____
Bonuses _____
Sick leave _____
Life insurance _____
Other _____ _____

45. What changes in the annual volume of your timber product sales took place in the years 1962-1966?

1962 _____
1963 _____
1964 _____
1965 _____
1966 _____

46. Do you plan to expand your operations?

Yes _____ Would like to but can't _____
No _____

If you would like to but can't, why not? _____

_____

If NO, why not? _____

_____

If YES, how do you plan to expand?

a. More independent workers or crews? _____
b. Increased output per man? _____
c. _____

_____

If YES, how will you finance your expansion and where will your increased production be sold? _____

_____

_____

47. How were you able to expand to your present operations? (Financial backing, sale of products to more buyers, other help received, etc.) _____

_____

_____

_____

48. What do you feel pulp mills can do to help increase the production of wood to meet increasing demands?

a. Raise prices _____
b. Financial assistance _____
c. Longer-term contracts _____
d. Larger contracts _____
e. Producer training _____
f. Mechanization aids _____
g. Other _____ _____
_____ _____

49. What else do you feel is necessary to be done to help pulpwood producers? _____

_____

_____

_____

_____