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THE ROLE OF WOOD PROCUREMENT IN THE DYNAMIC PAPER INDUSTRY OF WISCONSIN AND UPPER MICHIGAN

by

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ABSTRACT

THE ROLE OF WOOD PROCUREMENT IN THE DYNAMIC PAPER INDUSTRY OF WISCONSIN AND UPPER MICHIGAN

by Robert J. Engelhard

Paper mills in Wisconsin and Upper Michigan obtain about eighty percent of their wood supply from independent wood producers and dealers. Excesses in supply and demand for wood occur frequently, often accompanied by decline or rise in price. Often such disequilibrium is the result of poor communication between mill management and wood supplier.

The focal point of this study is the director of wood procurement. His office is the path through which information concerning the supply and demand for pulpwood moves. The purpose is to develop new insight into the problems confronting the wood producer and top paper mill management, meeting through the director of wood procurement. A more thorough mutual understanding should promote greater harmony of supply and demand.

Interviews were conducted with the director of wood procurement and a representative of top management at four-

teen paper mills in Wisconsin and Upper Michigan in order to determine: (1) the environment within which the paper industry in the study area manufactures paper products and competes for wood; (2) the relationship between the competition for wood and the nature of its production to the method of acquisition; (3) policies of wood acquisition; (4) the role played by the director of wood procurement as a buyer of wood and as a mill employee; (5) opportunities for improvement in the producer-mill relationship which could result in greater harmony in wood supply.

Most of the study mills are old, well established manufacturers. Pulpwood procurement represents the largest single capital outlay in wood pulp production. Lacking economies of scale and technology, they compete for survival by modifying their product line to meet the specific needs of each customer. Product flexibility is essential. Wood procurement policies must necessarily remain flexible.

Top management has delegated the authority for the acquisition of pulpwood to the director of wood procurement. In most instances, the director of wood procurement possesses considerable autonomy in decision-making designed to enable him to execute his responsibilities efficiently.

Given a mixture of species necessary for wood pulp manufacture, the director can establish time and methods of delivery, region from which the wood will be delivered, identity of the producer and, to a considerable extent, the prices which will be paid for wood deliveries. His superiors recognize that he possesses a high degree of specialized knowledge and skill and permit him to set procedures and policy as he deems necessary for the fulfillment of corporate objectives within the framework of his responsibilities and experience.

According to a consensus of opinion of the directors of wood procurement interviewed, the producer of wood of the future must have certain characteristics if he is to assist the industry in attaining its objective of reducing the comparative cost of wood pulp manufacture. These characteristics are: (1) he will be an independent entrepreneur; (2) his wood producing capability will increase; (3) he will receive larger contracts from the mills for whom he produces than he is now receiving; (4) his entire logging operation, from stump to the mill yard, will be most mechanized in the future than now; (5) he will be more inclined to earn his total livelihood at the business of wood pro-

duction; (6) he will have a more professional business knowledge of the art of wood production; (7) he will have a more stable and predictable income expectation; (8) his wood production costs will also be more stabilized and predictable. Wood procurement has the responsibility of creating an atmosphere conducive to the effectuation of these characteristics.

Top management does not consider wood procurement to be innovative within the area of its responsibility. Change usually originates outside the department.

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CHAPTER I

INTRODUCTION

The paper industry of Wisconsin and Upper Michigan is a major processor of pulpwood raw materials in the North Central Region of the United States. As such, it exercises a major influence in the marketing of wood and the amount and profitability of forest management in this region.

In order for the paper industry of Wisconsin and Upper Michigan to be able to meet the demands for its finished products, it is essential that an adequate flow of wood raw material be maintained from the forest to the pulp mill where wood pulp, the basic ingredient in paper manufacture, is produced.

It has long been the custom for the pulp mills of Wisconsin and Upper Michigan to obtain most of their wood raw material from independent wood producers and dealers rather than through company logging crews. This arrangement makes it necessary for pulp manufacturers, hereafter referred to as paper mills, to be in constant contact with a considerable number of these independent pulpwood producers. The responsibility for procuring pulpwood raw material, as well as, for the maintenance of close liason with independent wood producers, is delegated to the paper mill's director of wood procurement.

The adequacy of the director of wood procurement's communication with the independent wood producer is measured by the degree of equilibrium between wood production (supply) and the paper mill's needs (demand). Over-production of pulpwood often results from an imperfect understanding by the producer of the volume of wood needed by the mills. Although often considered to be entirely a result of adverse weather conditions, the inability of the producer to meet mill needs is often due, as well, to imperfect communication between the producer and mill concerning impending conditions likely to influence production and demand.

Since World War II there have been times when marked deviation from the desired equilibrium occurred. The most recent manifestation of a wood shortage occurred during 1966. Wood production has also, occasionally, exceeded the needs of the paper mills in this region. The pulpwood shortage of 1966 was followed by excess wood production in late 1967.

The director of wood procurement, in addition to the responsibility of liason between the independent producer and the paper mill, is also responsible to his paper mill's top management echelon. Therefore, he communicates both externally to the corporation and internally within it. His relationship with the independent producer is to a large extent dictated by the constraints imposed upon him by top management.

Purpose and Objective

The focal point of this study is the director of wood procurement. His office is the path through which information concerning the supply and demand of pulpwood moves. The purpose is to develop new insight into the problems confronting the wood producer and top paper mill management, meeting through the director of wood procurement. A more thorough mutual understanding should promote greater harmony of supply and demand. In addition, some realistic proposals regarding future acquisition policies resulting from this study should yield a more harmonious, stable, and predictable relationship between producer and the paper mill.

Shortages of wood cause sharp increases in prices paid. This can cause financial hardship to a mill. Excesses in supply are accompanied by falling prices which result in a financial hardship on the producer. Neither alternative is optimum since short term price fluctuation discourages long term planning by both parties and tends to encourage speculation and discontinuity of enterprise.

The object is, therefore, to: (1) identify the environment within which the paper industry in Wisconsin and Upper Michigan manufactures paper products and competes for wood raw material; (2) relate competition for wood and the nature of its production to method of acquisition; (3) define existing

policies of wood acquisition; (4) explain the role played by the director of wood procurement within the paper mill corporation as a purchaser of wood, as a link in the channel of communication between top management and wood producer, and as a determinative employee of the corporation; (5) indicate opportunities for improvement in the producer-mill relationship available to the director of wood procurement which could result in greater understanding between producer and mill designed to yield greater control over wood supply.

Method and Procedure

In order to accomplish the objectives listed, the study was divided into four parts: (1) a review of the importance of the paper industry in the study area and the mechanism by which it acquires its wood raw material for the manufacture of wood pulp and paper; (2) an investigation into the perspective through which top management views the process of wood acquisition; (3) a review of the perspective through which the director of wood procurement views both his source of wood raw material and his relationship to top corporate management; (4) the interaction of top management and the director of wood procurement in the dynamic paper industry.

Nineteen paper mills in Wisconsin and Upper Michigan were originally selected for study. This included all mills pro-

ducing wood pulp chemically either by the sulfite, sulfate or semi-chemical processes within Wisconsin and Upper Michigan. The sample included some of the major groundwood pulp mills as well. The study sample contained 96 percent of the wood pulp manufacturing capacity in Wisconsin and 100 percent of the wood pulp capacity in Upper Michigan, as reported in Post's 1968 Pulp and Paper Directory (14). Four minor groundwood mills in Wisconsin were not included because each consumes annually less than 10,000 cords of pulpwood. No paper mills were sampled which did not manufacture wood pulp in the study area.

Interviews were to be conducted with a representative of top corporate management and with the director of wood procurement at each of the 19 paper mill sites. Two questionnaires were prepared to be used as an interview outline; the first questionnaire to be used in the top management interviews and the second in the interview with the director of wood procurement. The questionnaires were prepared in October 1967.

Initial contact was made with the prospective interviewees by letter. A sample copy of these letters may be found in the appendix. Twelve of the sixteen mills originally contacted in Wisconsin agreed to the interview. These twelve mills represented seventy-four percent of the wood

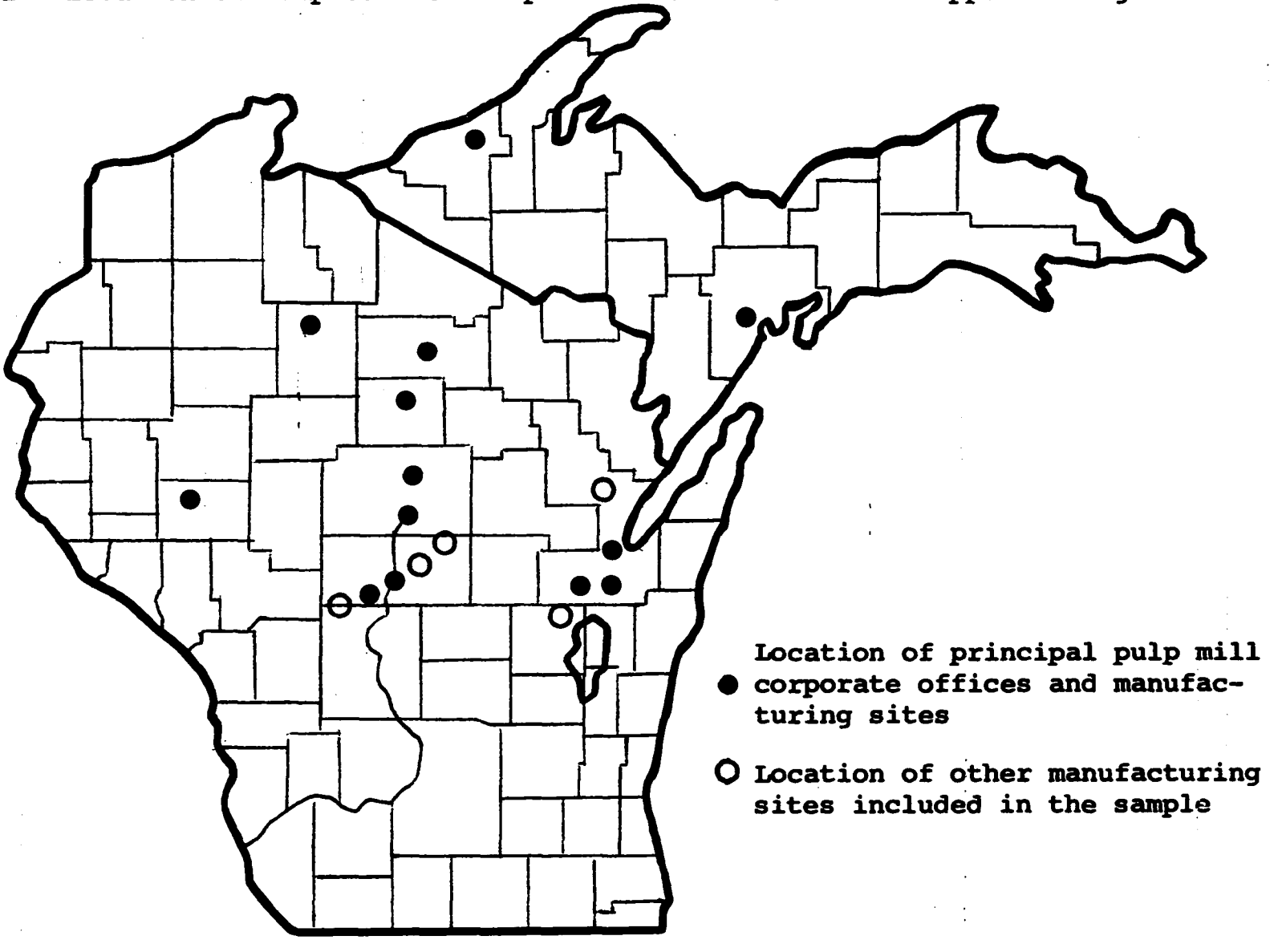
pulp capacity in the state. Two of the three mills contacted in Upper Michigan agreed to the interviews, representing seventy-six percent of the wood pulp capacity of that area. Figure 1 indicates the locations of the fourteen corporate executive offices at which interviews were held as well as the locations of all wood pulp manufacturing sites for which the interviewees are responsible.

The initial letter of introduction precipitated additional correspondence in order to establish a mutually satisfactory interview date. All but two companies requested an advance copy of the questionnaire for review prior to consenting to the interviews. Correspondence began in December 1967. The first interview took place January 17, 1968 and the last interview was completed April 30, 1968.

Statistical data were collected for 1966 except when specific information was desired to describe the most recent wood requirements of each mill. The specific question regarding that data was requested for 1967. It would be irrational to describe a 1966 wood requirement and to use that information as a basis for drawing conclusions if wood requirements had changed radically in 1967, as was the case at three mills.

With few exceptions, the correspondence preliminary to the interview proved to be the most time consuming part of

Fig. 1 - Location of Sampled Wood Pulp Mills in Wisconsin and Upper Michigan



the study. Once the investigator established an atmosphere of cooperative dialogue with the representative of top management and the director of wood procurement, established a time and place for the interview, and appeared promptly, the interview was relaxed and candid.

Rarely did corporate policy prohibit complete and free replies to the questions asked. The primary source of anxiety concerned questions regarding the establishment of prices paid for wood by the paper mill. Many of these mills refuse to discuss wood prices with anyone other than producers with whom they are negotiating for the delivery of pulpwood. The reluctance of some of the mills to discuss prices is directly attributable to civil action number 3563 taken by the Justice Department against a number of these mills for alleged violation of section 1 of the Sherman Act, as ammended. The action taken by the Justice Department caused a number of the mills indicted to sign a consent decree restraining them from various forms of direct communication regarding wood prices in effect. In spite of the fact that the consent decree specifically excluded studies and reports prepared by any division or department of any government or any college or university, a barrier to free communication did exist between the interviewer and some of the interviewees on this subject.

CHAPTER II

REVIEW OF LITERATURE

Paper industry's top management has at its disposal a wide variety of information which is used as a basis for decision making. Trends and developments in the scientific and technical areas of pulp and paper manufacture are available through the Technical Association of the Pulp and Paper Industry (TAPPI), 360 Lexington Avenue, New York City, 10017. In addition to publishing the Journal of that association, TAPPI, monthly, they annually publish a Bibliography of Papermaking and U. S. Patents. The bibliography is a compilation of abstracts of articles of a scientific nature appearing in journals, books, and periodicals articles by subject. Over 1000 foreign and domestic journals are searched annually.

A more complete list of journals and information regarding them, as well as a list of libraries in the U. S. and Canada in which they are currently received, can be found in the List of Periodicals Abstracted by Chemical Abstracts, with Key to Library Files, published by Chemical Abstracts, Ohio State University, Columbus, Ohio, 43210, and Periodicals Currently Received, which appears in the

Abstract Bulletin of the Institute of Paper Chemistry, Appleton, Wisconsin, published monthly.

The Institute of Paper Chemistry publishes, in addition a bibliographic series containing bibliographical information on a specific paper manufacturing subject. To date, 236 subjects have been covered. The bibliography contains the author, title of his article, publication in which the article appears, and a brief abstract of the content of the article. Authors, subject, and patents are indexed separately.

General information regarding the business aspects of the paper industry, as well as articles concerning technology and engineering, paper demand and supply, paper and pulp prices and trends, expansions, capital investments and international market data, are available through a variety of paper trade publications. Among the more important publications of this type are both Pulp and Paper (since 1965 combined with Paper Mill News) and Pulp and Paper International. The former is published weekly, the latter monthly except twice in August, by Miller Freeman Publications, 500 Howard Street, San Francisco, California, 94105. Prior to 1965 Paper Mill News was published weekly by L. D. Post, Inc., 3rd and Hunting Park Avenue, Philadelphia.

The Paper Trade Journal is published weekly by the Lockwood Trade Journal Company, 551 Fifth Avenue, New York

City, 10017. Lockwood also publishes annually its Lockwood's Directory of the Paper and Allied Trades Paper Directory. Both directories list the name and location of all pulp and paper mills in the United States and Canada, as well as production statistics, new mills projected and under construction, a directory of mill officials, manufacturers of paper and pulp by grade, and a buyer's guide to equipment and supplies needed in the trade.

Of particular interest to those doing business or contemplating business in the specific region are the Southern Pulp and Paper Manufacturer published monthly by the Ernest H. Abernathy Publishing Company, Inc., 75 Third Street, N.W., Atlanta, Georgia, 30308 and the Pulp and Paper Magazine of Canada, a twice monthly publication by the National Business Publications Ltd., Gardenvale, Quebec. The Pulp and Paper Magazine of Canada is authorized to publish official papers of the Technical Section, Canadian Pulp and Paper Association.

Many of the statistics concerning the paper and pulp industry of the United States originate with the American Paper Institute, 260 Madison Avenue, New York and the Census Bureau, U. S. Department of Commerce. The American Paper Institute is sponsored by many of the paper manufacturers in the United States.

Records and information regarding the paper industry in Wisconsin are available from the Wisconsin Paper Industry Information Service, 104 North Commercial Street, Neenah, Wisconsin. Sponsored by twenty-four paper companies in Wisconsin, they publish newsletters and pamphlets concerning the role played by the industry in the economy of Wisconsin.

Information available to the pulpwood industry of primary interest to the director of wood procurement and manufacturers of wood pulp is available within the study area concerning logging equipment and technology and forest resource inventory data.

The American Pulpwood Association, 605 Third Avenue, New York City, is an industry sponsored organization dedicated to the broad dissemination of information concerning new technology in logging and wood handling, silviculture and woods safety. At the discretion of the area forest engineer and with the cooperation and assistance of the manufacturer, between seventy-five and 100 Technical Notes are published each year by the association concerning logging equipment available to the industry. In addition, they report annually on the progress being made in Pulpwood Logging and Research Projects.

For the Lake States, the American Pulpwood Association annually sponsors a forestry engineering seminar. This is

conducted in Wausau, Wisconsin every February and the papers presented are available to selected members of the public and industry.

The U. S. Department of Agriculture, Forest Service publishes material concerning both the pulp and paper industry and the forest resources of the study area. Most recent release from Washington, D. C. concerning the paper industry is their Forest Resource Report Number 18. This discusses the Use of Regression Equations for Projecting Trends in Demand for Paper and Board as well as containing projections of demand to 1985 for major grades of paper and board, wood pulp and pulpwood (9).

Each year since 1946 the North Central (until 1965, Lake States) Forest Experiment Station has published statistics concerning Pulpwood Production and Consumption of particular interest within the study area. Information for the report is furnished by the members of the wood pulp and paper manufacturers. Included in these reports are data on the company, location, and capacity of the mills in the Lake States, as well as production and consumption figures by state, species, roundwood and chips and origin and destination of wood.

The Lake States Forest Experiment Station Papers 82 and 90 concern Michigan's and Wisconsin's forest resources

respectfully. Station paper 82, concerning Michigan's forest resources, is being revised at the present time and publication is anticipated by 1969. Most of the information concerning Michigan's latest inventory has been published in Technical Notes and is available to the members of wood procurement in Michigan at the present time (18).

Station Paper 90 was a compilation of data collected between 1950 and 1958 in Wisconsin. Separate reports are available for each of thirty-two counties and five regions in the state as a result of this inventory. They are available from the Wisconsin Department of Natural Resources under the title of Wisconsin Forest Inventory Publications. A new reappraisal is presently underway and is expected to be completed by 1972 (16).

Inventory data for the county forests of Wisconsin is available in each county. The title is a Ten Year Comprehensive Plan for _____ County Forest. These were published in 1965. Similar information should be available concerning the state forest lands by 1971.

Literature concerning corporate management and marketing dynamic and voluminous. Most texts written on the subject of corporate organization and administration, such as William H. Newman's revised edition of Administrative Action published by Prentice-Hall, Englewood Cliffs, N. J.,

agree that a corporation must create lines of communication necessary to meet its own needs. However, texts of this nature provide general guidelines for creation of communication systems. Others, such as Wilber E. Moore's, The Impact of Industry, Prentice-Hall, 1965, Victor A. Thompson's Modern Organization, Knope, New York, 1961, and Edgar H. Schein's Organizational Psychology, Prentice-Hall, 1965, deal with the sociological and psychological impact of industrial organization on the individual. Particular reference is made to the individual's ability to compete within a bureaucratic structure.

Most marketing literature can be classified into one of four general types. There are basic marketing texts such as Marketing: The Firm's Viewpoint by Schuyler F. Otteson, William G. Panchar and James M. Patterson, 1964, one of the Macmillan, New York, marketing series or Mark E. Stern's Market Planning: A Systems Approach, McGraw-Hill, New York, 1966.

Many advanced marketing texts are editorial source books expressing views of selected authors on marketing subjects compiled for the purpose of providing what the editor considers to be an accurate analysis of the marketing subject, Managerial Marketing: Perspectives and Viewpoints by Eugene J. Kelley and William Lazer, third edition, 1967,

published by Richard D. Irwin, Inc., Homewood, Illinois or Theory of Marketing, edited by Reavis Cox, Wroe Alderson and Stanley J. Shapiro, 1964, also published by Irwin.

Marketing journals furnish an outlet for current articles, usually of 3000 and 6000 words in length. The Journal of Marketing is a quarterly publication of the American Marketing Association, 230 North Michigan Avenue, Chicago, Illinois, 60601. Some graduate schools of business administration also publish journals. Harvard Business Review, published bimonthly by Harvard University and MSU Business Topics, published quarterly by Michigan State University are examples.

Finally, managerial and marketing case study books provide case problems for exercise in the application of theory to real problems. One of the most current examples is the fourth edition of Problems in Marketing by Milton Brown, Ralph G. Sultan, Walter J. Salmon, and Richard N. Cardozo, 1968, McGraw-Hill. The concept of case study originated at Harvard University and selected cases of a specific nature, for example, the paper industry, are available through Harvard's Graduate School of Business Administration.

None of the marketing and management information available, except selected case studies, is specifically

oriented to the paper industry. However, principles defined are broad and often applicable and some illustrations are obtained from paper industry actions.

CHAPTER III

THE ENVIRONMENT WITHIN WHICH THE WISCONSIN-UPPER MICHIGAN PAPER INDUSTRY COMPETES

The Economic Importance of the Paper Industry in the United States

Paper and paperboard production in the United States amounted to 46.0 million tons in 1967. The American people consumed approximately 51 million tons during that same year for an average per capita paper and paperboard consumption rate of 512.4 pounds in 1967. Pulpwood consumption for the same year was estimated at 51.4 million cords (11).

The American Paper Institute estimates that the paper and paperboard industry installed 2.8 million annual tons of additional productive capacity in 1967 and will install about another 2.8 million annual tons of productive capacity in 1968. Capital expenditures on new plant and equipment of the paper and allied products industry equaled approximately $2.9 billion in 1967. Most of this expansion investment is expected to be devoted to the development of the industry's capacity in the South and West Coast (11).

At the end of 1967 there were 754 paper and paperboard mills and 271 wood pulp mills in the United States. The

paper industry employs about 684,000 persons with an annual payroll in excess of $4.6 billion and producing products with a value of $21.8 billion (2).

It is estimated that by 1985 paper and board consumption will rise to 101.5 million tons. Demand by U. S. pulp mills is expected to reach 120.2 million cords in the same year.

Economic Importance of the Paper Industry in the Study Area

In Wisconsin, one out of every eleven industrial workers is employed in the pulp and paper industry. There are forty-nine pulp and paper mills in the state and an additional 150 converting and merchant plants employing a total of 44,900 persons. In 1966, paper firms spent a record $84,976,000 for capital investment. This expansion adds more than ten percent to the previous total investment of $827,838,000. Two new paper machines began production in Wisconsin in 1967 (23). Expansion continues in both Wisconsin and Upper Michigan.

Characteristics of the Study Sample

Organizational Classification

The ownership pattern of the paper mills participating in this study can be classified in one of two ways. Either

the paper mill corporation has its main office within the study area or the main office of the corporation is located in some city outside Wisconsin or Upper Michigan. Corporations falling into the latter classification are generally larger and more complex than those corporations having their main office in Wisconsin or Upper Michigan. Five of the six mills having their main office in some other part of the United States appear in Fortune magazine's most recent list of the 500 largest corporations in the United States with gross sales in excess of $130 million (7). On the other hand, none of the eight cooperating mills whose main executive office is located within the study area appears in this list. Therefore, local corporations are generally smaller and have less capitalization than those with absentee executive offices.

Further, corporations whose main corporate office is located within the study region can be subdivided into those having full pulp productive capacity at one site within the study area, corporations having full pulp productive capacity at more than one site within the study area and corporations having partial pulp productive capacity within the study area and partial capacity elsewhere. Corporations whose main corporate office is located outside of the Wisconsin-Upper Michigan region can also be classi-

fied into those having one productive pulp mill within the study area and corporations having more than one productive pulp mill within the study area.

Age and Size of the Mills

More than half of the mills at which interviews were conducted have been buying forest product raw material for more than sixty years. Many of these mills began purchasing forest product raw material as lumber companies. As the virgin forests disappeared, these lumber companies made the transition to pulp and paper manufacture rather than move their lumbering operations to the West Coast or South. The fact that the sample mills represent an average of fifty-six years experience in buying forest product raw materials indicates not only that these firms have a considerable amount of experience in successfully meeting the daily challenges of competition but it also indicates that many of these mills are less efficient than their more modern competitors. One executive indicated that an expenditure of $10 million would be necessary in order to modernize his corporation's existing plant and equipment. Yet, even with this amount of capital expenditure, his mill would still require more employees and thus more expense per ton of manufactured pulp than the more automated modern

plants now being built in the United States.

Plant and equipment obsolescence has forced most of these mills from mass production high volume competition to specialized paper manufacture marketing and innovation. The trend in top management thinking in many of these mills is toward the concept of the paper mill as a converting agent which takes raw cellulose in the form of pulpwood, slabs or chips and modified this cellulose in such a way as to meet the product specifications of the consumer.

When the length of time that a firm has been buying forest product raw material is compared with the annual pulpwood consumption (Table 1) some insight into the historical evolution appears to be evident.

TABLE 1.-Comparison of average forest product raw material acquisition experience with volume of wood raw material acquired by sample in 1967.

Average experience in pulpwood acquisition	Volume of wood acquired 1967
65 years	More than 250,000 cords
53 years	100,000 to 250,000 cords
47 years	50,000 to 100,000 cords
68 years	Less than 50,000 cords

The oldest mills are either the largest in terms of annual cordwood consumption or the smallest. Perhaps from the beginning some mills either chose to follow a policy of

pulp expansion or did not expand their pulping processes either because they were financially unable to make the necessary capital investments or they were not convinced of the profitability of entering into greater wood pulp capacity.

Newer mills entering production had greater productive capacity than the original mills had without expanding but less capacity than those mills which were established and were expanding their capacity as demand for their products warranted.

Pulping Processes

The four major processes by which wood pulp is manufactured in Wisconsin and Upper Michigan are groundwood, sulfate, sulfite, and semi-chemical. Over seventy percent of the wood used by the study sample was pulped by either the sulfite or the sulfate process and nearly ninety percent was pulped chemically (Table 2).

Sulfate capacity will probably surpass sulfite capacity in terms of wood volume consumed in the near future. At least three corporations have announced discontinuance of a portion of their sulfite producing capacity and one began sulfate pulp manufacture at their new mill in April, 1968. About sixty-four percent of the total United States wood pulp capacity in 1968 was sulfate. Total U. S. sulfate

capacity increased about thirty-two percent between 1965 and 1968. Only about seven percent of the United States wood pulp capacity was of sulfite manufacture with an expansion of less than four percent between 1965 and 1968 (11).

TABLE 2.-Wood volume consumed by various pulping processes by mills in study area in 1966

Pulping Process	Consumption (cords)	Percent
Groundwood	200,066	10.6
Sulfate	609,867	32.3
Sulfite	729,656	38.6
Semi-chemical	350,513	18.5
Total	1,890,102	100.0

Two forces are at work which favor sulfate expansion in the study area. Sulfate pulp is stronger than sulfite and therefore, the logical basic process to the expanded utilization of short, weak fibre dense hardwoods so abundant in the study area. Secondly, the degree of pollution measured by the five day biochemical oxygen demand (B.O.D.) associated with the sulfate process is fifty-five to seventy pounds of oxygen per day per ton of manufactured pulp, whereas, sulfite pulping without chemical recovery makes a demand upon a stream of 400 to 600 pounds of oxygen per day per ton (20).

Demand for pollution abatement requires either the replacement of sulfite pulping by sulfate capacity or the employment of modifications in the sulfite process which will permit both chemical recovery and some replacement of softwood fibre by hardwoods without loss of strength. Magnifite, bi-sulfite and multi-sulfite modifications are expected to meet both demands (6).

Species Use

Aspen was acquired in greatest volume by the fourteen mill study sample in 1967 (Table 3). This includes both trembling and bigtooth aspen. Balsam poplar, also called "Balm of Gilead", is considered unacceptable by most mills because of low volume of fibre available per ton of wood compared with the aspens.

Pine consumption not only included the three species native to the study area, jack, red, and white but also lodgepole and ponderosa imported from Western United States. All the pine acquired was manufactured into wood pulp by the sulfate process. Although it is technologically possible to use aspen in sulfate pulping, nearly all of the aspen was acquired for use by groundwood, semi-chemical, or sulfite mills.

The semi-chemical process has gained wide acceptance

since its development between 1921 and 1927 because this process lends itself readily to the use of temperate hardwoods (12). The semi-chemical mills, therefore, purchase any hardwood species native to the study area. In addition, certain dense hardwoods specified from the oaks, maples, birchs and elms may be purchased by various individual sulfate and sulfite mills. Sulfate and sulfite pulping of all native dense hardwoods, regardless of species, has not yet become possible.

TABLE 3.-Cords of wood acquired by sampled mills, by species and form, 1967

Species	Roundwood		Chips	Slabs	Total	Percent
	Peeled	Rough				
Aspen	331,791	147,549	7,074	974	487,388	27.4
Pine	1,093	412,541	61,293	--	474,927	26.8
[a] Dense hardwoods	23,972	275,343	38,599	54,502	392,416	22.1
Spruce	35,697	195,177	--	--	230,874	13.0
Balsam	800	83,386	--	--	84,186	4.8
Hemlock	18,000	65,490	--	--	83,490	4.7
Tamarack	--	22,100	--	--	22,100	1.2
Total	411,353	1,201,586	106,966	55,476	1,775,381	100.0
Percent	23.2	67.7	6.0	3.1	100.0	

[a] Includes white birch

Both black and white spruce are pulped either by the groundwood or sulfite process. A limited amount of Engelmann spruce, killed by bark beetles, was imported from

Colorado by one sulfite manufacturer in the late 1950's. However, the trend in spruce utilization in the Lake States has been decreasing since 1952 (3). Further reductions in the volume of spruce required for pulping can be expected in the future as additional sulfite capacity is replaced by other forms of pulping.

CHAPTER IV

THE ROLE PLAYED BY THE DIVISION OF WOOD PROCUREMENT IN THE PAPER INDUSTRY IN WISCONSIN AND UPPER MICHIGAN

INTRODUCTION

Wood procurement is defined as that process by which title to and possession of wood raw material is acquired by a manufacturing plant for the purposes of conversion into desirable economic goods. All of the pulp mills at which interviews were conducted rely heavily on acquisition of pulpwood from woodlands owned by other than the purchasing mill. Half the mills in the study sample obtained none of their 1966 wood supply from corporate woodlands and none of the mills reported relying upon its own woodlands for more than one third of its total 1966 wood needs. Therefore, it is apparent that procurement of pulpwood raw material on the open market is a most essential function in the daily routine of wood pulp manufacture.

Most of the directors of wood procurement are professional foresters, although a few have backgrounds in forest product manufacture and sales. Whether his title is similar to the "director of wood procurement" or "woodlands manager"

depends on whether he is responsible for the management of corporate woodlands in addition to the responsibilities of wood procurement. The latter title, or one similar to it, is usually used when woodlands management forms part of the responsibilities.

The average director interviewed has had twenty-two years of professional experience, seventeen years of which were in wood procurement and fifteen years with his present employer. Nearly half have been working at wood procurement for their present employers for more than twenty years. Only four of the fourteen directors interviewed are comparative newcomers to procurement with their present employers representing a total of only seven years experience. These man have come into their positions as the result of retirement or promotion of the previous director of wood procurement or by way of drastic changes in corporate policy and ownership.

This record of experience indicates a high degree of professional maturity and a vast amount of proven professional competence. On the other hand, it also indicates that the office of director of wood procurement is often a terminal responsibility within the paper corporation. Only one director of wood procurement came to his present position as a result of his predecessor's promotion to a

position of greater responsibility within the corporation.

The Role of Wood Procurement in the Attainment of Corporate Objectives

Most directors of wood procurement interviewed indicated complete understanding of the contribution their office was expected to make toward the attainment of overall corporate goals when their replies to this question were compared to the replies given by top management. Two directors gave a more detailed reply than was given by their superior. One referred, particularly, to the concept of continuing producer free enterprise. He felt that if present producers and their employees are to be encouraged to remain in their professions, they must earn a respectable wage and profit at the business of wood production. His mill must present a price structure in keeping with this concept while maintaining or improving upon the quality of wood delivered. The second director felt that the quality of wood acquired and the prices paid should be such as to allow eight to nine percent return on paper sales so long as such prices would be adequate to maintain the financial well being of his producers. He stated further that he felt a company the size of his could not afford to be accused of forcing a producer into bankruptcy.

Other replies indicated either incomplete understanding of the role expected by top management as evidenced by a reply similar to the one given to buy the wood needed by the mill or incomplete understanding of what is privileged corporate information. A few directors gave that as a reason for not replying yet none of the members of top management gave that answer.

A consensus of replies indicates that the directors of wood procurement are expected to: (1) continually supply the mill with the necessary proportions of volumes and species dictated by their pulping processes at a minimum fair price while maintaining adequate quality standards; (2) keep the corporation advised of trends and opportunities available so that the corporation can be at all times able to protect its competitive position; (3) maintain wood inventories at a level high enough to permit maximum sustained production and yet not so high that undue amounts of capital are tied up in inventory and unavailable for alternative uses; (4) maintain a market orientation and flexibility so that all species are available to the corporation in whatever amount and proportion dictated by the market place; (5) represent the corporation and the corporate image and the concept of the free enterprise system to the greatest number and variety of people possible;

(6) keep constantly aware of new technological improvements and encourage their incorporation and use in such a way as to assist in developing more efficient wood production systems. One of the essential requirements of any forester contemplating employment in the private sector is that he be sympathetic toward the concept of the free enterprise corporate system (17).

The Office of Wood Procurement in the Acquisition of Forest Products

Wood Procurement Methods and Policies

Introduction

The pulpwood producer views the paper mill as a market for some of the products he manufactures. To him, the director of wood procurement is the purchasing agent through whom he must deal. The director, thereby, forms an important link in the chain of communication from the consumer of paper products through the paper and pulp mill operation to the point of origin of the basic fibre raw material, the forest. His office is the recipient of feedback information from the producers and, if he is to fulfill, in their entirety, the responsibilities delegated to him by top corporate management, he must not only represent the best interests of his corporation but also serve as a viable

channel of communications from the producer to the corporation executive. He has a dual agency, representing the best interests of the mill to the producer and the interests of the producer to the mill; and since top management expects that he will keep them informed, he can fulfill this dual agency without conflict of interest.

In 1966 the average director of wood procurement interviewed dealt with nineteen company employees, six contractors logging either on company land or stumpage purchased by the company, 323 independent producers and twelve pulpwood dealers in the course of buying 135,000 cords of wood.

He purchases about ninety-three percent of the total wood production of company employees and eighty-nine percent of the wood cut by contractors working either on company lands or on company owned stumpage. He estimates that his average independent producer relies upon his mill as a market for about fifty-four percent of his total wood production. He believes that the average dealer, with whom he has contact, relies on his mill as a market for about seventeen percent of the total wood volume he generated in 1966 (Table 4).

TABLE 4.-Estimated percentage of average producer's total wood production delivered to each sample company purchasing wood, by agent class, 1966[a]

Mill	Agent Class			
	Company employee	Company contractor	Independent producer [b]	Dealer
a	-	96%	60%	12%
b	-	-	60%	30%
c	90%	75%	35%	5%
d	-	65%	50%	30%
e	-	-	90%	30%
f	-	-	60%	1%
g	90%	90%	33%	-
h	-	-	5%	20%
i	-	-	100%	25%
j	-	100%	50%	-
k	100%	99%	30%	-
l	-	-	90%	-
m	-	100%	33%	-
n	-	-	60%	3%
Average	93%	89%	54%	17%

[a]In no case were records kept so as to substantiate these estimates.

[b]Chips and mill residues are assumed to come from independent producers.

Agreements

Kinds of Agreements

There are three generally acceptable methods of agreement between producer and director of wood procurement for the acquisition of pulpwood. There can be a formal written

agreement, oral agreement, or in some cases, wood is purchased with no prior agreement being negotiated.

It is usually customary for producers to obtain a written wood purchase agreement from the paper mill prior to making wood deliveries. More than half of the mills interviewed indicated that 100 percent of the total wood purchases acquired in 1966 were a result of prior written agreement (Table 5).

TABLE 5.-Percentages of wood purchases made by sample mills by type of agreement, 1966

Mill	Agreement		
	Written	Oral	No prior agreement
a	95	5	0
b	100	0	0
c	100	0	0
d	80	0	20
e	90	5	5
f	100	0	0
g	100	0	0
h	98	0	2
i	50	50	0
j	100	0	0
k	100	0	0
l	100	0	0
m	100	0	0
n	0	100	0

The general policy of written purchase agreements for the delivery of pulpwood has, to a large extent, been en-

couraged by the present directors of wood procurement interviewed. The overwhelming consensus of opinion concerning the desirability of a written contract stems from the belief that with a written contract there can be no misunderstanding of the exact terms agreed upon by both parties. A number of directors reported falling heir to a policy of oral commitment when assuming their present duties. Having nothing in writing, they found they were forced to accept almost any reasonable amount of wood delivered by producers as a result of oral commitments claimed to exist between the previous director and producer.

Not only does a written agreement help the mill by formalizing a business arrangement but it also places in the hands of the producer a firm commitment to buy a specific amount of wood at a definite price. The producer can use this agreement in planning and budgeting for his future, as well. An oral agreement does neither of these.

The principle disadvantage in wood acquisition without prior agreement is that the director of wood procurement and the mill have no control over inventory levels under this policy. Deliveries are made at any time and in any volume within the period in which wood is accepted. The principle advantage lies in the ease of operation. The director of wood procurement is not obliged to keep records on past

performances, undergo the expense of negotiating written agreements and can begin or cease wood purchases at any time with short notice. The relationship between the mill and the producer is less personal.

Duration of Agreements

Roundwood can be delivered under a specific written agreement for an average of about seven months. The average duration of written agreements is longer for peeled roundwood than rough. Written agreements for the delivery of sawmill residues and chips average three years. Long term agreements are quite common between sawmills and paper mills since debarking and chipping equipment purchases must be amortized over a number of years and short term arrangements do not provide the assurances necessary in order to meet amortization cost. In addition, the sawmill operator is usually a reputable businessman of long standing. Negotiation between such an individual and paper mill professionals usually carries with it a high degree of performance stability. Both companies are inclined to abide by the letter of the agreement negotiated.

Oral agreements for the acquisition of wood are all made on a twelve month basis. Mills acquiring wood with no prior agreement will accept such delivery only during spec-

ified times of year. One mill director, acquiring wood with no prior agreement, indicated that he will accept one truck load of wood per year hauled to the mill from a distance of thirty-five miles or less from the mill. Another, reporting the acceptance of some wood in 1966 without prior agreement, indicated a 100 percent written agreement policy went into effect in 1967.

Arrangements for Wood Delivery

The director of wood procurement contracts for future wood deliveries on the basis of anticipated mill needs. The need for wood is translated by the mill from predictions made on the demand for its product line. A stabilized long term predictable demand from a few customers, acquiring their paper needs as a result of long term agreements with a paper mill, is conducive to stable and predictable pulpwood needs. A situation such as this appears to be the exception rather than the rule. Repeated emphasis, by some executives, on the need to maintain customer marketing flexibility is translated into wood procurement flexibility, as well.

Each director of wood procurement keeps an annual record of the contract volumes assigned to each producer and a record of his fulfillment of each contract. Unless

there is a good reason for a producer's lack of performance on a contract, those producers who have a history of poor or erratic performance will tend to receive volume reductions in successive contracts until the volumes called for in the written agreement more closely approach his productive capabilities. On the other hand, a producers greatest insurance of increasing successive contract size is a high degree of performance on past contracts. Producers who consistently deliver near 100 percent of the volumes called for in their written contract can be virtually certain that they will receive a contract in the future for no less volumes requested in the past. In order to minimize wide fluctuations in volumes of wood called for in successive contracts made with suppliers, the director of wood procurement will tend to pass along increases in pulpwood requirements to those producers exhibiting a high degree of performance on past contracts and expressing a desire to continue to expand their productive capacity.

In the rare instance when projections indicate a need for reducing the amount of wood purchased in a particular season, reductions in volumes called for are passed on, primarily, to those producers who in the past have not fulfilled the provisions in past contracts. There are notable exceptions to this policy.

One director contracts for about ninety percent of anticipated wood need. He can always guarantee to accept this volume if the demand does not meet projections. If demand appears to be equal to or greater than expected, he issues a supplemental contract to his producers for their share of the additional amount needed during the contract period.

Another mill furnishes its large producers a copy of its five year forecast of wood volume and species needs. This is designed to assist these producers in formulating more meaningful plans for their future, as well. Many mills contract their producers prior to contract preparations asking specifically the volumes by species they expect to be able to furnish in the ensuing contract period. Contracts are issued on the basis of these replies. Traditionally, when the price is acceptable, the supply offered to the mill by producers exceeds projected demands. Modifications are then made when the contracts are written. Those producers with a high degree of performance on past contracts again are favored and contracts called for are often the same or closely approach the volumes offered.

Arrangements for roundwood delivery are made with producers from two to seven months ahead of delivery date. Only five mills reported having any agreements with producers for

more than one year's delivery of wood and only two mills acquired more than thirty-three percent of their total wood supply in 1966 as a result of agreements of more than one year duration. In all, eleven percent of the total wood acquired by the sampled mills in 1966 was as a result of agreements of more than one year duration. Every agreement involved delivery of chips, slabs and other mill residues. Rationale for these longer agreements is that they are necessary because of the assurance such an agreement provides the producer. Long term agreements help to justify his investment in debarking and chipping machinery.

The need for a more formal written agreement between producer and the mill was recognized by Abbott in 1952 (1). The advantage to the producer of having a written agreement is an assurance of a market for a specified amount of wood at a designated price. However, the average written agreement prepared for the purchase of roundwood by the fourteen directors interviewed is seven months and arrangements for delivery of roundwood are made two to seven months before delivery. It would seem that a planning period of so short a duration would work a serious hardship on the independent producer. An outlook of no more than fourteen months appears far too intangible to be used as collateral when negotiating long term loans for necessary improvements.

Most directors are reluctant to lengthen the terms of the written agreement because of variabilities in price, their mandate to keep species mix flexible, and the control they are expected to maintain over inventory levels. Nearly all directors of wood procurement have expressed little interest in offering contracts for more than one year for the delivery of roundwood.

There are two opposing forces at work with regard to delivery contracts for more than one year in advance. Most mills feel that fewer, large, mechanized producer-businessmen would help to stabilize inventories and prices. There is also the recognition that stability of enterprise and large capital investments for expensive mechanization is not commensurate with a two to seven month planning period.

The counterforce is changing wood pulp technology. In the past, long term agreements for Canadian spruce delivery were not uncommon. However, as technology permitted the replacement of this expensive wood by cheaper local species, many mills were forced to acquire this Canadian spruce because they were bound by long term written obligations. Most mills experiencing this difficulty in the past are adamantly against long term written agreements at the present time.

One director of wood procurement expressed a desire

to enter into a limited number of agreements for roundwood delivery with some of his largest and most reputable producers. These agreements will contain adequate escape clauses to protect the mill should future technological change dictate a modification of species requirements.

Importance of the Agreement

There was general agreement among the parties interviewed that the standard written agreement between the mill and wood producer for wood deliveries are morally binding on the mill. However, the agreements are not considered binding, to any extent, on the producer. No paper mill has ever attempted to force a producer to perform on a written contract. However, the written agreement is enforced against the acceptance of more wood than is called for in the contract period. Most interviewees agree that the paper mill is not legally bound by these contracts. However, they agree that the social and moral obligations to accept wood contracted for are extremely strong. Oral contracts are only as binding as either of the parties wish them to be.

Seasonality of Purchase

All wood pulp and paper manufacturers report a near uniform manufacturing schedule throughout the year. Correspondingly, the demand for wood by the manufacturer is

also uniform. Contracts negotiated with the mill union call for from fifteen to twenty Sunday workdays between October and May, in order to make up for the summer holiday season shutdown and summer vacations during June through September.

Over half of the mills at which interviews were conducted indicated that wood was now being acquired from producers on a specified monthly delivery schedule designed to bring pulpwood receipts more closely in harmony with manufacturer needs. Many mills report using written agreements to specify minimum and maximum monthly allowable wood volume deliveries. Some mills issue quarterly rather than yearly contracts in order to give greater control over delivery dates.

Those mills which considered 1966 wood receipts typical of annual wood receipt patterns reported maximum wood deliveries during the first quarter of that year (Table 6). However, the strong seasonal trends evident in pulpwood delivery reported in earlier studies (1, 10, 13) are not evident in the 1966 information received.

Greatest uniformity in pulpwood acquisition was noted at those mills using more than 70,000 cords of wood annually. Included in this group are mills using a variety of species delivered by a large number of producers well-distributed

throughout the acquisition area and mills relying upon sawmill chips and slabs for more than twenty-five percent of their total raw material needs.

TABLE 6.-1966 quarterly pattern of wood volume acquired by that portion of the study sample considering 1966 a typical year [a]

Quarter	Volumes (cords)	Percent
January - March	517,384	29.6
April - June	328,918	18.8
July - September	460,541	26.4
October - December	438,837	25.2
Total	1,745,680	100.0

[a]Five mills considered exact volumes confidential but gave assurance that the volumes reported were within plus or minus 10%. Three mills did not consider 1966 to be a typical year. The acquisition pattern of these mills is not included in this table.

A number of forces involved in pulpwood production work against uniform production and acquisition. Weather is perhaps the most important single consideration. Spring thaw and wet forest soil conditions render the skidding and hauling of pulpwood impossible from mid-March in central Wisconsin until May in the northern fringe area of Canadian spruce acquisition. Not only is it impossible to work economically, it is often illegal to haul normal truck load

tonnage during April and early May, as well. On most secondary roads, local regulation prohibits normal axle weights from being carried during that season. Often five to seven and one-half tons is the maximum gross weight permitted.

Beginning in early May, sap peeling of pulpwood is possible. Sap peeling is the process of tree bark removal possible during the spring logging season. It is accomplished readily during that season by cutting through the phloem to the cambium and peeling the layers of cells outside the cambium layer away from the tree trunk. Normally, peeling season extends for about 100 days. Since many mills pay $5.00 or more per cord than they do for the same species in its rough form, many producers find it profitable to devote most of their available man power during this time of year, exclusively, to the task of felling and peeling. Although pine, balsam, hemlock, and tamarack are not sap peeled in quantity, (Table 3) all mills using these species will accept peeled pulpwood if it is produced.

Whether the logger is a full-time or part-time producer also dictates the seasonal pattern of wood receipts. Mills relying on farmers to produce at least thirty percent of their total roundwood supply report greater volumes of wood acquired between November and March than those acquiring lesser volumes from seasonal producers. Therefore, greatest

variability in wood acquisition is noted in those mills relying upon sap peeling for more than eighty percent of their total wood acquisition, mills relying on species native to swamplands, where winter hauling only is possible, such as spruce and tamarack for more than eighty percent of their total volume requirements and mills relying on seasonal producers for more than thirty percent of their total wood receipts.

Producer Credit

Financial assistance in the form of loans or advances is provided by a majority of the mills. None, however, either encourage or solicit loans or advances but rather provide financial assistance to selected producers only as a matter of convenience. The others feel either that such monetary transactions are not the proper function of a paper mill but rather the business of banks and other lending institutions or they frankly admit that they do not have sufficient capital available to permit them to offer such financial assistance to their producers.

Eight mills will make advances on wood deliveries and five will loan money to reputable producers when need can be established. Advances are generally made only on wood designated for delivery to the mill making the advance. Half of

the mills loaning money to producers charge interest on the money loaned. The rate of interest varies from four percent to the going rate established by the local banks at the time the loan is made.

Repayment is usually negotiated with each individual producer, but when the amount is to be deducted from wood payment upon delivery, a minimum deduction is established by the mill. There are no restrictions against pre-payment for either loans or advances.

There appears to be a definite mill policy against broad provision of credit to producers. Only a few of the highest credit risks can obtain loans or advances and the amount available is based on the value of wood to be delivered to the specific mill during the contract period. Most mills would prefer to have banks and other lending institutions provide the financial assistance needed by a producer. The liberal provision of credit is used as an inducement to wood delivery when wood is in short supply.

Exclusive Dealings

There is complete agreement among all the directors of wood procurement and all the members of top corporate management in that all have a clear cut policy of discouraging wood producers from dealing exclusively with their particu-

lar mill. All mills are cognizant of the fact that their mills use only a percentage of the total species mix offered as a result of sustained yield logging in their timbershed area. In addition, all mills regard their producers as independent entrepreneurs, free to choose with whom they will deal in the course of their business routine. Since every mill, as an independent entrepreneur, has this right regarding the end products of its manufacture, it follows that the pulpwood producer should also have the same rights within the limitations imposed upon the mill as well; that is, an independent producer is expected to fulfill the agreements under which he is delivering wood during any particular contract period. As previously mentioned, most of the mills feel morally bound by these agreements; and, although they recognize that the producer is not equally bound by the terms of these agreements, there is an assumption that a reputable producer will feel a similar moral binding, as well. Any producer wishing to establish a growing productive capacity and a reputation for performance will be bound by the terms of each agreement if he expects the volumes called for by the mills for whom he produces wood are to increase over the years.

In keeping with the concept of producer professionalism, there is also agreement that to be an economically healthy

producer one must avoid extreme fluctuations in volumes called for in successive contracts by producing wood for a number of mills manufacturing many different products. By so doing, the producer ties the demand for his product to the market demand made on a number of mills each producing hundreds or thousands of specific paper and pulp products. The producer can, therefore, divorce himself from dependence upon the demand for any individual product in much the same way as a paper mill diversifies its market offerings.

The unanimity of opinion expressed by the mills against encouraging exclusive dealings by pulpwood producers extends to the particular species used by each mill. Only one director of wood procurement expressed the hope that his producers would look upon his mill with favoritism should the mill need additional wood in times of short supply. All of the mills agreed that the producer is independent even to the extent that he is free to negotiate with other mills as a market for any species in short supply provided that they first meet the obligations of their contracts.

The responsibility for acquiring pulpwood is delegated to the director of wood procurement and each of the gentlemen interviewed is convinced that his relationship with the producer and his knowledge of each specific pulpwood market is adequate to protect the mill from shortages

of wood due to mass withdrawal of deliveries by producers. It was generally agreed that the reason for a reduction in deliveries exogenus to the mill can be discovered and the situation can be remedied.

The one exception to the rule against the encouragement of exclusive dealings concerns long term contracts for the marketing of mill residues and chips. Some mills prefer to have the option of buying all the useable material of this nature produced by manufacturers of other forest products.

Although no data is kept on the subject, an estimated average of one-third of the total number of producers doing business with the mills interviewed rely upon any one individual mill as a market for more than one-half of their total wood production. Only two mills, both enjoying a comparatively high degree of monopsony position in wood procurement, reported that more than half of their producers rely on their mill as a market for more than half of their total wood production. Mills using sawmill waste and chips or those mills having more than three-quarters of their total wood requirements composed of a single species, estimate ten percent or fewer of their producers rely on their mill as a market for more than half of their total wood production.

Of those producers who do rely on one mill as a market

for most of their wood production, only three mills estimate that half or more are full-time producers. A full-time wood producer is defined as one who obtains more than ninety percent of his total gross annual income from wood production (Table 7). We can distinguish between the high volume producer engaged exclusively in the production of wood from the high volume producer obtaining a high percentage of his income from other sources than wood production as well. Those producers who rely upon income from wood production for more than half of their total gross annual income and less than ninety percent of their total gross annual income are engaged in other part-time enterprises such as farming, Christmas tree culture or the building and construction trades where heavy equipment is necessary.

Evolution of Procurement Policies during the Past Decade

Since 1957 there has been a concerted effort on the part of wood procurement to attach wood yard inventory control to wood procurement contracts. Over half the mills interviewed have expressed a basic policy of favoring truck-hauled wood over wood delivered by other common carriers. The total cost of this wood is usually less due to lower transportation and handling costs.

All mills now pay producers at least twice a month for

wood deliveries. Some pay every two weeks and one mill reported paying for wood immediately upon receipt.

TABLE 7.-Estimated percentage of producers' gross annual income derived from pulpwood production, 1966

Mill	Percentage of producers earning their gross income from pulpwood production		
	50 - 75%	75 - 90%	More than 90%
a	20	10	5
b	90	90	90
c	20	10	5
d	50	40	20
e	0	0	0
f	90	75	50
g	60	33	10
h	5	3	2
i	40	40	30
j	65	60	55
k	0	0	0
l	30	15	6
m	75	75	20
n	. . . No reply		

Paper mills in the Upper Peninsula reported that wood is acquired on a weight basis. In Wisconsin, only chips and other mill residues are acquired by weight. Roundwood is purchased by cord measure. One Wisconsin mill abandoned its practice of buying roundwood by weight because that system was not widely practiced by the other mills in Wisconsin. Because the practice of buying roundwood by weight was not more generally incorporated into Wisconsin mill

acquisition, it became less acceptable to producers, particularly new producers to the company.

Woodlands Ownership

Nine of the fourteen directors of wood procurement interviewed are employed by mills owning some forest land. In addition to the duties of wood procurement, many have assigned to them the responsibility for management of this property. This is true of all of the companies sampled which maintain their executive offices within the study area. At only one mill are the responsibilities of the director separate from those of the woodlands manager. This mill has absentee executive offices.

Since the other major pulping processes generally require a species mix considerably different from the available composition in the forest, these companies generally tend to rely on their woodlands for lower percentages of their wood needs. They also, generally, indicate less future need to rely on their woodlands for increasing percentages of wood needed in the future. This is generally not true of the semi-chemical mills using aspen and dense hardwoods. Semi-chemical mills which own forest land and plan to expand production in the future expect to increase the percentage of wood coming from corporate woodlands.

The Woodlands manager is responsible for the management of his forest property. This includes the maintenance of an annual allowable cut on the basis of the recommendations made in his forest management plan and irrespective, to a large extent, of the species mix required by the division of wood procurement. The Woodlands manager is expected to increase the percentage annual return on capital invested in woodlands. One way he accomplishes this is by keeping his actual annual cut as close as possible to the allowable cut indicated in his inventory and growth figures. In order to be able to market the material indicated for cutting, he is often forced to sell to other paper mills in the region. Often this is accomplished by making timber sales directly to independent producers. Sometimes, the independent producer is given a contract for the delivery of those species used by the mill selling the stumpage. The producer is allowed to market all the other species in the timber sale wherever he wishes. Often, the timber sale is completely independent of the paper mill owning the forest land. The producer buying the stumpage receives no additional contract from the director of wood procurement for desirable species. There may be no requirement in the contract that any species be sold to the mill with whom the timber sale is negotiated.

It is essential that the woodlands manager be informed

of all marketing alternatives available to producers operating on company woodlands as well as the value of stumpage offered for sale as represented by the market price attached to each alternative. Although the amount of inter-mill pulpwood sales has not been documented in this study, information obtained in the interviews indicated that the practice does exist. One director of wood procurement indicated that he foresaw an increase in the percentage of wood acquisitions coming from the woodlands owned by other corporations.

Where the responsibilities of woodland management and wood procurement are both delegated to the same individual, there is a per se knowledge of existing market prices. When these responsibilities are delegated to different individuals both the woodlands manager and the director of wood procurement are professional foresters. As professional colleagues, they maintain a high degree of rapport on all subjects known to be of common interest and concern. They are both employees of the same company. They have mutual interests, responsibilities and allegiances. They share professional knowledge which includes the knowledge of existing market prices for pulpwood paid by other mills in the study area.

Summary

Most of the directors of wood procurement interviewed have extensive professional training and experience in the

performance of the office assigned to them. For the most part, they clearly understand the role their office is expected to play in the attainment of corporate objectives. One of his important duties is to serve as a communication conductor between the independent producer of pulpwood raw material and mill management. He has a dual agency, representing the interests of the mill to the producer and the interests of the producer to the mill.

Most of the wood delivered to the paper mills is contracted for in writing from two to seven months in advance of delivery period. A written contract delivery period extends for an average of another seven months for roundwood and lasts for an average of three years for mill residues and chips. Written agreements for the delivery of roundwood are not made for more than one year in advance. Written agreements for the delivery of mill residues and chips are rarely for only one year delivery. The written agreement is not meant to be legally binding on either party but the mills feel a moral binding not felt by many producers.

There is an increasing attempt to specify wood delivery schedules in the written contracts in an attempt to control inventory levels. Uniform wood deliveries are often impossible but mills using more than 70,000 cords of wood per year composed of a large variety of species deliv-

ered by many producers well distributed throughout the acquisition area are more successful at approaching this objective than others.

More than half the sampled mills will give financial assistance to selected producers in the form of loans or advances. However, this is done usually when the need is clearly established and when other lending institutions refuse to help the producer. As producers expand their operations and production, they are encouraged by directors of wood procurement to seek contracts with additional mill to facilitate more readily their process of growth. There is a universal resistance to requiring producers to furnish wood exclusively to a particular mill, except where mill residues and chips are the products delivered.

In the past ten years changes in procurement have resulted in greater control by mills over wood deliveries and wood inventory, the evolution of a basic policy toward favoring truck delivered wood over other methods of delivery, and more frequent payment for wood delivered.

When the director of wood procurement is also responsible for forest management on corporate woodlands, he often keeps separate the sale of stumpage and acquisition of pulpwood. This is usually true when the species mix available in a timber sale is radically different from the mix desired

by the mill in the manufacture of wood pulp.

Source of Wood

Size of the Timbershed

Timbershed size is affected by the relationship of the pulp mill location to forest location, transport access to the forest, freight costs, species requirements, mill capacity, and the extent of competition among mills for the available pulpwood supply (13). Increases in the radius of a mill's timbershed with increasing volume requirements (Table 8) are a function of these factors.

TABLE 8.-Timbershed radius as it is related to percentage of total wood acquired by each sample mill, 1966

Percentage of total wood receipts	Radius (miles)				
	Minimum	Median	Mean	Mode	Maximum
Nearest 10%[a]	10	30	57	20 (5)[b]	250
Nearest 30%	20	60	99	30 (4)	350
Nearest 50%	40	80	175	40 (3)	950
Nearest 70%	50	150	226	50 (3)	1150
Nearest 90%	70	225	458	250 (3)	1600

[a]"Nearest %" figures indicate the radius of a mill's timbershed by specific segments of their 1966 wood volume needs. A ten mile radius at "nearest 10%" indicates that a mill obtained 10% of its 1966 wood acquisition from a distance of ten miles or less from the mill yard.

[b]Number in parenthesis indicates the number of mills reporting mode distance.

Minimum radii are reported by semi-chemical mills isolated from competition for pulpwood. Maximum distances are reported by mills relying heavily upon Canadian spruce or lodgepole and ponderosa pine for their wood requirements. The rapid increase in mean radius between the nearest seventy percent and nearest ninety percent of total wood acquisition is reflective of the need for comparatively small amounts of these remote species by some mills. Half of the mills interviewed indicated that they obtained ninety percent of their wood needs within a 225 mile radius. Paradoxically, those mills reporting timbershed radii of over 1500 miles at ninety percent were not overly concerned about the need to reduce this distance appreciably. Product quality is of primary concern and the size of the timbershed will not be reduced if its reduction would require lowering the wood pulp quality standards. Their wood flows from a cadre of suppliers with a history of high quality wood production.

Over half of the mills indicated that there has been a significant change in the wood supply area for their mill since 1957. In every case, these changes resulted in lower wood cost commensurate with the maintenance of wood pulp quality standards. In a few instances, it was cheaper to increase the timbershed radius where such an increase re-

sulted in a lower freight rate than existed previously. High freight costs are not only a function of distance but also are caused by switching cars from one railroad to another. Single railroad transportation can be more economical than multiple rail line switching.

There is a consensus that chips are a cheaper form of raw material than roundwood. However, some mills report that the quality of chips and, therefore, the quality of wood pulp is not always maintained at the high level characteristic of roundwood quality. Therefore, chip acquisition may be abandoned if it means quality wood standards can only be maintained through the use of roundwood.

Mill capacity and wood demands also have some general effect upon the size of the timbershed. Mills buying more than 250,000 cords in 1966 reported that they need to acquire some wood from an average distance of 1100 miles from the mill even if they consumed only ninety percent of the 1966 rate. Mills using less than 50,000 cords of wood obtained their wood supply from an average estimated maximum distance of 160 miles during the same year.

This relationship of mill capacity to radius of timbershed is less important than the relationship between species requirements and, therefore, wood pulp quality and timbershed radius. For example, mills using from 100,000 to

250,000 cords of wood in 1966 reported an average maximum radius of 170 miles, whereas mills using from 50,000 to 100,000 cords reported a maximum average radius of 485 miles. However, the importance of the need for maintaining quality of pulp manufactured by one mill in the latter group of mills was given as the reason for so large a radius of procurement.

Ownership of Wood

None of the directors of wood procurement interviewed kept precise records involving the ownership of forest land from which their wood supply was obtained. Such information is not required in order to successfully meet the needs of the paper mill. Nevertheless, each director of wood procurement attempted to give a reasonable approximation of stumpage ownership from which his 1966 wood supply originated. The percentages derived from these volumes are in reasonable agreement with the percentages reported by Hamilton (10) for eighteen mills acquiring 1,571,600 cords (Table 9).

More than half of the wood acquired by the sample mills originated on privately owned lands. However, federal lands account for more stumpage than any other single ownership classification. Five of the fourteen mills interviewed

in 1966, representing thirty-five percent of the total wood volume acquired by the sample, indicated that in the past ten years there has been a significant change from private stumpage to public. On the other hand, three others who acquired twenty-eight percent of the study sample's 1966 total indicated that excessively high minimum stumpage value appraisals on national forest land caused them to shift from public to private stumpage for more of their raw materials. There was also a trend in the past ten years toward decreasing wood acquired from Canadian Provincial Crown Lands accompanied by a corresponding increase in wood acquired from logging operations conducted on county lands in the Lake States.

A few mills reported no significant change in the ownership of forest land from which their wood supply was obtained over the past ten years. In every case where no significant change was reported, the competitive environment for pulpwood within which these mills exist is less severe than the competitive environment experienced by the majority of mills interviewed. The limited competitive environment enjoyed by these mills is a function of either their location with respect to other mills using the same species or the uniqueness of their species requirements.

TABLE 9.-Ownership of forest land from which wood supply was obtained by sample mills, 1966

Ownership	Total Volume	Percent	Hamilton's Percentages (10)
U. S. Public	838,224	42.9	49.0
Federal	510,972	26.7	22.8
State	168,410	8.8	12.2
County	141,618	7.4	14.0 [a]
Canadian Provincial Crown	17,224	0.9	
Private	1,075,529	56.2	1,571,600
Corporation lands	287,063	15.0	13.5
Farm woodlot	363,613	19.0	21.1
Other private	424,853	22.2	16.4
Total	1,913,753	100.0	1,571,600

[a]Hamilton classified public ownership as either federal, state, or other. The 14.0%, therefore, applies to "other public".

Five mills representing thirty-eight percent of the wood acquired by the sample look for no significant change in the ownership wood supply pattern in the near future. Most of the ponderosa and lodgepole pine stumpage is federally owned and most Canadian spruce originates on Provincial Crown Land. Any future projections concerning the expansion or contraction in use of these species is reflected in the statements made by the directors of wood procurement inter-

viewed. Only one mill indicated that it intended to rely more heavily on its own lands for primary raw material in the future.

Agent Source

Pulpwood is obtained by the fourteen study mills from three general sources: (1) company employees or contractors harvesting stumpage from company owned lands or timber purchased by the company from public or private landowners; (2) independent producers; and (3) pulpwood dealers. Half of the mills reported receiving at least some wood from company logging operations or contract cutters but only a few obtained more than 20,000 cords from this source. All mills interviewed obtained some wood from independent producers. Four mills reported receiving more than ninety-five percent of their total annual wood supply from this source while six other mills received more than half of their total wood volume needs in 1966 from independent producers.

More than half of the mills obtained wood through pulpwood dealers. Three mills reported they received more than fifty percent of their total volume acquisition from this source (Table 10). Most of the mills which acquired more than 100,000 cords of wood in 1966 reported receiving some wood from pulpwood dealers. Most of these mills also

reported receipt of some wood from company logging operations or contract cutters. However, only one reported receiving more than fifty percent of its total receipts from company logging or contract cutters and only one other mill obtained more than twenty-five percent of its total wood receipts from this source.

TABLE 10.-Agent source of pulpwood purchased by study sample 1966

Agent Source	Total Volume (cords)	Percent
(1) Company employees or contractors harvesting stumpage on company lands or timber purchased by the company	380,837	19.9
(2) Independent producers[a]	1,065.960	55.7
(3) Pulpwood dealers	466,956	24.4
TOTAL	1,913,753	100.0

[a]Sawmill residue is assumed to be acquired from independent producers.

Pulpwood dealers are an important agent of wood to mills using Canadian spruce, lodgepole and ponderosa pine. They are not used as a source of wood acquisition by those mills experiencing little competition for wood either because of their particular species utilization. Wood acquisitions made up of species abundantly available in close

proximity to the mills can be acquired readily without the need to rely on dealers. For example, none of the semi-chemical mills interviewed relied on pulpwood dealers as a source of pulpwood in 1966. Aspen and dense hardwoods make up virtually all of the pulpwood used by these mills annually.

Most directors of wood procurement feel that the independent producer looks upon a particular mill as a far more significant market for his production than does a dealer. The dealer is acknowledged to be less dependent on any individual mill. Large annual volumes of wood production often come about as a result of contracts for wood delivery from many mills.

There has been a decrease in the number of company employees and pulpwood dealers through whom wood was acquired since 1957 (Table 11). However, the total number of contract cutters and independent producers has increased during the past decade. In compiling Table 11, no attempt was made to eliminate dual listings in the numbers obtained in each interview. Large, full-time producers and dealers market wood at many mills. Therefore, these producers and dealers will be reported by each mill as a source of wood receipts.

TABLE 11.-Comparison of the number of agents from whom pulpwood was purchased by study sample, by agent classification between 1957 and 1966

Agent Classification	Total		Percent Change
	1957	1966	1957 - 1966
Company employees	387	273	29% fewer
Contractors on company lands or company purchased stumpage	36	88	144% more
Independent producers	4271	4522	6% more
Pulpwood dealers	179	161	10% fewer

Mills reporting an increase in contractors harvesting on company purchased stumpage also report increasing utilization of those species found most abundantly in the Lake States. A majority of woodlands owned by these mills is located there. Mills which have always used a high percentage of local stumpage have increased company operations in the past ten years, when possible.

Twelve of the fourteen directors of wood procurement interviewed agreed that they expect to have fewer producers in the future than now. The others indicated that they felt the number of persons from whom they acquire wood would remain about the same as the 1966 figures reported. A consensus indicates that the producer of the future will have the following characteristics: (1) he will be an independ-

ent entrepreneur; (2) his wood producing capability will increase; (3) he will receive larger contracts from the mills for whom he produces than he is now receiving; (4) his entire logging operation, from stump to the mill yard, will be more mechanized in the future than now; (5) he will be more inclined to earn his total livlihood at the business of wood production; (6) he will have a more professional business knowledge of the art of wood production; (7) he will have a more stable and predictable income expectation; (8) his wood production costs will also be more stabilized and predictable. All of the characteristics predicted for the future wood producer are necessitated by an industry-wide objective of reducing the comparative cost of the raw material wood supply to the paper mill. Nevertheless, the small producer hauling truck wood from a short distance will probably always be able to find a market for this raw material if he can meet the market price.

Summary

There was considerable variation in the length of timbershed radii reported by the study mills. The most important factors affecting the size of the timbershed were the relationship of pulpmill location to the location of needed species, and the competition among mills for favor-

able wood supply. Mill capacity often had less influence on distance of procurement source than did the maintenance of wood pulp quality and species composition necessary to assure the established quality standards.

This study substantiates the work by Hamilton which indicated that more than fifty percent of the wood used by the paper mills in the study area comes from privately owned woodlands in spite of the fact that timber from federal lands is the most important single ownership category. Recently county owned stumpage has become a significant source of wood to a few mills. There is every reason to believe that this increase in significance of county timber production will continue during the next decade.

Independent producers provide most of the wood used by the mills interviewed, but the major increase in numbers of persons relied upon for wood during the period 1957 - 1966 took place in the number of contractors cutting on company lands or company purchased stumpage. There has been an overall reduction both in the number of company employees and pulpwood dealers furnishing wood to the study mills between 1957 and 1966. Most paper mills want to stabilize wood deliveries and inventory by favoring the larger full-time producer who will also want to stabilize deliveries on a uniform monthly basis, stabilize prices at

a lower comparative level than now exists, and promote better producer-mill relations. It is generally agreed that there is a deeper understanding and more harmonious relationship between the paper mill and large volume producer than exists between the paper mill and the small part-time producer. The amount of reduction in producer numbers was not specifically defined. Five of the mills reported more than 500 independent producers on their annual mailing list and half of the mills interviewed reported doing business with more than 250 independent producers each year. Sizeable reductions in these numbers are possible before there is any need for concern over the possibility of producers exercising contravailing power in their negotiations with the paper mills.

Method of Price Establishment and Change

Nature of Pulpwood Acquisition and Pricing

Within this study area pulpwood is considered to be a heterogeneous product. Not only do the prices agreed upon depend on the supply available and the demand made by an individual mill for the specific product but also there is disagreement between mills as to the definition of acceptable quality. A mill relying on specific pulpwood furnish for its groundwood operation may require a high moisture

content because less power is needed to produce groundwood pulp from moist wood than dry. Some sulfite and sulfate mills prefer that their wood be twelve to eighteen months old before it goes into the digester. They believe that older wood tends to be of more uniform moisture content and pulp quality is more predictable.

Eleven of the fourteen directors interviewed reported differences in established price schedules for different producers, agents, geographic location within timbersheds, quality or quantity of wood delivered. Softwoods are intrinsically more valuable than aspen and dense hardwoods. Their long fibres are more conducive to the manufacture of high quality sulfate and sulfite pulp.

Semi-chemical mills will usually accept woods run dense hardwoods on an undifferentiated basis. There may be minimums placed on the amount of basswood which will be accepted per load, but this is often the only restriction due to species mix. Sulfite and sulfate mills are not technologically able to use all of the angiosperm species available within their timbershed. Each of these mills has a specific definition of acceptable dense hardwoods. As the definition becomes more selective, the price offered increases. The semi-chemical mills can acquire dense hardwoods at a lower price per cord than can sulfite or sulfate

mills because they can guarantee woods run acceptance and minimize handling and loading costs. Such a market is often valuable to the logger in disposing of small quantities of little used species required in a timber sale agreement.

In order for the director to maintain adequate communications with agents supplying wood to him, personal contact is essential. Nearly half of the directors indicated that they maintain mailing lists containing more than 500 names of wood supplying agents. One mill obtains wood from more than 1000 agencies. Through these channels the director keeps abreast of changes occurring in the industry. Through this network he discovers the going market price for wood meeting the specifications required by his mill and factors such as rainfall, snow depth, soil conditions, stumpage, and railroad car availability which will affect wood deliveries and prices.

He keeps records of contract performance both with regard to volume and quality and uses these records as a basis for judging performance dependability. In dealing with as many agents as he does, he is often required to use these records as a basis for decision on the advisability of the corporation making advances or loans to a particular producer or as a basis for determining the general reputability of an individual agent.

Some directors of wood procurement feel that often the absence of dependability among producers with regard to the fulfillment of volumes contracted for is a major planning problem. They report a seventy-five percent to eighty-five percent rate of fulfillment of contracted volumes in a normal year. Therefore, in order to be assured of receiving adequate wood deliveries they are required to write contracts for correspondingly more wood than is actually needed.

When the ratio of contract fulfillment is well established and predictable, the problem is minor. However, when the market price for delivered pulpwood is favorable to maximum production, the ratio of volumes produced to contracted volumes approaches one. Because mills consider contracts with producers morally binding upon the mill, they accept 100 percent contract fulfillment. The results are high woodyard inventories, excessive amounts of corporate capital investment in wood inventories and lower prices and volumes called for in the next contract period. This is followed by lower prices and reductions in volumes contracted for in the next period and producers then tend to leave the profession. Those who remain in the business tend to return to their previous pattern of contract fulfillment.

The instability of prices and inventory levels pro-

duced by this cobwebbing works against the concept of enterprise continuity desired by both mill and producer. It has frequently been stated by wood procurement men that the more reputable business oriented producer is more likely to withdraw from the wood producing business than his counterpart during a time of inventory reduction and price depression. Carried to an extreme, this pattern of price-quantity response could result in an increasing number of speculative wood producers, and the virtual elimination of the full-time professional.

The great number of variables permit him to encourage by way of pricing, certain species, methods of delivery, regions within the timbershed, producers, agents or wood quality as dictated by feedback information from the market place and the forest. Price schedules can permit payment from a minimum of one price to as many as ten different prices for the same species depending on its quality, point of origin or producer. In this way, the director of wood procurement assures himself of the ability to provide his employer with the necessary wood.

The director finds his task difficult when technology dictates drastic changes in species requirements. Elimination of the demand for a genus or species often results in drastic changes in the size and shape of the timbershed.

When this occurs, wood can no longer be accepted from some agents regardless of their reputability, size of previous importance to the mill. A number of directors expressed regret over being forced to sever many years of business dealings with dependable producers because the species they offered was no longer needed by the mill.

Purchase of a new species necessitates the development of new channels of production. Often subordinates must be moved into unfamiliar geographical locations and relationships must be established between the mill and a new cadre of dealers and producers. This realignment of timbershed very often results in a need to meet new competition and to accept wood from producers less familiar to to the mill.

How Prices are Established

The exchange price of pulpwood is generally either set by the mill acquiring the wood or determined by mill-producer negotiation. Since most mills exercise a degree of oligopsonistic power in negotiation for pulpwood deliveries, it is logical to expect that producers have a weaker voice than they would have under pure competition. On the other hand, the paper mill is often the major employer in a community or region and is, therefore, constrained from harsh price nego-

tiation by the awareness of a social responsibility to the region and attempts to offer a price which will permit producers to maintain their economic independence. The mills also agree that often a somewhat higher price may be more predictable over the years than one established by the intersection of short-run supply and demand. It is more important for these mills to maintain their maximum productive capacity than to attempt to acquire wood at the lowest possible price when the establishment of such a minimum price could result in temporary mill stoppage due to lack of wood raw material.

Agreements on prices to be paid for pulpwood can be a result of the sellers offered price, mill's offered price, or negotiation. Long term contracts between mills for the production, delivery, and acquisition of chips or other residues designed to last more than one year and as a result of which the seller is obliged to install expensive and otherwise unnecessary equipment usually contain price schedules arrived at either as a result of the seller's price or by way of periodic negotiation. Most directors agree that the price schedules accepted by roundwood producers are a result of the mill's offered price.

Pricing Policies

Although no mill reports any difference in the amount paid for wood delivered as a result of landowner origin, some mills reported that they pay different prices to different groups of producers or agents. A few pulpwood dealers receive a bonus of $1.00 per cord above the price paid independent producers.

A limited number of mills reported paying as much as $1.00 per cord bonus when contracts for 1000 cords or more were fulfilled. A policy of this type encourages producers to meet the volumes called for in their contracts and serves as a stimulus to small producers to establish a reputation for dependability and increase their productive capacity.

Quality of wood deliveries is a factor in price determination. At least $5.00 more is paid per cord for sap peeled wood over the price for comparable rough wood, regardless of the geographical point at which title to the wood changes hands. Prices paid for pine often differ between species. White pine has a lower average specific gravity than the other pines used. As a result, prices quoted for white pine are often $3.00 to $4.00 less than jack pine. Jack pine may be priced $1.00 per cord higher than red pine (15).

Other quality considerations considered important

enough to be encouraged through premium pricing include paying $1.00 per cord bonus for all aspen delivered during the months of April and May peeled during the previous peeling season and paying a higher price for chips and slabs than for veneer core. Slabs usually contain fewer knots and less rot than veneer core on the average. Chips need less processing prior to pulp manufacture.

It should be pointed out, as well, that the process of acquisition of wood by weight includes premium payments for large sticks of high moisture content and specific gravity, since wood of this type will weigh more than average and thus demand higher values.

Half of the mills interviewed subsidize, to some extent, the cost of trucking wood to the millyard. The amount of subsidy paid to truck delivery increases with the distance between timber sale and mill. The amount of subsidy, the number of increments in the subsidy paid due to distance of haul and the period in which subsidies are in effect vary with each mill reporting. The minimum distance subsidized is twenty-five miles, the maximum 100 miles. The minimum subsidy paid is fifty cents, the maximum $3.00. As many as five pricing zones may exist around a mill, each having a different price structure.

Truck haul subsidy may be confined to only certain

species or subsidies may go into effect only when there is need to offer increased financial inducement to wood production in times of inventory shortage. Such temporary subsidy payments have the same effect as a price increase to the producers on the fringes of the timbershed. A few mills maintain a separate price structure for each state within their timbershed.

Price Change

Regional price stability reported by Manthy and James, 1964, was not characteristic of the 1966-1967 era with which this study is concerned. A recapitulation of the dramatic price change witnessed in 1966 and 1967 indicates that initial upward price adjustments of $0.50 per cord for delivery of some species were evident in October 1965. Extremely heavy snows, severe cold and a high demand for labor in the industrialized urban areas of Wisconsin and Michigan caused a sharp reduction in wood production and delivery during the end of 1965 and the beginning of 1966. As a result, another round of price increases was reported by many mills beginning in May and ending in July 1966. Several mills reported increasing prices a third time in the last quarter of 1966. By mid-1966 price increases had affected all species. The extent of these increases reported by the mills interviewed,

is indicated in Table 12 together with the most recent schedule reported by the University of Wisconsin (15).

Minor local price reductions were reported in mid-1967 and by the fourth quarter of that year four mills reported that lower prices were offered for some of their specific wood requirements. Since all of the interviews were conducted between January and April 1968, precise price expectations for the first half of 1968 were not sampled. However, most of the mills interviewed during March and April indicated that further price reductions would be extensive during the second quarter of 1968 and might affect all species.

TABLE 12.-Maximum increase in prices paid per cord for pulpwood during 1965 - 1966 adjustment by study mills.

Species [a]	Maximum Amount of Increase	Wisconsin Prices November 1967 (15)
Aspen		
rough	$1.00	$13.00 to $18.50
peeled	$5.00 to $6.00	$24.00 to $26.50
Dense hardwoods	$1.85 to $3.00	$15.00 to $17.00
Pine	$2.00 to $3.50	$17.00 to $22.50
Spruce	$3.00 to $6.00	$27.00 to $31.00
Balsam	$3.00	$20.00 to $25.50
Hemlock	$3.00	$20.00 to $22.00
Tamarack	amount not available	$22.00

[a]All prices reported on the basis of a rough cord except aspen.

The director of wood procurement has the responsibility for informing top management of an impending need to raise or lower prices. Only a few directors indicated, however, that they have sufficient authority to make other than minor price adjustments without prior approval from their superiors. All increases in prices of such magnitude as to involve corporate budgetary adjustments, must generally have the approval of the chief executive officer available in the locality. The chief executive officer may require, in addition to the recommendation of the director of wood procurement, substantiating recommendation by an executive in an intermediate position between the chief and his director of wood procurement.

Summary

Within the study area pulpwood is a heterogeneous product. "Acceptable pulpwood" is a term defined differently by nearly every mill depending on the pulping process and the desired quality of the wood pulp resulting from manufacture.

Each of the mills interviewed has its unique price structure designed to encourage the production and delivery of "acceptable pulpwood". Prices are usually those offered by the mill except for chips and mill residues when negotiat-

ion is involved.

The prices offered by mills vary according to the classification of agent providing the wood, size and fulfillment of contract, quality of wood delivered, species and distance from the forest to the mill.

Only a few directors of wood procurement have sufficient authority to increase prices to such an extent that the increase will cause an overall increase in the procurement budget without approval from higher authority. Minor increases or decrease in prices paid, however, are usually made without prior approval from superiors.

Past and Future Wood Needs

The interviews revealed three total volumes applicable during the study period. The fourteen mills participating in the study acquired 1,913,753 cords of wood in the principle study year, 1966. These mills consumed 1,890,102 cords in the manufacture of pulp in 1966 and acquired 1,775,381 cords in 1967. These dates indicate the degree of inventory fluctuations within the industry. When two adjacent years are compared in a sample of this size, it is often difficult to perceive accurately the trends in the industry. Therefore, the directors of wood procurement were also interviewed on the subject of past and future wood

needs using their experience in the acquisition of wood as a basis for general predictions.

Half of the directors interviewed representing thirty-nine percent of the pulpwood acquired by the study sample reported no appreciable expansion in the volume of wood used in the decade 1957 to 1966. The others reported expanded pulpwood use over that period of time ranging in amounts from fifteen to more than 100 percent. These rates of expansion in wood use were accomplished in spite of general inventory reductions in 1958. During the past decade, four directors reported changes in species mix used in pulp manufacture. Many of the changes itemized were brought about by modifications in sulfate pulping. Although there has been a general tendency in the Lake States area toward increased use of locally available species, two mills reported sharp discontinuance in the use of some form of aspen.

The three mills reporting the largest percentage increase in wood use in the last decade, from seventy-five to 100 percent, anticipate expansion at nearly the same rate in the next five years. Seven mills reporting an expanded use of pulpwood in the past ten years look forward to some future expansion, while most of the mills reporting no appreciable change in volume use between 1957 and 1966 expect that the volumes called for in the next five years will

remain nearly constant. Three-fourths of the mills that do not intend to expand woodpulp production in the next five years have absentee executive offices.

Apparently, most of the mills following a policy of expansion in wood pulp production will continue to expand. Mills which have not expanded in the past decade generally do not look forward to expansion within the next five years, whereas expansion in the larger corporations may take place in other regions of the United States.

Most of the directors of wood procurement admit that the agents supplying wood to them usually offer to supply more wood than they can accept. Nevertheless, only two directors of the fourteen interviewed took issue with the goals of the corporation regarding volume and species mix. One director of a mill, predicting a thirty-five percent expansion in wood needed in the next five years, stated that this rate of growth would probably not be enough to alleviate the chronic annual problem he faces of rejecting offers of pulpwood. The other director expressed a preference for greater use of wood available within truck haul distance. However, he acknowledged that with the present technology his company would be unable to maintain the quality of their product if he were permitted to purchase this wood. None of the other directors took issue with the

corporate goals in spite of the fact that more than twenty-five percent of the directors interviewed admitted to having a timbershed radius of more than 750 miles. Both of the directors who expressed dissatisfaction with corporate goals concerning volumes and species mix have been in their present position less than the fifteen years reported as average for all directors interviewed.

One director of wood procurement offered the comment that he believed that the present practices of wood procurement and the relationship between mill and producer have improved in general over the past ten to twenty years. The relationship between producer and mill is more formal and more closely akin to a business dealing than before. Procurement has employed more technical and professional tools than ever before. There is greater control over capital expenditures and inventory. The American Pulpwood Association has assisted the logging industry in mechanization research and provides an international network of communication concerning logging technology. New information is thereby receiving faster and more widespread publicity than ever before.

CHAPTER V

TOP MANAGEMENT'S PERSPECTIVE OF THE WISCONSIN-UPPER MICHIGAN PAPER INDUSTRY

Introduction

For the purposes of this study, the term top management was not precisely defined with respect to title. In order for an interview to be meaningful it was considered necessary to talk with someone possessing intimate knowledge of corporate objectives and policies. Initial request for an interview with top management was directed to the president or chairman when his office was located within the study area, and to managers of those mills owned by corporations having their chief executive offices outside of the study area. When unforseen circumstances prohibited a direct interview, the director of wood procurement substituted for the representative of top management after a review of the questionnaire and previous discussion between the director and the representative of top management. It was possible to obtain communication with the designated corporate officer later where elaboration was necessary and the director of wood procurement did not feel that he had

sufficient knowledge to enlarge on a particular subject.

Dialogue was established with all the managers of six mills whose chief executive offices are outside the study area. Of the eight cooperating mills having their executive offices within the study area, interviews were conducted with two chairmen, three presidents, two vice presidents and one mill superintendent.

Eight of the fourteen representatives from top management interviewed had a professional background in engineering, primarily chemical, mechanical or industrial. Five others were originally trained in some phase of business administration such as accounting, sale or marketing. One is an attorney.

Corporate Goals

The general goals of all the corporations interviewed are well defined for the next five years. Usually these goals are public information. Many corporations are required to present projections to their stockholders. However, when asked to look beyond the next five years, half of the representatives of top management interviewed stated that they did not feel they could forecast beyond five years with conviction. Those who did venture projections up to ten years phrased their projections in highly general terms.

Manufacture and Sales Volume

Over one-third of the interviewees expect their mills in the study area to double product manufacture and sales volume within the next five years. Manufacture and sales volume was usually expressed in tons per day of paper productive capacity. This does not necessarily mean, however, that the wood pulp productive capacity will increase accordingly. On the contrary, so long as the present price structure regarding wood pulp prices exists there are no plans for increasing wood pulp production appreciably. There is a consensus among executives that the present price of open market wood pulp is considerably less than the cost of comparable wood pulp manufactured within the study area. Therefore, projections concerning future pulpwood needs may not be identical to the corporate objectives with regard to manufacture and sales volume. Often projections beyond five years are based on the tacit assumption that the present wood pulp price situation is ephemeral, and that it may be advantageous in the long run to expand wood pulp capacity to meet paper mill requirements.

Those mills expecting to double manufacture and sales volume by 1973 were among the smaller users of wood in 1966. They represented only seventeen percent of the total acquisition of wood by the sampled mills that year.

Other projections include the increasing manufacture and sales volume at a rate of ten percent annually during the next five years, a twenty percent growth over the next five year period, and the expectation of about a ten percent growth rate in manufacture and sales volume in the next five years.

If we assume a 62,675,000 ton annual rate of consumption of paper and paper board in the United States by 1973 (based on a population of 218 million persons and a 575 pound per capita annual consumption rate at that time) (9, 11), it is estimated that the production requirements of the paper and paperboard industry in this country will have to increase about 13.5 percent in order to meet the demands, assuming that import and export levels remain at a constant 1966 rate. Therefore, ten of the fourteen mills included in this study representing sixty-four percent of the pulpwood consumption capacity in 1966 look forward to a manufacture and sales volume expansion rate greater than indicated demand projections. Usually management indicated that they will strive to increase their percentage share in those markets or products determined to have the greatest profit potential.

Market Position with Relation to Competition

Outlook for the next five years concerning the corporation's market position with relation to its competition is summarized as follows: six corporations expect to either improve their market position or to grow faster than the average of their specific industrial competition; five paper mills expect to maintain their specific market position; and the remaining three mills either expect to grow more slowly than their competition or to increase product specialization. The objective of increasing product specialization includes within it the assumption that the corporation may withdraw from competition in certain elements of the paper market but makes no assumptions concerning its position with relation to competition in those markets in which it intends to remain.

Those mills which enjoy a position of leadership in their specialized market area naturally expect to continue in that position. Other mills having a position less than first in their specific paper market expect to improve their competitive position somewhat in the next five to ten years. One mill ranking below tenth in a market considered highly competitive expects to maintain the position it now holds. In order to be successful in maintaining their position, management feels it will be necessary to increase

paper production by at least twenty percent in the next five years.

Paper mill capacity does not generally increase in smooth increments. Rather, large capacity increases result from the addition of digesters or fourdriniers. Some small increments may be added through improvements in pulping technology which reduce the time of wood pulp manufacture and result in capacity increase or through fourdrinier re-modeling resulting in higher and more efficient speeds. Projections reflecting major increases in manufacture and sales volume or market position are generally made by those mills anticipating the addition of paper machine capacity.

All mills expect to increase their gross dollar income each year for the next five years. The amount of annual net income increase expected varies considerably from a high of forty percent in the next five years to a low of one and five-tenths percent (Table 13).

In some instances, those large paper mills having absentee executive offices reported that general short run goals are established for the corporation in its entirety rather than for each individual mill. These corporations offer a complex line of paper products and grades and the individual mill manufactures only a small fraction of the product line. In these instances, precise objectives for

individual mills were often less precisely defined than were the overall corporate paper manufacture objectives. On the other hand, some mills with absentee executive offices conveyed clear and precise objectives for their particular manufacturing complex. Apparently, within some large corporations there may be more intermill competition than within others. Mills also recognize, within the framework of short-run goal definition, that certain paper products will be in greater demand than others in the next five years. Expansion in these lines will be more rapid than average. Demand for other grades may remain nearly constant during the next five years and mills whose major productive effort is in these lines of product manufacture will be less able to expand at the average rate projected for the industry.

TABLE 13.-Percentage increase in annual gross dollar income expected by top management of study sample, 1968 - 1973

Number of top managers	Expected increase
1	20 to 40%
1	15 to 20%
4	10 to 15%
5	5 to 10%
3	1 to 5%

Basic policy of the nature that a corporation will invest capital in any related endeavor which promises a fourteen percent return annually on invested capital before taxes was reported as well as the objective of "stable profit growth". A precise definition of the meaning of stable profit growth was not conveyed.

Managerial Perspective of Wood Raw Material Importance in Profitability of Paper Manufacture

Pulpwood procurement is generally considered to require the largest single amount of capital outlay for raw materials in the manufacture of paper. Therefore, procurement plays a vital part in the overall profitability of paper manufacture.

Contribution Expected of Wood Procurement in the Attainment of Corporate Goals

Every member of top management interviewed refers either directly or indirectly to the cost of pulpwood when defining the role wood procurement is expected to play in helping his corporation attain projected goals. References to price often assume that the director of wood procurement will provide the mill with its wood at the fairest possible price in keeping with the philosophy of continuity of producer enterprise.

Several executives stated that they expect fibre to be furnished to their mill at a cost and in sufficient amount to permit the attainment of growth projections or to contribute to the corporation's ability to meet competition in such a way as to make projections realistic. Specifically, management felt that if wood volume acquisition could be maintained at a constant dollar outlay per cord during the next five years, it would result in an overall decrease in the percentage of pulpwood's total cost in paper manufacture. It was assumed that the price of other inputs would increase during that period of time. Executives did not suggest that their companies intended to hold the line on prices paid for wood delivered by producers in the future. Rather, they expected that any increase in price paid to producers would be balanced by savings in the overall cost of procurement through the incorporation of more efficient techniques.

Indirect references to the cost of wood not only included general references to increased procurement efficiency but specific areas were defined in which procurement should concentrate in order to reduce the overall cost of fibre acquisition. These areas included: (1) extension conducted by the office of wood procurement designed to improve harvesting method efficiency; (2) investigations

into economies of chip use compared to the use of round-wood; (3) investigation into the inherent economies of mechanization as they apply specifically to those producing wood for his mill; (4) investigation into the feasibility of employing the use of wood concentration yards at sites away from the mill.

Large inventories of wood represent large capital investment. More rigid control over inventory levels was also specified as another way of reducing the cost of wood. The more capital invested in idle wood yard inventory, the less that is available to the corporation for alternative uses. Top management also recognizes that it is necessary to keep a wood supply on hand as a hedge against periods of low delivery levels.

Some of those interviewed considered flexibility in procurement to be the most important contribution the office of wood procurement can make toward the attainment of the overall corporate goals. As paper customers continue to demand a larger number and wider variety of paper products, some mills have found it essential to maintain their entire productive line in a dynamic perspective. Static wood procurement methods and static timbersheds are inconsistent with this concept.

One corporation reported relying on the division of

wood procurement to present a true corporate image to a great number and variety of people with whom contact is not maintained through the normal channels of marketing.

Wood Procurement Methods and Policies

The executives of six mills representing sixty percent of the total annual wood consumption of the fourteen mills sampled believe that there would be some advantage in contracting for wood deliveries from producers for more than one year in advance. Some of those interviewed felt that with proper safeguards concerning price and species mix, they would be willing to enter into a contract for as long as twenty years for chips, if necessary.

Long term contracts are palatable to top management when they are necessary in order to assure highly reputable producers of a market so as to guarantee them a market for wood large enough and for a sufficient number of months to permit amortization of the cost of equipment designed to increase their productive efficiency. This is true, primarily, in instances where top management feels that a producer is a competent business manager as well. Usually, top management feels that these qualifications are most readily met by other entrepreneurs engaged in forest product manufacture, relying on the paper mill as a market for

waste wood. Roundwood producers are not excluded from consideration by some executives if they can meet the established standards of business reputability. The executives of all large mills interviewed (those reported consumption of more than 250,000 cords in 1966) expressed a willingness to consider agreements for as much as five years with some producers of roundwood.

Those executives who felt that flexibility is of utmost importance, those who believe that their producers cannot accurately predict their ability to perform, those who have experienced difficulty in the past with long term agreements and those who have limited experience in other than roundwood acquisition are reluctant to commit their mill to producers for more than one year in advance.

No one interviewed felt that there was a need to make the contracts negotiated between producer and the mill more binding on the mill. It was acknowledged that an agreement which would legally bind the mill to accept the volumes contracted for would provide the producer with a greater feeling of security. This has not been considered necessary in the past because no corporation has ever refused to accept wood for which it contracted in the past.

However, nearly half of the members of top management interviewed agreed that there was a need to insure more de-

pendable performance from producers in the future. They acknowledged that dependability of performance cannot always be insured by strict written agreement designed to bind the producer legally to perform within the terms of the agreement. They also expressed the opinion that few producers are in a position which would permit them financially to enter into a binding agreement. It was agreed that such variables as weather, labor, fire and stumpage price and availability faced by the logger would make contracts attempting to bind the producer to perform unenforceable.

The consensus of the opinion of members of top management is that their corporation will provide advances or loans to individual reputable producers when they can show genuine need for such assistance and when the corporation has an adequate supply of cash to permit the use of cash in this alternative way. Although top managers of most mills acknowledged this to be their policy, many agree that they attempt to minimize this type of negotiation. One member of top management stated that he has had up to $200,000 committed in the form of loans and advances at one time or another without losing so much as one percent of that amount through default.

Quantity of Wood Available

There is unanimity of opinion among the members of top management interviewed that the quantity of wood available is not a limiting factor in the maintenance of full plant production. A few expressed corcern as to whether there would be sufficient softwood fibre available to permit expansion of wood pulping capacity under the existing price structure. Some mills have a policy emphasizing substitution of hardwood fibre for softwood fibre. A basic policy, favorable to the issuance of long term contracts with suppliers could help assure mills of a continuous future supply. In addition, the practice of sustained yield forest management on other private land ownerships, through the Tree Farm system, and a continuing policy of maintenance of good producer-mill relations are important ways of insuring a more reliable wood supply in the future.

Although up to the present the quantity of wood available is not a limiting factor to expansion of mill capacity, this item is of vital concern in corporate planning and corporate projections for the future.

Most of the executives interviewed conveyed an interest in expanding wood pulp production in the future, particularly if it proves technologically possible to substitute dense hardwood fibre for softwood and providing there

are no drastic changes in the present paper manufacturing cost structure.

Desirability of Woodland Ownership

Nine mills at which the interviews were conducted own some forest land. Five do not. Of the nine mills reported owning forest land, six consider such ownership a valuable investment of forest capital. Three do not. Only one manager of the five mills not owning forest land considers forest land a valuable investment of corporate capital.

All members of top management are aware that the supply of land is highly inelastic, particularly, in the short run. They are also conscious of the many alternative uses to the production of forest products available to the forest land owner in addition to the competition for forest land by parties representing these alternative uses. Nevertheless, some mills have never experienced a need to own forest land in order to insure an adequate flow of pulpwood to their manufacturing site.

There is only rare exception to the belief the acquisition of additional forest land at this time cannot be justified because the price of this land is considered to be too high to permit a competitive return on investment. An anticipated estimated return of less than three percent

annually on forest land investment cannot compare to the possibility of earning as high as fourteen percent on capital invested in other alternatives available within the paper manufacturing enterprise.

None of the executives of mills owning forest land expressed any interest in disposing of these lands, however. Most managers felt that it was necessary to maintain their present supply of forest land in order to insure a future supply of wood at a competitive price. Many were of the opinion that the ownership of forest land conveys to the general public the concept of corporate permanency and most interviewed would not divest their corporation of forest lands because of supply inelasticity. Forest land ownership can provide greater assurance of current and future wood supply, protection against captive ownership by single use management, and greater check against excessive wood pricing on the open market than is available to competition, as well.

Forest land represents a valuable source of collateral when seeking capital loans. One of the top managers expressing this opinion stated quite definitely that certain loans their corporation was able to negotiate were available only because they owned woodlands. Another felt that most investments in real property tend to appreciate in value at

a rate competitive with other alternatives and that the three percent rate of return, reported so often as being normal on woodlands investment, was not the true rate earned.

Woodland ownership is a classic example of an economically fixed asset. The cost of acquiring additional forest land is generally higher than the internal value the land represents to the corporation and the internal value of the land to the corporation is greater than the value represented by this land if it were sold. Stated another way, many of those interviewed agree that although woodland ownership does not provide a competitive advantage at the present time, historically it did help some mills; and one additional officer felt that although the ownership of forest land does not provide an advantage at the present time, it may in the future.

Woodland ownership is regarded more favorably by those mills anticipating extensive utilization of species available from their present woodlands. Mills expressing the need for species flexibility and mills looking forward to limited utilization of species available from their woodlands are reluctant to predict expansion of their woodland acreages.

A majority of the top managers of the nine mills

owning forest land do not feel that the ownership of this land gives their corporation a competitive advantage because their competitors owned either as much or more land than their corporation does. Woodland ownership is believed to be an aid in the development of more intimate local contact with producers, which often yields some advantage in wood procurement.

Some of the five managers of corporations not owning forest land felt that the lack of ownership provided them with a definite advantage over competitors which do have sizeable amounts of corporate capital fixed in a low return investment. Others did not feel that the lack of ownership of forest land gave them any particular advantage in their competitive atmosphere.

Cost of Wood Pulp Manufacture

During the time interviews were conducted, a price structure existed in the international wood pulp market which made it possible for most of the mills in the study area to purchase wood pulp on the open market from $9.00 to $24.00 per ton cheaper than the cost of manufacture in the study area. Therefore, as one interviewee stated, "Something in the cost of wood pulp manufacture is excessive". Many attributed the excessive costs directly to the cost of

wood. On the other hand, top management in Upper Michigan pointed to the compensation insurance rate of 27.24 cents per dollar in effect in that area compared with an 11.39 cent per dollar rate in Wisconsin. High insurance rates, particularly when there is so large a discrepancy, result in producers leaving the business, taking legal or illegal measures to avoid carrying this insurance or passing the cost of the insurance on to the mill in the form of increased price demands.

Wisconsin executives feel that they can reduce the cost of wood both by encouraging and providing incentive for the incorporation, by producers, of economizing efficiencies or by substituting truck delivery of cheaper species, primarily aspen and dense hardwoods, for rail delivered softwoods in an attempt to secure dual savings in both transportation and handling costs and in the inherent cost of the delivered fibre.

Most mills having chief corporate offices outside of the study area delegate to their local mill managers a high degree of fiscal autonomy with regard to expenditures for wood raw material. This is true of at least four of the six mill managers interviewed. Budgetary expenditures for wood, procurement policies, and woodlands management organizations have separate and parallel organizations to mill management

structure in two absentee corporations. Each division has autonomy of decision making within the limits of his particular responsibility; and the price paid for wood raw material when dealing with this organizational structure is the responsibility of a superior authority in a location outside of the study area. In both of these mills, the mill manager and the director of wood procurement are expected to cooperate in their daily routine but the mill manager does not have authority to determine prices for wood paid by his particular mill.

CHAPTER VI

THE RELATIONSHIP BETWEEN TOP MANAGEMENT AND THE DIRECTOR OF WOOD PROCUREMENT

Modern plants and equipment in operation primarily in the south and the Pacific Northwest are able to mass produce many of the paper grades at a delivered price far less than is possible by the mills of Wisconsin and Upper Michigan. The mills in this study area have been forced out of paper markets in which there is, traditionally, a high degree of price competition. Management is forced to constantly adapt its paper offerings to the specifications dictated by the market. Since they cannot usually be successful in price competition with the newer mills, they compete by offering a personalized service. In the trade they are referred to as "Specialty Mills". Nevertheless, no matter how valuable service is to a customer, he can be lost to a competitor if the price of the product line he buys becomes excessive. It is, therefore, understandable that replies by top management to questions regarding quantity, quality and price of wood made and the role wood procurement is expected to play in the attainment of corporate goals, to a large extent, were dic-

tated by the orientation of top management toward the goal of meeting the demands of his customers at a price which will permit his corporation to meet other projections.

The director of wood procurement sees his mill as a market upon whom hundreds of agents are dependent for livelihood. They are cognizant of the importance of wood in the manufacture of paper. They are also keenly aware that the mill cannot be completely insensitive to the demands of the producer no matter how elastic the supply of some species might appear to be. The mill is dependent upon regular deliveries of quality wood from these producers and although there is no implication of an employer-employee relationship in any of their dealings (13), there is a great deal of mutual dependence. Often a warm personal friendship develops between wood procurement and many of the wood suppliers.

Because most of the directors of wood procurement have a forestry background they are keenly aware of the hardships faced annually by men working in the forest environment. In this context, it is understandable that many of the replies given by the director of wood procurement to the questions asked of them contain a high degree of orientation toward awareness of the social responsibilities borne by the paper mill to their producers.

Communication between Top Management and the Director of Wood Procurement

Extent of Communication

The director of wood procurement was present during half of the interviews conducted with top management. During the interviews they were often asked to comment with regard to the answer that would be most accurate for a given question. Fourteen of the twenty-seven major questions asked of top management were also included in the director of wood procurement's questionnaire. Six of the fourteen questions, especially those concerning plans for the corporation's future and the role wood procurement will play in those plans, were designed, primarily, to learn the extent of understanding possessed by the director of wood procurement concerning the business of top management. The remaining fourteen questions had reference to the relationship between the director of wood procurement and the producer. Here, the investigator attempted to learn the extent of top management's understanding of the factors involved in wood procurement.

With the mills providing a joint top management interview, there appears to be a management policy of transmitting information to the director of wood procurement, as well as

a policy of delegation of authority from top management. There was no possible way for the interviews at these seven companies to establish the absolute extent of mutual understanding between top management and the director of wood procurement except to say that within the limits of this investigation there appears to be a policy of information transmission between top management and wood procurement.

Of the seven mills providing private interviews with top management, the answers given by both top management and wood procurement to the same questions were similar at two mills. The director of wood procurement was not available for interview at a third mill and the representative of top management answered all the questions posed in both questionnaires. At the remaining four mills, the director of wood procurement either would not answer or stated that he did not know the answer to most of the six questions dealing primarily with information normally transmitted from top management. All the representatives of top management, on the other hand, answered the questions dealing with wood procurement responsibilities with a similarity demonstrating rather complete understanding.

Channels of Communication

The channels of communication and supervision are

not the same in all the paper mills at which interviews were conducted. Dissimilarities in the structure of the hierarchy occur most dramatically among those six mills with absentee chief executive offices. At one of these mills, the director of wood procurement is responsible to a vice president in the executive office. At two others, the director buys wood for more than one mill and is responsible to the manager of each mill when his work pertains to that mill. One of these directors is also responsible to another officer located outside of the study area. The director at the other three mills having absentee executive offices is responsible to the manager of the mill complex for which he buys wood.

All of the mill managers are in turn responsible to executives located outside of the study area. When these managers are free to establish their own communication structures within their own mill complex and possess a high degree of decision making autonomy concerning the daily business activities of their mill, a direct relationship between wood procurement and the mill manager can be the same as the direct relationship between the president of the corporation having executive offices within the study area and his director.

The offices of the director of wood procurement of

the eight mills having their main executive offices within the study area are located in the main corporate office building or within close proximity to the main corporate office building.

Channels of communication are somewhat less complicated in that the director of wood procurement reports either directly to the chief executive officer of the corporation or to an intermediate vice president who in turn reports directly to the chief executive officer of the corporation. Only rarely are there two intermediate vice presidents between the director of wood procurement and the president of his corporation.

There is only moderate correlation between the amount of wood consumed in 1966 and the number of intermediate offices in the channel of communication between the director and corporation president. Although some of the largest users of wood in 1966 have an intermediate vice president within the communication structure, so does the smallest mill.

The directors of wood procurement at some mills report they are also responsible to other members of the corporation hierarchy concerning matters of specified nature. For example, other members of the board of directors of the corporation may be free to make specific demands upon the director,

primarily, concerning the justification for major non-reoccurant expenditure items. At other corporations, certain directors may request information as a matter of routine information.

Although these directors occupy a position superior to the director of wood procurement, they do not dictate policy to him except through previously established channels. A sharp distinction exists between the responsibility of reporting to a particular executive, who in turn dictates policy and procedure, and informing an executive who uses this information provided to assist him in determining overall corporate objectives as well as the general policies and procedures for attaining them. Only at specific times and with regard to specified subjects is it sometimes convenient to have the director also communicate through other than normal channels.

Communication from the chief executive to his director of wood procurement is ordinarily conducted through the established channels.

Most directors are quite satisfied with the existing channels of communication. Those who suggested changes reported that these suggestions had been communicated to their superiors and were presently under consideration.

Top Management's Perspective of the Director of Wood Procurement

When top management positions are either vacated or created, these offices are usually filled by members of the professions of engineering, finance, and paper chemistry. In the past ten years, only three men from wood procurement in the fourteen mills interviewed have been transferred to other departments in their corporation and now occupy positions of greater administrative authority than is available within the wood procurement department. Two of these foresters were promoted because their particular talents fitted them for their new managerial role. The third is a corporate vice president with substantial background and experience in finance. As one executive stated, "When a man sticks his head above the crowd, he moves regardless of the department he is in." It would appear that top management at most of the study mills is either not accustomed to seeing members of the department of wood procurement with their heads above the crowd or not disposed to looking toward wood procurement and the professional forester for such talent.

In an address to the Wisconsin-Michigan Chapter of the Society of American Foresters, February 15, 1968, Mr. Samuel Casey, President of the Nekoosa-Edwards Paper Company

said, "In all candor, I believe that the paper people know more about woodlands than foresters know about the paper industry, but it is time for the forest industry to get the whole picture." (5). The focal point of Mr. Casey's concern is wood procurement's apparent lack of understanding and appreciation for the problems inherent in a market oriented business.

Not all of the members of mill top management agree completely with Mr. Casey. Fewer than one-third indicated in their interview that they either regularly or automatically look to the area of wood procurement as a source of talent in corporate administration, decision making and program execution. Most of these mills expressing this sentiment are among the five smallest buyers of pulpwood in 1966 in the interview sample. None of the mills using more than 250,000 cords annually agreed, however. Often, smaller mills include their director of wood procurement among the members of their top managerial team. Personnel in wood procurement are considered both capable and well trained and possess adequate judgement to meet the needs of these mills. Some small mills regularly look to the director of wood procurement for contributions only in those areas in which the director is considered best qualified. Other small corporations maintain a policy of internal pro-

motion whenever possible. Theoretically, everyone in such a corporation is automatically considered for new responsibilities.

The remaining ten mills, representing over eighty percent of the 1966 wood acquisition of the sample mills, indicated that they look to the office of director of wood procurement as a source of executive talent only upon occasion. Three of these executives expressed concern over past policies which did not consider talent available in the department of wood procurement. One member of top management stated that although past policy has favored the engineer, there was nothing inherent in any area of professional training that would justify excluding its members from consideration when looking for executive talent. Two others mentioned that they intended to change their heretofore policies of ignoring wood procurement's executive possibilities because they felt that valuable talent is possibly being overlooked. One described his interest in including selected members of the department of wood procurement in corporation programs for talent development.

Most members of top management agreed that the director of wood procurement, and in particular the woodlands manager-forester, possesses a high degree of specialized knowledge. However, a few executives regard the forester's adherence to

the conservation ethic as indicative of a personality not generally thought to be attune to the highly competitive atmosphere in which paper industry executives live. In addition, the specialized nature of the forester's knowledge, as well as the unique nature of wood procurement and forest management, often results in the office of wood procurement having both a high degree of autonomy and physical and psychological remoteness from many mill activities. Often foresters are not exposed directly to many of the problems of the mill beyond their area of responsibility.

When top management was asked the usual reaction by woodlands to corporate changes involving their area of responsibility, only thirty-six percent of the mills conveyed the idea that it was ordinary for woodlands to initiate change within the corporation. Most members of top management indicated that the majority of the suggestions involving changes in the area of wood procurement originate outside of that department.

An example of the reluctance to change was obtained with reply to the inquiry made of the director of wood procurement concerning their reaction to the corporate goals with respect to volume and species mix. Specifically, they were asked whether these goals were ideal from the standpoint of procurement feasibility and forest management.

Only two directors of the fourteen interviewed replied that they would prefer the use of more locally grown truck hauled species or increase use of these species beyond projections; in spite of numerous facts indicating genuine opportunities for cost saving are available to their corporations through increased use of locally abundant aspen and dense hardwoods in paper manufacture. Some of these facts are: (1) there is a net surplus (difference between allowable cut and timber cut) in aspen and dense hardwoods amounting to nearly 300,000 cords in Wisconsin alone (19); (2) there is general agreement among directors of wood procurement that producers chronically offer to supply more wood than mills can use with present digester capacity. This is, particularly, true of aspen and dense hardwoods; (3) wood procurement is under constant pressure from paper mill management to, at least, hold the line on the overall cost of procurement; (4) aspen and dense hardwoods are cheaper than equal volumes of softwoods because there is an abundance of the former within truck haul of most mills and the use of these woods permits savings in freight costs; and, in addition, the average delivered cost per cord of aspen and dense hardwoods is intrinsically cheaper than the average cost of softwood cordage (15).

It would seem natural that directors using locally

grown species would express reluctance to change their species mix primarily when their mills use exclusively hardwood or abundantly available local softwood fibre. However, only five of the twelve directors expressing satisfaction with corporate goals with respect to volume and species mix, procure, exclusively, this species mix.

Therefore, half of the directors of wood procurement are content with the species mix used by their mills at the present and projected for their mills in the future, and all but two directors are content with volume use and projections in spite of the facts available indicating need for changes.

Often the director of wood procurement is constrained by a reluctance to appear aggressive in the highly technical area of pulp and paper manufacture. However, this does not alter the fact that management at most mills feels it can expect only a limited amount of innovation and aggressive leadership from the department of wood procurement. If there is reluctance to advocate more research designed to increase use of cheaper species while maintaining quality standards, perhaps there is greater reluctance to innovate where the need for change is less obvious.

There exists, as well, the possibility that top management is not conscious of change initiated by procurement.

Those managers who regard procurement as being innovative refer to innovation within the area of wood procurement. Rarely does top management regard wood procurement as asserting leadership outside of the sphere of wood procurement methods and policies.

CHAPTER VII

CONCLUSIONS

The average cost per cord of pulpwood delivered to any of the fourteen mills studied in Wisconsin and Upper Michigan is determined by many factors. Because none of the mills have exactly the same matrix of cost determinants, there is considerable degree of variability in average pulpwood costs among the members of the study sample.

The average cost per cord varies according to the process by which wood pulp is manufactured since basic species needs are often dictated by a particular pulping process. Wood pulp quality is also an important factor in determining the price of wood. Straight pulpwood, free of defect, is more expensive than woods run quality. Costs vary as to the form of wood delivery, as well, whether wood is delivered as chips, slabs, veneer cores, or as rough or peeled roundwood.

Many of the factors affecting the cost, however, are associated with the production and delivery of wood to the mill. Generally, the agents supplying this raw material are independent entrepreneurs supplying wood to many mills.

The efficiency of their enterprise and the level of understanding between producer and mill concerning supply capabilities and projected demand is of major importance in wood cost determination.

The Role Played by Wood Procurement in the Paper Mill Corporation

Paper mill management generally feels that under the existing price structure something in the cost of wood pulp manufacture in the study region is excessive. Since pulpwood is the largest single cost input in wood pulp manufacture, the cost of pulpwood is assumed to be, in part, responsible for the excessive cost of wood pulp. In the long run, the cost of pulpwood must be reduced in comparison to other costs incurred in wood pulp manufacturing if these mills are to continue to be able to successfully meet competition from modern, larger mills located outside the study region.

The Position of the Director of Wood Procurement within the Corporate Organizational Structure

Top management has delegated the authority for the acquisition of pulpwood to the director of wood procurement. In most instances, the director of wood procurement possesses considerable autonomy in decision-making designed to

enable him to execute his responsibilities efficiently. Given a mixture of species necessary for wood pulp manufacture, the director can establish time and methods of delivery, region from which the wood will be delivered, identity of the producer and, to a considerable extent, the prices which will be paid for wood deliveries. His superiors recognize that he possesses a high degree of specialized knowledge and skill and permit him to set procedures and policy as he deems necessary for the fulfillment of corporate objectives within the framework of his responsibilities and experience.

The director of wood procurement not only has adequate authority to execute his office but he also communicates with and is responsible to a simply structured corporate hierarchy. The director is either directly responsible to the chief corporate officer or directly responsible to an intermediate vice president possessing a high degree of decision making authority and who is in turn directly responsible to the chief corporate officer. The director of wood procurement is always encouraged to communicate with his superior regarding matters he considers to be of importance to the function of his office.

Therefore, it appears as if most of the directors of wood procurement sampled have the freedom and authority

within their corporations to insure the delivery of an adequate supply of desirable wood raw material and, within limits, regulate the flow of pulpwood deliveries. Because of the importance of pulpwood in the manufacture of paper and the influence its procurement exercises upon corporate profit, the director of wood procurement is usually a member of the chief corporate officer's chief advisory team. However, in the past, he has advanced only with rare exception, beyond this plateau to positions of greater administrative authority within his corporation.

Definition and Attainment of Desirable Wood Procurement Objectives

According to a consensus of opinion of the directors of wood procurement interviewed, the producer of wood of the future must have certain characteristics if he is to assist the industry in attaining its objective of reducing the comparative cost of wood pulp manufacture. These characteristics are: (1) he will be an independent entrepreneur; (2) his wood producing capability will increase; (3) he will receive larger contracts from the mills for whom he produces than he is now receiving; (4) his entire logging operation, from stump to the mill yard, will be more mechanized in the future than now; (5) he will be more inclined

to earn his total livlihood at the business of wood production; (6) he will have a more professional business knowledge of the art of wood production; (7) he will have a more stable and predictable income expectation; (8) his wood production costs will also be more stabilized and predictable.

However, if these characteristics are to become realities in the future and contribute to the attainment of the goal of stable wood pulp manufacture costs in the face of increasing overall paper manufacture costs, wood procurement has the responsibility of creating an atmosphere conducive to the effectuation of these characteristics. Often, policy formulation designed to promote these objectives has not been adequately delineated with respect to all of these objectives. As a result, progress toward the attainment of these goals has been less rapid where there has been less direction.

The Effectuation of Independent Entrepreneurship

Only two mills participating in this study indicated that they obtained as much as twenty-five percent of their total annual wood receipts from company logging operations or contract cutters, whereas, ten mills obtain more than half of their wood supply from independent producers.

Apparently, those mills believing that independent entrepreneurship is desirable have followed a policy of accepting wood from this source. The trend during the past decade has been toward reliance upon twenty-nine percent fewer company employees as a source of pulpwood.

Number and Duration of Contracts for Wood Deliveries

Attainment of many of the desirable producer characteristics has not been dramatic. Between 1957 and 1966 the number of company contractors, independent producers and dealers from whom pulpwood was purchased increased from 4486 to 4771 persons. The policy of favoring those producers who consistently fulfill their contracts with larger contracts is either comparatively new or has produced only a limited number of larger contracts during the past decade, in the face of increased cordwood utilization by these mills over the same period of time.

One of the major shortcomings in the relationship between mill and producers presently concerns the limited planning period available to the independent producer of truck delivered roundwood. The average duration of time within which wood can be delivered under a written agreement for this wood is seven months. Arrangements are made from two to seven months prior for the delivery of this

wood. Therefore, the total planning period available to the producer averages between nine and fourteen months. Although he can extend his planning period by establishing a reputation for dependable contract performance, the mills generally provide him with no more tangible evidence of a continuing business relationship.

In spite of this limited planning period, the producer is expected to fulfill his contract when he receives it. In order to do this, he must buy stumpage wherever available and usually at the terms dictated by the seller.

Often the producer must hire part-time labor, especially if he is to meet deliveries of large quantities of sap peeled wood. The producer is under constant pressure to hold the line on the cost of wood production so as to make it possible for the paper mill to meet competition. He is expected to become more efficient by employing new cost saving technology, specifically, by investing in expensive mechanizing equipment.

The sawmill operator who provides wood in the form of chips and mill residues reportedly receives a contract averaging three years in duration. One mill provides its chip and slab producers with a copy of its five year projections regarding future wood needs. The mills justify this by stating that chips and slab production requires in-

vestment in expensive debarking and chipping machinery. The cost of this machinery must be amortized over more than one year and the sawmill operator will not willingly make such investment on less than a one year market horizon.

The reputable independent producer of roundwood faces a dual standard. He is expected to mechanize by purchasing expensive logging and hauling equipment but is not given the benefit of long term contracts for the purpose of collateral, as is the sawmill operator. The investment he is called upon to make is often considerably greater than the investment incurred by the sawmill operator for debarking and chipping machinery. The directors of wood procurement have justified this by pointing to the need to maintain a flexible wood supply outlet concerning quantity, species, quality and wood price. On the other hand, projections with regard to wood volumes and species needs for the next five years are rather well established and generally known by most directors. No mill anticipates a reduction in wood volume use in the next five years, and those five mills reporting anticipated modifications in species mix also indicated rather definitely what they expect those changes to be.

In addition, most mills prefer that financial transactions designed to provide capital for the producer, such

as loans or advances, be referred to banks and other lending institutions. At the present time, most mills provide loans or advances to producers of proven reputability only as a matter of convenience to the producer and do not solicit or encourage producers to request them. The mills acknowledge that some banks resent mills making loans and consider such a policy a form of competition. However, a planning period of only fourteen months in the form of a contract for the purchase of roundwood is inadequate collateral to guarantee repayment to ordinary lending institutions for the use of large sums of money needed by a producer for mechanization.

Top management is more inclined to be sympathetic toward a policy of longer agreements for the delivery of wood than are presently in effect. Top management at large mills, (those reporting consumption of more than 250,000 cords in 1966) expressed a willingness to consider agreements for as much as five years with selected producers. Since over seventy percent of the total acquisition reported for 1967 was in the form of roundwood, a policy favoring longer planning periods for producers would have a major impact on the pulpwood industry in the study area. The opportunity for earning such a degree of security would serve as an additional incentive to producers to meet standards of reputability established by the paper mills. In addition,

these long term contracts, with the accompanying assurance of income, should encourage investment in mechanization and expansion by producers. The existence of long term agreements would also tend to eliminate the compulsion felt by some producers to insure against the effects of possible midseason reductions in volumes required by the mills by contracting for greater volumes than they intend to produce. This should yield a closer correlation between contract request and contract fulfillment.

A few mill managers indicated they would be sympathetic to the idea of making the written agreement, particularly for more than one year of wood deliveries, if the agreements were more binding on the producer to perform to the letter of the contract. They feel that the mill is bound adequately to accept wood contracted for under the terms of the present agreements negotiated. All contracts for delivery of wood for more than one year are revised at least once a year to reflect new delivery and price schedules, at the present time. This policy could be maintained without undue hardship to either mill or producer.

Information and Education

Financial inducements such as long term contracts for wood deliveries, will encourage producer to incorporate the

use of more efficient wood production techniques. Wood procurement also has the responsibility of assisting the producer, wherever possible, to learn of new techniques and developments in more efficient wood production. He must not only serve as a link in the chain of communication between the wood producer and the many sources of new developments but must also take an active role in advising producers intelligently, as to those which are designed to increase efficiency under logging chances alien to his specific needs.

The use of new equipment is not in itself a guarantee of cheaper wood production costs. Investment in the wrong equipment can yield quick bankruptcy. A policy of "let the producer beware" results in irreparable damage to harmonious producer-mill relationships and will not encourage expansion into the practice of full time professional wood production.

Utilization of Authority by the Director of Wood Procurement

Although there are some noteworthy exceptions, top corporate management does not usually consider wood procurement to be innovative within the area of its responsibility. Impetus for the incorporation of new procedures and policies in the area of wood procurement generally originates outside

of that department.

Wood procurement was most often described by top management as "cooperative" in acceptance of company policy, in doing what is asked of them with enthusiasm, in helping to solve problems faced by the total company.

The director of wood procurement is usually in the best position to evaluate trends in production as well as consumption of pulpwood because of their understanding of both mill and producer problems. Changes in policy and procedure with regard to wood procurement can be expected to be more acceptable to producers affected by change when leadership is accompanied by maximum understanding of all factors involved. Change is often less acceptable when imposed by those external to the wood procurement-producer relationship. Wood procurement's reluctance to take the initiative in the incorporation of change has often resulted in the imposition of new policies by other members of mill management. The producer, therefore, views most new policy and procedure as being imposed by persons external to the focal point of his enterprise, the customer, the director of wood procurement. Therefore, he is more inclined to resist and resent change in procurement policy and procedure than to understand and cooperate with them.

When top management is convinced that subordinate departments are not inclined to innovate, they tend to look to others for new ideas to fill the vacuum and precedent for the external imposition of change can become established. Change could be more acceptable and efficient if wood procurement would take the initiative.

Result of Wood Procurement's Corporate Image

Wood procurement is not ordinarily looked to by top management as a source of talent in corporate administration, decision-making and program execution when the need for such talent is indicated within the corporation. The position of director of wood procurement is a terminal one for members of the forestry profession within most of the sampled corporations. However, additional academic training in business administration, paper chemistry or other disciplines regarded to be more productive of potential executive talent will not in itself change the present image of wood procurement. The propensity to innovate and lead must also be encouraged.

Some corporation executives have expressed concern over past procedures for talent identification within their corporation which have overlooked foresters. It is generally believed that executive ability can be found among members of any profession. A few corporations plan a reappraisal

of existing corporate policy which has failed to develop executive talent among members of wood procurement in the past.

Recommendations for Changes in Existing Wood Procurement Policies

Wood Production and Delivery

The limited progress made in realizing a cadre of wood producers with characteristics considered desirable for the attainment of wood pulp manufacture costs may be attributed to the existence of one or a combination of several alternatives: (1) the producers are reluctant to fulfill the characteristics deemed desirable by the mills; (2) some level of mill management does not agree that the characteristics are desirable; (3) the suggestors are not serious about the need for producers to have these characteristics in the future; (4) action and leadership in effectuating the development of these characteristics has been minimal in the past. Although all mill managers are not in agreement with the need or desirability of all the characteristics listed of the producer of the future, directors who are in agreement generally have not taken adequate steps to effectuate the development of these characteristics in their producers.

In the future a concerted effort must be made to implement these characteristics when considered desirable. The professional reputable producer must be offered the opportunity to increase his percentage share of annual mill wood needs by receiving larger contracts. Large contract volumes can be arrived at both as a result of mill expansion and reduction in numbers of producers.

The producer's planning period must also be extended beyond its present length of time to allow the incorporation of expensive technological economies into his enterprise. He also needs more information concerning availability, application and cost of new economies to his particular operation.

Rate of Return on Woodlands Ownership

Opinion as to the advisability of corporate woodland ownership expressed by top corporate management ranges from complete disinterest to aggressive acquisition. The least common denominator for decision making is the anticipated rate of return to an investment in woodlands.

Representatives of top management expressing disinterest in woodlands investment usually feel higher earnings can be obtained from alternative uses of capital. Proponents of vigorous woodland acquisition programs do not

share this opinion. Yet, the preferable alternative rate of return is often available to both corporations through investment in paper manufacture and coating machinery.

Further investigation initiated by procurement foresters into the true rate of return available to a corporation investing capital in woodlands real estate should produce a more accurate and generally acceptable anticipated rate of return.

Pulpwood Transportation

The cost of transporting pulpwood from the forest to the mill represents a major cash outlay to the paper mill. Distances over which wood is transported to the mill varies from 100 miles to over 1600 miles depending on the volume and species required. Minimum expenditures are reported by mills using species available in abundance within the study area.

Prolonged adherance to static pulping processes involving the use of large volumes of species available only at great distance from the mill must be scrutinized by the office of wood procurement. This is particularly true when the division of wood procurement is under managerial pressure to reduce the cost of wood to the mill.

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APPENDIX I

Confidential Questionnaire

Top Management

Date
Recorder

Corporation: Name

Address (Main Office)

Address (Others in Lake States)

Address (Others in U. S. - if necessary)

Name of Person Interviewed_____

Title_____

Address_____

Professional Training_____

A. General

1. What are the goals of this corporation with regard to:

   a. Manufacture and sales volume.
      short run (1-5 years)

      long run (more than 5 years)

b. Market position with relation to competition.
short run (1-5 years)

long run (more than 5 years)

c. Dollar income ____% increase per year

d. Source of wood

1. Company employees or contractors harvesting stumpage from company owned lands or timber purchased by the company from public or private landowners.
_____% short run ____% long run

2. Independent producers.
_____% short run _____% long run

3. Pulpwood dealers.
_____% short run _____% long run

4. Other (Specify)
_____% short run _____% long run

2. What contribution do you expect wood procurement to make toward the overall attainment of these goals?

3. Do you ordinarily communicate directly with the director of wood procurement on matters you consider to be of importance to the corporation?
Yes_____ No_____

a. If no, through what chain of hierarchy do you communicate?

4. Do you encourage direct communication from your chief of wood procurement regarding matters he considers to be of importance to the function of his office? Yes_____ No_____

   If no, why not?

5. Do you look to the wood procurement department as a source of talent in the area of corporation administration, decision-making, and program execution?

   automatically _____
   regularly _____
   often _____
   sometimes _____
   rarely _____
   never _____

   Explain reasons for this answer.

6. What is woodlands' usual reaction to corporate changes involving their area of responsibility?

   innovative _____
   enthusiastic _____
   cooperative _____
   reluctant _____
   antagonistic _____

   Will you enlarge upon this?

B. Quantity of Wood Required

1. Is the quantity of wood available a limiting factor in maintaining full plant production?
Yes_____ No_____

If yes, what species is limiting?

2. Is the quantity of wood available a limiting factor to expansion of productive capacity?
Yes_____ No_____

a. If yes, what species is limiting?

b. If yes, what measures are you taking to insure a more reliable wood supply?

3. What are your long range goals regarding wood volume needs and species utilization?

4. Do you consider the ownership of forest land a valuable investment of corporate capital?
Yes_____ No_____

Why?

5. Do you feel that the ownership (lack of ownership) and management of forest lands gives your corporation an advantage over your competitors?

a. Not now, but did in the past _____
b. Not now, but will in the future _____
c. Yes _____. In what way?

d. No _____. Why do you own forest land other than 4, if any?

6. Do you feel it will be necessary to increase the percentage of wood coming from corporate lands in the future?
Yes_____ No_____

If yes, why?

7. Do you anticipate the need to rely more heavily on company logging crews in order to meet increasing future wood needs?
Yes_____ No_____

If no, what measures are you taking to insure that future wood production will be adequately meeting expanding needs?

8. Do you consider the cost of wood excessive?
Yes_____ No_____

If yes, what cost in particular is most in need of reduction?

If yes, what measures are being taken to reduce costs?

C. Wood Procurement Method and Policies

1. Does your firm prefer wood purchase agreements with independent wood producers to be written____ or oral____?

2. How binding are the provisions of the standard agreement for wood purchases on the mill?

on the producer?

3. Does your firm feel there would be any advantage in contracting for wood delivery from producers for more than one year in advance?
Yes_____ No_____

If yes, what would the advantage be?

If yes, how many years in advance would you be willing to commit the corporation? _____number.

If no, why not?

4. Do you anticipate that in the future these agreements will need to be more binding on the mill?
   Yes_____ No_____

On the producer? Yes____ No____

Why?

5. What is your policy regarding payments in advance of delivery or direct loans?

6. Do you desire that suppliers sell wood exclusively to your mill?
   Yes____ No____

   If yes, why?

   If no, why not?

D. Prices

1. Are the prices you pay for wood raw material the result of:

   a. _____your offered price
   b. _____seller's price
   c. _____negotiation
   d. _____other (specify)

2. Is the director of wood procurement free to:

   a. _____ offer a price different from the previous price paid?
   b. _____ accept seller's price if different from previous price paid?
   c. _____ negotiate
   d. _____ other (specify)

3. Who makes the final decision to increase or decrease price paid?

4. Does the authority making the final decision on price to be paid for wood also make the final decision on prices paid for other major expenditures made by the corporation?

   Yes_____ No_____

   If no, what is unique about wood prices?

APPENDIX II

Confidential Questionnaire

Wood Procurement

Date
Recorder

Corporation: Name

Address (Main Office)

Address (Others in Lake States)

Address (Others in U. S. - if necessary)

Name of Person Interviewed_____

Title_____

Address_____

Professional Training_____

A. General

1. How many years has your firm been buying forest product raw material?
   _____ years.

2. How many years have you been buying wood?
   _____ years for this firm
   _____years total
   Previous experience:

3. List principal pulping process of firm and approximate volume of wood used annually by each process, 1966.

B. Quantity of Wood Acquired

1. What was the total volume of wood acquired through your office in 1967?

Species	Peeled, Rough	Chips, Slabs	Amount	Units of Measure

2. What was the seasonal pattern in volume of wood acquired through your office in 1966?

Jan.-Mar._____

Apr.-June_____

July-Sept._____

Oct.-Dec._____

3. Do you consider this distribution a typical pattern of wood receipt?
Yes _____ No _____. If no, why not?

4. Do you prefer a seasonal variation in wood receipt?

Yes _____ No _____
If yes, what is your preferred pattern?

5. How do you explain the seasonal variation in the typical pattern of wood receipts?

6. How does this pattern coincide with mill production?

7. What changes in the annual volume of wood receipts took place in 1957 - 1966?

	Volume all Species	Change in Specification
1966	_____	_____
1965	_____	_____
1964	_____	_____
1963	_____	_____
1962	_____	_____
1961	_____	_____
1960	_____	_____
1959	_____	_____
1958	_____	_____
1957	_____	_____

8. What precipitated each specific change?

9. What are the corporation's long range goals (beyond the next 2-5 years) with respect to volume and species mix?

10. Are these goals ideal from the standpoint of procurement feasibility and forest management? Yes _____ No _____. If no, what is a more desirable alternative from your standpoint?

C. Source of Wood Receipts

1. Where is the 1966 wood supply area for your mill(s)?

States

Counties within states

Radius of operation	Percent of total wood use
	90%
	70%
	50%
	30%
	10%

2. Have there been any significant changes in the wood supply area for your mill over the period 1957-1966?
Yes _____ No _____. If yes, what were the changes?

Why?

3. What is the ownership of the forest land from which the 1966 wood supply was obtained?

	Volume	%
Own Land	_____	_____
Farmer	_____	_____
Other Private	_____	_____
Public	_____	_____
Federal	_____	_____
State	_____	_____
County	_____	_____
Other (Specify)	_____	_____

4. Has this pattern of ownership-wood supply changed significantly in the past ten years?
Yes _____ No _____. If yes, what is the change?

5. What do you anticipate regarding future trend in the stumpage ownership-wood supply pattern?

6. What percentage of your 1966 wood receipts was produced by the following (category with respect to relationship between agent and company):

   a. Company employees or contractors harvesting stumpage from company owned lands or timber purchased by the company from public or private landowners _____%

   b. Independent producers _____%

   c. Pulpwood dealers _____%

   d. Other (specify) _____%

7. Is this typical? Yes _____ No _____. If no, what was not typical about 1966?

8. How many agents supplied wood to your company as follows:

	Company Employees	Contractors on Company Land or Company Purchased Stumpage	Independent Producers	Pulpwood Dealers	Other
'66	_____	_____	_____	_____	_____
'65	_____	_____	_____	_____	_____
'64	_____	_____	_____	_____	_____
'63	_____	_____	_____	_____	_____
'62	_____	_____	_____	_____	_____

'61	_____	_____	_____	_____	____
'60	_____	_____	_____	_____	____
'59	_____	_____	_____	_____	____
'58	_____	_____	_____	_____	____
'57	_____	_____	_____	_____	____

9. Will this trend toward more (fewer) suppliers continue in the future? Yes _____ No _____. If no, what do you anticipate the future trend to be with regard to number of producers?

Why?

10. Will this trend prove more advantageous to the corporation than the present producer situation? Yes _____ No _____. If no, what would be more advantageous to the corporation?

Why would this be an advantage to the corporation?

11. Average estimated percentage of total production of each producer's production purchased by this company per year per relationship category between agent and company, 1966:

a. Company employees _____%

b. Contractors on company land or company purchased stumpage _____%

c. Independent producers _____%

d. Pulpwood dealers _____%

e. Other (specify) _____%

D. Wood Procurement Method and Policies

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

	Percentage
a. Written	_____
b. Oral	_____
c. No prior agreement	_____

2. What is the usual duration of time within which wood can be delivered under each type of agreement?

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

3. How far in advance of the beginning of wood deliveries are arrangements made with producers for delivery of wood?

4. Do you have any agreements with producers for more than one year's delivery of wood? Yes _____ No _____. If yes, what percentage of the wood supply arrived in 1966 as a result of these long term agreements? _____%

Is this typical? Yes _____ No _____. If no, what is typical?

5. Do you have any wood procurement policies designed to minimize wide fluctuations in volume of wood called for in successive contracts made with suppliers? Yes _____ No _____. If yes, explain process.

6. What percentage of these long term agreements effected truck-hauled wood in 1966? _____%

   Is this a typical year? Yes _____ No _____. If no, what is the typical pattern?

7. Are dealers or producers offered payments in advance of delivery or loans? Yes _____ No _____ Payments in advance _____, loans _____.

   a. If yes, are all producers, dealers eligible for loans or advances? Yes _____ No _____

   b. If yes, does the recipient pay interest on the loan? Yes _____ No _____ Rate_____

   c. If yes, are there any restrictions of method of repayment? Yes _____ No _____

8. Has it been your company's policy to offer advance payments or make loans over the past ten years? Yes _____ No _____

   If yes, when?

If no, why not?

9. Do you encourage advances or loans, solicit them or provide them only as a matter of convenience to the producer (or dealer, etc.)?

10. How binding are the provisions of the standard agreement for wood purchases?

upon the mill

upon the producer

11. Do you encourage producers to produce wood exclusively for your mill? Yes _____ No _____ If yes, why?

If no, why not?

12. What percentage of your producers rely on your mill as a market for more than 50% of their annual total wood production?_____

a. What percentage of these obtain more than _____% of their total gross annual income from wood production?

50%_____ 75%_____ 90%_____

13. Do you object to having your wood suppliers take contracts to supply wood to other firms using the same species? Yes _____ No _____

If yes, what measures do you take to discourage this activity?

If yes, why?

If no, why not?

14. What changes have been made in the basic mechanics of procurement in the last ten years?

Regarding contracts

Regarding method of delivery

Regarding time of delivery

Regarding scale

Regarding inventory control

Regarding payment

Others (specify)

E. Prices

1. What were prices paid per unit of volume for wood purchases for your firm?

	Species, product and quality class
a. Stumpage	_____
b. Roadside	_____
c. Delivered to R. R.	_____
d. F.O.B. railroad	_____
e. Trucked at yard	_____
f. Railroad at yard	_____

2. Are there any differences in price paid to different groups of landowners, producers, or agents?
Yes _____ No _____

If yes, what are the differences?

3. Are there any differences in price paid to producers or agents as a result of quality or quantity of delivered product? Yes _____ No _____

   If yes, what are the differences?

4. Are there any differences in price paid for delivered wood on the basis of distance of haul? Yes _____ No _____

   If yes, what are these differences?

5. Are the prices you pay for wood raw materials the result of:

   a. _____your offered price

   b. _____sellers price

   c. _____negotiation

   d. _____other (specify)

6. How frequently have the prices you pay for wood raw material changed during the last three years? _____times.

   History of changes.

7. By whose order were these prices changed, i.e. who made the final decision to increase or decrease prices paid?

F. Internal Corporate Structure

1. To whom are you directly responsible?

   Name

   Title

2. What is the chain of commands between your office and that of the chief corporate officer. (Obtain diagram of internal structure of the corporate hierarchy.)

3. In addition to the above officers, who else has administrative authority in decision-making activities in:

   a. Wood procurement

   b. Forest management

4. In what specific phase of procurement or management is this administrative authority held?

5. What alternative internal structure would be more advantageous to the corporation and why?

6. What are the goals of this corporation with regard to:

   a. Manufacture and sales volume
      short run (1-5 years)

      long run (more than 5 years)

   b. Market position with relation to competition
      short run (1-5 years)

      long run (more than 5 years)

   c. Dollar income _____% increase per year.

   d. Source of wood.

      1. Company employees or contractors harvesting stumpage from company owned lands or timber purchased by the company from public or private landowners.
         _____% short run _____% long run

      2. Independent producers.
         _____% short run _____% long run

      3. Pulpwood dealers.
         _____% short run _____% long run

      4. Other (specify).
         _____% short run _____% long run

7. What contribution does top management expect wood procurement to make toward the overall attainment of these goals?

8. In the past ten years, how many professionals from woodlands have been transferred to other departments in the corporation and now occupy positions of greater administrative authority?

Name	_____	_____	_____
Area of Professional Training	_____	_____	_____
Title of Position in Woodlands	_____	_____	_____
Subsequent Positions	_____	_____	_____
Why Transferred	_____	_____	_____

APPENDIX III

January 4, 1968

Mr. X, President
Xyz Paper Mills Company
Somewhere, Wisconsin 54455

Dear Mr. X:

As you very well know, 1966 saw a dramatic shortage of pulpwood raw material throughout much of the United States. This shortage was expensive in that your corporation was required to meet increasingly high pulpwood costs in order to obtain sufficient wood to maintain production.

Economic studies regarding the precise cause of the circumstances precipitating this shortage are valuable as tools in preventing the repetition of such shortages in the future. I am engaged in collecting data for one of these studies. The title of my specific segment of this problem is "The Role of Wood Procurement in the Dynamic Paper Industry of Wisconsin and Upper Michigan".

By means of personal interview this study will explore the views of a member of the top corporate echelon in each of nineteen paper mills, in Wisconsin and Upper Michigan, regarding the role played by the wood procurement department in assisting the mill in attaining long run and short run corporate goals. I would like to interview you in this regard, if I may. The interview will take between sixty and ninety minutes.

Such a study would, of necessity, entail an interview with Mr. A, as well. Since it would be most convenient for me to complete both interviews in a single day, may I suggest a tentative time and date, subject to change, if necessary.

Interview with you 8:30 a.m. Wednesday, January 17
Interview with Mr. A. 10:00 a.m. Wednesday, January 17

If the times are not convenient, perhaps you could suggest alternative hours. I will be available all that day.

If the date is inconvenient, I am available any Thursday until June 1. Please suggest a date.

Thank you for your consideration. I will, of course, make the results and conclusion of this study available to you when completed.

Sincerely yours,

Robert J. Engelhard

APPENDIX IV

January 4, 1968

Mr. A
Director of Wood Procurement
Xyz Paper Mills Company
Somewhere, Wisconsin 54455

Dear Mr. A:

As you very well know, 1966 saw a dramatic shortage of pulpwood raw material throughout much of the United States. This shortage was expensive in that your corporation was required to meet increasingly high pulpwood costs in order to obtain sufficient wood to maintain production.

Economic studies regarding the precise cause of the circumstances precipitating this shortage are valuable as tools in preventing the repetition of such shortages in the future. I am engaged in collecting data for one of these studies. The title of my specific segment of this problem is "The Role of Wood Procurement in the Dynamic Paper Industry of Wisconsin and Upper Michigan".

By means of personal interview this study will explore the views of the office in charge of wood procurement in each of nineteen paper mills in Wisconsin and Upper Michigan regarding the role played by the wood procurement department in assisting the mill in attaining long run and short run corporate goals. I would like to interview you in this regard, if I may. The interview will take about two hours.

Such a study would, of necessity, entail an interview with Mr. X, as well. Since it would be most convenient for me to complete both interviews in a single day, may I suggest a tentative time and date, subject to change, if necessary.

Interview with Mr. X 8:30 a.m. Wednesday, January 17
Interview with you 10:00 a.m. Wednesday, January 17

I should be finished by noon. If the times are not convenient, perhaps you could suggest alternative hours. I

will be available all that day. If the date is inconvenient, I am available any Thursday until June 1. Please suggest a date.

Thank you for your consideration. I will, of course, make the results and conclusion of this study available to you when completed.

Sincerely yours,

Robert J. Engelhard