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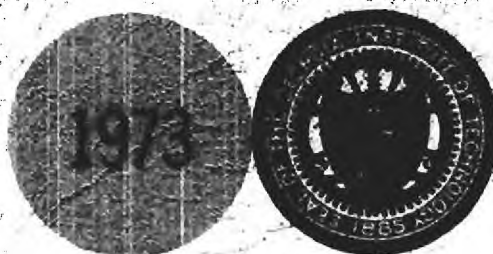
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A NEW LOOK AT MANUFACTURING SOUTHERN PINE PLYWOOD IN OGLETHORPE COUNTY, GEORGIA

**Prepared for
GEORGIA DEPARTMENT OF COMMUNITY DEVELOPMENT**

**by Tze I. Chiang
INDUSTRIAL DEVELOPMENT DIVISION**

Project A-1578



**Engineering Experiment Station
GEORGIA INSTITUTE OF TECHNOLOGY
Atlanta, Georgia**

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Summary

A proposed pine plywood plant to be built in the vicinity of Crawford and Lexington, Georgia, with annual output of 90 million square feet on a 3/8-inch thickness basis can show profits of \$1,508,700 on domestic sales of \$9,097,700 under the current plywood prices. This profit is equivalent to a 24.8% return on a fixed investment of \$6 million. If an alternate computation, based on 50% sales in the European market, were adopted, the plant would show after-tax profits of \$792,190 on sales of \$7,540,060. Return on fixed investment then would be 13%.

The proposed plant is sponsored by Norcem, the largest building products manufacturer in Norway. The proposal has three unique conditions. First, a large sum of European capital would be brought in to build a plant which would provide 180 direct jobs in an EDA-designated county. Second, at least 50% of the proposed production eventually would be shipped to Europe, where there is a shortage of plywood. Third, net freight gains to the proposed plant would be large because plywood is sold on a delivered basis, and a large portion of the sales price consists of freight gains.

The timber resources in a 50-mile radius of Crawford are excellent. In fact, timber volume in the area has increased substantially in the last two decades, according to survey reports released by the U. S. Forest Service. Standing sawtimber in the area exceeds 11 billion board feet, of which pine sawtimber constitutes nearly 8 billion board feet. Annual growth exceeds annual cut by 390 million board feet, of which pine sawtimber constitutes 294 million board feet. The proposed operation would require 37.5 million board feet a year. The timber resources in the 50-mile radius could support eight pine plywood plants of the proposed size without diminishing standing volume.

The U. S. softwood plywood industry has enjoyed an annual growth rate of 10.2% since 1945. Production totaled 18.3 billion square feet in 1972 and is expected to reach 21 billion by 1976. Between 1965 and 1972, the production of southern pine plywood grew from 402 million square feet to 5.3 billion, a twelvefold increase. Pine plywood production is expected to reach 7.4 billion square feet by 1976, which indicates that 23 new plants would be needed in the South to meet the expected growth.

The proximity of southern pine plywood plants to major markets gives them distinct advantages in transportation costs, as well as customer services, over the western regions, which still produce the bulk of softwood plywood today. The proposed plant would have a freight advantage of \$13 to \$20 per thousand square feet over West Coast plants in shipping to eastern markets. On a total output of 90 million square feet, the freight gains would exceed \$1.7 million. If 50% of the proposed production is shipped to Europe, freight gains would be \$854,000 under current conditions.

The main market destinations in Europe would be Norway, Sweden, Denmark, and Germany, where the sponsoring firm has trade contacts. Sale revenues from the European markets would average about \$66.82 per thousand square feet on a 3/8-inch basis as compared with \$100.73 per thousand square feet on sales to domestic markets at the present time.

Fixed capital investment for the plant would total \$6 million, of which equipment and machinery would constitute \$3.1 million, site and building would amount to \$1.7 million, plant utilities and systems would cost \$0.4 million, and other expenses would require \$0.8 million. Working capital requirements were estimated at \$795,000.

INTRODUCTION

In 1969, through a contact with the Georgia Department of Industry and Trade, a Norwegian firm, Den Norske Gipsplatefabrikk A/S (abbreviated as DNG in this report), became interested in building a southern pine plywood plant in the vicinity of Crawford and Lexington, Oglethorpe County, Georgia. A separate company, Norden Plywood, Inc., was incorporated in Georgia for the purpose of managing the proposed pine plywood plant. However, the proposed plant did not materialize because of financing problems. Recently Norcem, the largest building products manufacturer in Norway, has taken the lead in investigating the possibility of building a pine plywood plant at the same location. The purpose of this study is to update a previous feasibility study prepared for DNG in 1969.

The current trend among European builders is to use more and more U. S.-type building materials, such as sheathing-grade plywood and gypsum board. However, sheathing-grade plywood has very limited sources of supply in Europe because of the paucity of timber resources there. Sheathing-grade plywood, used extensively for construction and building purposes in the United States, is generally made of softwood species such as Douglas fir and southern yellow pine. Europe has no such species or equivalent species in volume.

The proposed plant would produce 90 million square feet, on a 3/8-inch thickness basis, of sheathing-grade plywood a year. The original plan called for at least 50% of the proposed production to be shipped to Europe in the first few years. However, due to the high costs of ocean freight and customs duty and the variations in plywood price fluctuations between Europe and the United States from time to time, it is not always profitable to ship plywood to the European market. Shipment to Europe can be feasible only when the returns from sales in Europe would be equal to or greater than the returns from sales in the domestic market. At the time of the writing of this report, plywood prices in Europe are higher than the U. S. prices, but not high enough to cover all export expenses involved and make the shipments profitable. Under these circumstances, two statements concerning costs and profits of the proposed plant are made in this study. One earmarks the entire output for the U. S. market, and the other divides the production equally between shipments to Europe and the domestic market.

This study includes three main areas of investigation -- the timber resources in a 50-mile radius of the Crawford-Lexington area, the plywood market, and estimates of investment, production costs, and returns. Economic data on Oglethorpe County are submitted separately in the booklet Oglethorpe County Economic Profile, a 1973 publication of the Northeast Georgia Area Planning and Development Commission.

TIMBER RESOURCES AND SUPPLY

Timber Resources in a 50-Mile Radius

The availability of suitable timber in a given area is a prerequisite condition in setting up a pine plywood plant. The proposed plant would require 37.5 million board feet of pine sawtimber a year based on a yield or recovery of 2.4 square feet per board foot of log (Scribner Decimal C).

A 50-mile radius of a given place is considered as an economic distance for hauling saw logs to a veneer and plywood plant. Within a 50-mile radius of Crawford, close to 3.8 million acres of land are in commercial forests, or 69.9% of the total land area. Of the total commercial forest acreage, nearly 90% is on the Georgia side and 10% on the South Carolina side. (See Table 1.)

Table 1
TOTAL LAND AREA AND COMMERCIAL FOREST ACREAGE
IN A 50-MILE RADIUS OF CRAWFORD, GEORGIA

	Total Land (in 1,000 acres)	Commercial Forests (in 1,000 acres)	Commercial Forests as % of Total
Georgia side	4,879.5	3,373.8	69.1
South Carolina side	<u>557.4</u>	<u>425.3</u>	76.4
Total	5,436.9	3,799.1	69.9

Sources: Georgia Forestry Commission and South Carolina Forestry Commission.

The ownerships of commercial forest land in the 50-mile radius are given in Table 2. Private farms and other private ownerships constitute the largest portion, 74.3%; public forests, 7.4%; forest industry, 16.4%; and forest industry lease, 1.9%. Forest industry lease means that private timberlands are leased to forest industries such as pulp and paper, lumber, or plywood manufacturing companies.

Sawtimber volume, annual cut, and annual growth by species in the area are given in Table 3. Sawtimber refers to trees with a diameter range of 9 inches d.b.h.^{1/} and up. Total sawtimber in the radius was recorded at 11,662.8

^{1/} Diameter breast high or 4.5 feet above ground.

Table 2
OWNERSHIPS OF COMMERCIAL FOREST LAND
IN A 50-MILE RADIUS OF CRAWFORD, GEORGIA
(in thousands of acres)

	<u>All</u> <u>Ownerships</u>	<u>Public</u>	<u>Forest</u> <u>Industry</u>	<u>Forest</u> <u>Industry</u> <u>Lease</u>	<u>Private</u> <u>Farm</u>	<u>Other</u> <u>Private</u>
Georgia side	3,373.8	184.0	536.7	59.9	1,131.4	1,461.8
South Carolina side	<u>425.3</u>	<u>95.8</u>	<u>87.4</u>	<u>14.2</u>	<u>28.0</u>	<u>199.9</u>
Total	3,799.1	279.8	624.1	74.1	1,159.4	1,661.7

Sources: Georgia Forestry Commission and South Carolina Forestry Commission.

million board feet, estimated annual growth at 935.4 million board feet, and annual cut at 545.6 million board feet, leaving a net gain of 389.8 million board feet a year.

Southern yellow pine, which is the major species used in the manufacture of sheathing-grade plywood in the South, has a total sawtimber volume of 7,841.6 million board feet in the 50-mile radius. The annual growth was estimated at 718.0 million board feet and annual cut at 423.9 million board feet. A net gain of 294.1 million board feet a year is realized. The annual net gain of pine sawtimber in the area could support nearly eight plants of the size proposed in this study without diminishing the standing sawtimber volume in the area. Detailed data concerning sawtimber volume, growth, and cut by species in the 50-mile radius of Crawford are given in Table 3.

The timber volume in the area increased substantially between the two survey years, 1962 and 1972. Major factors contributing to the increase were a lack of cutting in the area, the compounded growth of a large timber base, better management practices, and seedling plantations. The timber volume growth trend in the area will continue in the foreseeable future.

The superiority of timber resources in the area is supported by a letter from the Georgia Forestry Commission, which indicates that the Lexington-Crawford area is the number one location for a forest industry such as a pine plywood plant. The letter is attached as Appendix 1.

Table 3
SAWTIMBER VOLUME, GROWTH, AND CUT BY SPECIES
IN A 50-MILE RADIUS OF CRAWFORD, GEORGIA
(in millions of board feet)

<u>Volume</u>	<u>Ga. Side</u>	<u>S. C. Side</u>	<u>Total</u>
So. yellow pine	7,136.1	705.5	7,841.6
Other softwoods	10.1	2.6	12.7
Soft hardwoods	1,729.1	209.6	1,938.7
Hard hardwoods	<u>1,741.6</u>	<u>128.2</u>	<u>1,869.8</u>
Total	10,616.9	1,045.9	11,662.8
<u>Annual Growth</u>			
So. yellow pine	665.3	52.7	718.0
Other softwoods	1.2	-	1.2
Soft hardwoods	97.9	8.4	106.3
Hard hardwoods	<u>102.6</u>	<u>7.3</u>	<u>109.9</u>
Total	867.0	68.4	935.4
<u>Annual Cut</u>			
So. yellow pine	393.8	30.1	423.9
Other softwoods	-	-	-
Soft hardwoods	70.0	6.0	76.0
Hard hardwoods	<u>43.4</u>	<u>2.3</u>	<u>45.7</u>
Total	507.2	38.4	545.6

Sources: Compiled from timber data supplied by Georgia Forestry Commission and South Carolina Forestry Commission.

Timber Procurement

The proposed plant would have to procure all of its log requirements from the open market. To ascertain the potential log supply for the proposed plant, the Northeast Georgia Area Planning and Development Commission is conducting a mail survey of timber owners in several Georgia counties centering around Oglethorpe County in October and November 1973. A separate report on log supplies will be prepared by the commission when the survey is completed.

MARKET POTENTIALS

National Trends

The growth of softwood plywood production in the United States has been spectacular over the past 28 years. Production increased from 1,200 million square feet in 1945 to 18,324 million square feet in 1972, a growth of 10.2% per year. In every five-year period between 1945 and 1960, some 20 to 40 new plants were added. Since 1964, new plywood plants have been added largely in the southern region. In 1964, three plywood mills opened in the South, marking the entry of the southern region into the softwood plywood industry. By 1972, the South accounted for 29.0% of the total U. S. production and registered 52 plants out of a total of 192 plants. Details are given in Table 4.

Table 4
SOFTWOOD PLYWOOD PRODUCTION AND NUMBER OF PLANTS
IN THE UNITED STATES AND THE SOUTH, 1945-1972
(Production in thousands of sq. ft., 3/8-in. rough basis)

<u>Year</u>	<u>United States</u>		<u>South</u>		<u>% of U. S. Production</u>
	<u>No. of Plants</u>	<u>Production</u>	<u>No. of Plants</u>	<u>Production</u>	
1945	31	1,200,000	-	-	-
1950	68	2,553,652	-	-	-
1955	112	5,075,189	-	-	-
1960	152	7,815,581	-	-	-
1965	174	12,446,612	12	401,708	3.2
1968	174	14,694,540	33	2,372,557	16.1
1972	192	18,323,754	52	5,318,848	29.0

Source: American Plywood Association, Softwood Plywood Production by State, 1973.

Since the majority of the plywood produced in the United States is consumed in the East, the proximity of southern pine plywood plants to major markets gives them distinct advantages in transportation costs, as well as customer service, over the western regions, which produce the bulk of softwood plywood today. Plywood is sold on a delivered basis and the market prices are based on West Coast manufacturing costs, plus freight from West Coast mills to marketing

areas. As a consequence, mills close to major markets profit greatly by their lower actual shipping costs. This reason alone gives southern plants a great leverage over western mills.

It is interesting to note that between 1965 and 1968 the total number of plants in the United States remained at 174 while southern pine plywood plants increased from 12 to 33. This indicates that the increase in the South induced a corresponding reduction in the western region. Between 1968 and 1972, the South gained 19 new plants while the West lost one plant. Besides the freight advantage enjoyed by southern plants, as mentioned, there is a basic shortage of timber resources in the West. Today the stand of Douglas fir timber is only two-fifths of its original size; in contrast, the stand of southern yellow pine has been increasing by 2 billion board feet a year. Because of the ever-increasing demand and heavy cutting, the virgin stand of Douglas fir may be exhausted after 20 years. New growth of Douglas fir timber no doubt will affect future supply, but it takes 80 years to reach 18- to 20-inch diameter. On the other hand, southern pine takes only 35 years to reach a diameter range of 14 to 16 inches. From a regional point of view, the rapid growth of pine plywood manufacture in the South is a rational move.

The outlook for softwood production by region has been projected. By 1976, U. S. production is expected to exceed 21 billion square feet a year, or 2.8 billion square feet more than the volume produced in 1972, which means that 30 new plants of the size proposed in this study should be built in the next few years in order to meet the demand in 1976. The production of southern pine plywood is projected to reach 7.4 billion square feet a year, or 2.0 billion square feet more than the volume produced in 1972, which indicates 23 new plants should be added in the South in the next few years. Details of these projections are given in Table 5.

The domestic demand for softwood plywood has been projected annually to 1978 by the American Plywood Association on the basis of major end uses. By 1978, the demand is projected to total 22.6 billion square feet, or about 8 billion square feet more than the volume produced in 1968. Residential construction will constitute about one-half of all end uses, followed by industrial uses, over-the-counter, general construction, and agricultural uses. Since softwood plywood is an export item and no significant volume has been imported,

Table 5
PROJECTED ANNUAL SOFTWOOD PLYWOOD PRODUCTION
IN THE UNITED STATES, 1972-1976
(in millions of sq. ft., 3/8-in. basis)

<u>Year</u>	<u>Total</u>	<u>Oregon</u>	<u>Wash.</u>	<u>Calif.</u>	<u>Inland</u>	<u>Southern</u>
1972 (actual)	18,324	8,635	2,251	1,051	1,068	5,319
1973	18,950	8,640	2,300	1,060	1,080	5,870
1974	19,600	8,700	2,330	1,080	1,160	6,330
1975	20,100	8,800	2,350	1,100	1,230	6,620
1976	21,080	8,850	2,440	1,120	1,300	7,370

the projection can be regarded as an indication of required domestic production. Details of the projection are given in Table 6.

Regional Markets

All of the proposed production of the Norcem Plywood plant, or 90 million square feet of pine plywood, would be sold in the domestic market under current conditions in this study. Because of the price structure of the softwood plywood industry, it would be most advantageous to market the production as far away as possible from the West Coast and as close to the proposed plant location as possible for the purpose of gaining maximum freight differentials. Recorded shipments to three groups of metropolitan areas which may present the best combination of marketing destinations for the proposed production are given in Table 7. Group A, containing six metropolitan areas and representing about 12.4% of the domestic plywood market in 1972 (according to the American Plywood Association members' shipment records), is the first choice of markets for the proposed plant. Group B, containing seven metropolitan areas and representing 9.3% of the U. S. market in 1972, is the second choice. Group C, containing six metropolitan areas and representing 13.5% of the U. S. plywood market in 1972, is the third choice. The shipment records for each metropolitan area in 1968 and in 1972 are given in Table 7. It should be noted that plywood shipments to metropolitan areas in groups A and B have increased both in volume and in percentage between 1968 and 1972. This means that a greater share of the production of the proposed plant can be shipped to the metropolitan areas in Group A so that greater freight gains can be achieved than the study made

Table 6

PROJECTED ANNUAL SOFTWOOD PLYWOOD DEMAND BY MAJOR END USES IN THE UNITED STATES, 1968-1978
(in millions of sq. ft., 3/8-in. basis)

<u>Year</u>	<u>Residential Construction</u>	<u>General Construction</u>	<u>Industrial Uses</u>	<u>Agricultural Uses</u>	<u>Over-the- Counter</u>	<u>Total Demand</u>
1968	7,700	1,600	3,400	300	1,900	14,900*
1969	8,150	1,650	3,550	300	1,950	15,600
1970	8,950	1,700	3,700	350	2,000	16,700
1971	9,700	1,750	3,850	375	2,025	17,700
1972	9,900	1,820	4,000	400	2,080	18,200
1973	10,450	1,900	4,100	400	2,100	18,950
1974	10,900	1,950	4,200	400	2,150	19,600
1975	11,150	2,050	4,300	425	2,175	20,100
1976	11,900	2,100	4,450	425	2,200	21,075
1977	12,650	2,200	4,500	425	2,225	22,000
1978	13,000	2,300	4,600	450	2,250	22,600

* Preliminary estimate.

Source: Long Term Forecast/Plywood Demand/1969-1978, American Plywood Association, January 1969.

Table 7
SHIPMENTS OF SOFTWOOD PLYWOOD
TO SELECTED MAJOR METROPOLITAN AREAS, 1968 AND 1972
(in thousands of sq. ft., 3/8-in. basis)

<u>Destination</u>	<u>1968</u>	<u>1972</u>	<u>Percent Change</u>
<u>Group A</u>			
Atlanta, Ga.-Chattanooga, Tenn.	335,022	536,615	+ 60
Charlotte, N. C.	418,917	664,276	+ 59
Birmingham, Ala.	95,702	150,960	+ 58
Knoxville, Tenn.	70,757	114,555	+ 62
Jacksonville, Fla.	123,836	223,366	+ 80
Nashville, Tenn.	<u>48,939</u>	<u>108,183</u>	+121
Subtotal	1,093,173	1,797,955	+ 64
<u>Group B</u>			
Richmond-Norfolk, Va.	182,065	292,659	+ 61
Tampa-St. Petersburg, Fla.	85,779	179,273	+109
Washington, D. C.-Baltimore, Md.	211,139	329,462	+ 56
Charleston, W. Va.	18,077	41,981	+132
Cincinnati-Dayton, O.	134,776	172,361	+ 28
Miami, Fla.	150,636	261,529	+ 74
Mobile, Ala.	<u>40,868</u>	<u>73,659</u>	+ 80
Subtotal	823,340	1,350,924	+ 64
<u>Group C</u>			
Columbus, O.	65,391	121,906	+ 86
Memphis, Tenn.	147,915	345,919	+ 34
New Orleans, La.	133,487	200,880	+ 50
Indianapolis, Ind.	128,147	173,346	+ 35
Cleveland, O.	161,436	198,701	+ 23
New York, N. Y.	<u>850,456</u>	<u>911,297</u>	+ 7
Subtotal	1,486,832	1,952,049	+ 31
Total of 3 Groups	3,403,345	5,100,928	+ 50
U. S. Total	10,707,938	14,507,185	+ 35

Source: Geographical Analysis of Plywood Shipments, 1968 and 1972, American Plywood Association, Tacoma, Washington.

in 1969 indicated. Freight differentials between Crawford, Georgia, and the West Coast on shipments to each metropolitan area are given in a later section.

Since southern pine plywood production began on a large commercial scale in 1964, the plywood market has expanded at a much more rapid rate in southern areas than in the nation as a whole. Between 1962 and 1972, sales in Atlanta increased 339%; Charlotte, 276%; Knoxville, 233%; Jacksonville, 297%; and Miami, 282%. In comparison, New York sales rose 78%; Cleveland, 78%; and Cincinnati, 91%. Metropolitan areas in Group A were up 234% on the average; Group B, 197%; and Group C, 104%. It is obvious that cities close to the sources of pine plywood production tend to increase plywood consumption faster than cities which are far away.

European Market

The proposed plant near Lexington and Crawford would have shipped at least 50% of its production to Europe, according to the original plan. Norway, Sweden, Denmark, and Germany were to have been the main market destinations. However, due to the fluctuation of plywood prices at different levels in the U. S. compared to the European market, it is not always profitable to ship to Europe.

At the present time, it is not practical to ship to the European market, according to the European market data supplied to the author by Norcem. Although plywood prices are generally higher in Europe than in the United States, high costs involved in shipping to the European market make net returns substantially lower than returns from sales in the domestic market. For example, sales returns on 3/8-inch 3-ply CD would average from \$108.39 to \$119.41 per thousand square feet on sales to selected U. S. market areas, while they would be \$64.30 on sales to Norway and \$72.10 on shipments to Sweden. This is illustrated in Table 8, which compares sales returns from domestic markets and European markets. Costs of ocean freight, customs duty, and insurance, together with wholesale prices and net returns on shipments of southern pine plywood to European countries are shown in Table 9.

Shipments of pine plywood to the European market can be justified only when returns from sales to the European market are equal to or greater than those from sales to the domestic market. For study purposes, two separate computations of sales returns under current market conditions are given in this study. One

Table 8

A COMPARISON OF SALES RETURNS FROM DOMESTIC MARKETS AND EUROPEAN MARKETS, OCTOBER 1973
(in dollars per thousand square feet)

A. Domestic Markets

Unsanded Plywood	List Price	Freight Gains ^{a/}			Crawford, Ga.	Sales Returns ^{a/}			F.O.B. Crawford
		Group A	Group B	Group C		Group A	Group B	Group C	
3/4" 5-Ply CD	170	46.71	39.19	30.80	48.28	216.71	209.19	200.80	218.28
5/8" 5-Ply CD	150	38.59	32.38	25.44	39.60	188.59	182.38	175.44	189.60
1/2" 5-Ply CD	134	32.50	27.26	21.42	33.09	166.50	161.26	155.42	167.09
3/8" 3-Ply CD	95	20.31	17.04	13.39	24.41	115.31	112.04	108.39	119.41

B. European Markets

Unsanded Plywood	Estimated Wholesale Price				Estimated Shipping Costs ^{b/}				Estimated Sales Returns			
	Norw.	Swed.	Den.	Ger.	Norway	Sweden	Denmark	Germany	Norway	Sweden	Denmark	Germany
3/4" 5-Ply CD	236	236	236	236	95.80	79.30	102.90	102.90	140.20	156.70	133.10	133.10
5/8" 5-Ply CD	-	-	-	-	-	-	-	-	-	-	-	-
1/2" 5-Ply CD	171	171	171	171	66.70	54.70	71.80	71.80	104.30	116.30	99.20	99.20
3/8" 3-Ply CD	112	112	-	-	47.70	39.90	-	-	64.30	72.10	-	-

^{a/} See Table 15 for the names of metropolitan areas in groups A, B, or C and for examples of freight differentials.

^{b/} Costs include ocean freight, customs duty, and insurance. For details, see Table 9.

Table 9

ESTIMATED WHOLESALE PRICES, COSTS OF OCEAN FREIGHT, CUSTOMS DUTY,
INSURANCE, AND NET RETURNS ON SHIPMENTS OF SOUTHERN PINE PLYWOOD
TO EUROPEAN COUNTRIES, OCTOBER 1973
(per thousand square feet)

<u>Destination</u>	<u>Type of Plywood</u>	<u>Estimated Wholesale Price</u>	<u>Estimated Costs</u>			<u>Net Return</u>
			<u>Ocean Freight</u>	<u>Customs Duty</u>	<u>Insurance</u>	
Norway	3/4" 5-Ply CD	\$236.00	\$70.50	\$23.60	\$1.70	\$140.20
	1/2" 5-Ply Cd	171.00	48.30	17.10	1.30	104.30
	3/8" 3-Ply CD	112.00	35.70	11.20	.80	64.30
Sweden	3/4" 5-Ply CD	236.00	70.50	7.10	1.70	156.70
	1/2" 5-Ply CD	171.00	48.30	5.10	1.30	116.30
	3/8" 3-Ply CD	112.00	35.70	3.40	.80	72.10
Denmark	3/4" 5-Ply CD	236.00	70.50	30.70	1.70	133.10
	1/2" 5-Ply CD	171.00	48.30	22.20	1.30	99.20
Germany	3/4" 5-Ply CD	236.00	70.50	30.70	1.70	133.10
	1/2" 5-Ply CD	171.00	48.30	22.20	1.30	99.20

Source: Norcem Company, Oslo, Norway.

is based on 100% sales in the U. S. market (Table 13); the other is divided equally between the U. S. market and the European market (Table 19).

PROJECTED INVESTMENT, COSTS, AND PROFITS

Data on investment requirements, sales revenue, costs, and profits for a southern pine plywood plant in the vicinity of Lexington and Crawford, Georgia, are presented in this section. Most data and assumptions used are intentionally conservative. Operation of the plant is calculated at two-thirds capacity or at an annual output of 90 million square feet on a 3/8-inch thickness basis. The total capital requirements of the plant will be \$6,866,000, including both fixed assets and working capital.

Fixed Investment

The total fixed investment required for the proposed pine plywood plant will be \$6,071,000, including machinery and equipment costs of \$3,143,000, site and building costs of \$1,728,000, plant utilities and systems costs of \$435,000, and other anticipated costs of \$765,000. Details are given in Table 10. A listing of itemized machinery and equipment costs is given in Appendix 2.

Working Capital Requirements

The working capital required for the proposed plant in a typical year would be \$795,000. The requirements are two months' log supply and two months' payroll. The details are given in Table 11.

Estimated Costs and Returns

At the time preparation of this report was begun, softwood plywood prices were quite depressed, but they have moved upward in recent weeks. Plywood prices have fluctuated widely over the past year. On January 19, 1973, the f.o.b.-West Coast price of sheathing-grade southern pine plywood, 3/8-inch thickness with exterior glue, was quoted at \$130 per thousand square feet. The price went down to \$115 on May 18 and to \$76 on October 19. However, the price started to move up again in the latter part of October and was reported at \$95 on November 9, 1973. The price used in this study was based on Crow's Newsletter, November 9, 1973. The monthly price trend on 3/8-inch southern pine plywood since January 1972 is shown in Table 12.

At the current domestic prices, the proposed plant could make a good profit. Base price revenue would be \$8,445,250; total net plywood sales revenue,

Table 10
SUMMARY OF FIXED INVESTMENT

Equipment, Shipped and Installed

Coe Company	\$1,448,000
Other companies	<u>1,695,000</u>
Total	\$3,143,000

Site and Building

Site, 50 acres at \$1,000 per acre	\$ 50,000
Grading and paving, 25 acres	85,000
Railroad spur	28,000
186,000-sq. ft. plant building	1,500,000
Office building and equipment	<u>65,000</u>
Total	\$1,728,000

Plant Utilities and Systems

Electrical wiring	\$ 175,000
Sprinkler system and heating	150,000
Boiler piping	25,000
Domestic water system and sewerage	25,000
Engineering	<u>60,000</u>
Total	\$ 435,000

Other Anticipated Costs

Legal expenses	\$ 15,000
Interest during building period	250,000
Contingency	<u>500,000</u>
Total	\$ 765,000
Total Fixed Investment	\$6,071,000

Table 11
WORKING CAPITAL REQUIREMENTS

Logs (2 months' supply)	
6.25 MM bd. ft. @ \$90/M	\$562,000
Two months' payroll	
Direct labor	198,000
Management	<u>35,000</u>
Total	\$795,000

Table 12
MONTHLY PRICE TREND ON 3/8-INCH SOUTHERN PINE PLYWOOD, 1972-1973
(in dollars per thousand square feet)

<u>1972</u>	<u>Price</u>	<u>1973</u>	<u>Price</u>
January 19	80	January 19	130
February 12	82	February 16	117
March 17	83	March 16	117
April 15	83	April 13	117
May 19	85	May 18	115
June 16	93	June 15	110
July 14	102	July 13	93
August 18	102	August 17	93
September 15	102	September 21	79
October 13	102	October 19	76
November 17	102	November 9	95
December 15	102		

Source: Crow's Newsletter.

\$9,097,700; and after-tax profit on a typical operating year, \$1,508,700 or 24.8% of the fixed investment. (See Table 13.)

Several items in the projected profit and loss statement need to be explained. Trade and cash discounts, which are commonly used in the United States, are not applicable to sales to the European market. Even in the domestic market, trade and cash discounts become less generous when market prices are depressed. However, these discounts are fully accorded to sales in the domestic market in this study.

Net freight gains of \$1,737,900 are derived from sales to metropolitan areas in the domestic market. Details are given in Table 15.

Based on information supplied by machine makers, a manpower table is given in Table 16. Wage rates were based largely on established rates for plywood manufacture but adjusted to the Lexington-Crawford pay scale.

Yield ratio from log scale to finished plywood depends on factors such as tree diameter and log grade. A yield ratio of 2.4 (Scribner Decimal C), which is conservative, was adopted. (See Table 17, VII.) Log cost at \$90 per thousand board feet is considered as generous. However, log cost has been rising steadily in recent years.

Sales of wood chips do not include possible revenue from wood wastes and bark. Wastes such as plywood trim saw waste, dry veneer waste, fines, and logged bark would be used as part of the boiler fuel in generating heat for drying purposes. Today many plywood plants have changed their heat sources from gas or oil to wood wastes, because of either the shortage of gas-petroleum fuels or their high costs. Wood wastes generated in the proposed plant would supply about 27% of the heat requirement and the balance would be purchased from neighboring woodworking plants. Detailed information is given in Table 17, V.

A statement of projected profit and loss on a typical operating year is given in Table 13, followed by detailed breakdowns on revenue and cost calculations in Tables 14 through 18.

Table 13

PROJECTED STATEMENT OF PROFIT AND LOSS^{a/}
 BASED ON 100% SALES IN THE U. S. MARKET
 (Typical operating year; annual production
 of 90 million sq. ft., 3/8-in. basis)

<u>Plywood Sales Revenue</u>	<u>Total Amount</u>	<u>Average/M</u>
Base price revenue (Table 14)	\$8,445,000	\$ 93.84
Less: Trade discounts - 5%, 3% (7.85%)	(662,900)	(7.37)
Cash discounts - 2%	(168,900)	(1.88)
Sales cost - 3%	<u>(253,400)</u>	<u>(2.82)</u>
Net base price revenue	\$7,359,800	\$ 81.77
Net freight gains (Table 15)	<u>1,737,900</u>	<u>19.31</u>
Total net plywood sales revenue	\$9,097,700	\$101.08
 <u>Cost of Goods Sold</u>		
Direct labor (Table 16)	\$1,184,000	\$ 13.16
Supervision (Table 17)	210,000	2.33
Glue and chemicals	540,000	6.00
Depreciation (Table 17)	346,000	3.84
Insurance (Table 17)	13,600	.15
Property taxes (Table 17)	43,100	.48
Operating supplies and expenses	70,000	.78
Maintenance supplies and expenses	128,000	1.42
Fuel (Table 17)	326,900	3.63
Electricity (Table 17)	195,900	2.18
Association dues and expenses	<u>70,000</u>	<u>.78</u>
Cost of manufacturing	\$3,127,900	\$ 34.75
Cost of logs (Table 17)	<u>3,375,000</u>	<u>37.50</u>
Cost of goods sold	\$6,502,900	\$ 72.25
 <u>Profit</u>		
Plywood gross profit	\$2,594,800	\$ 28.83
Income from chips (Table 18)	<u>685,000</u>	<u>7.61</u>
Profit before taxes	\$3,279,800	\$ 36.44
Reserve for taxes (54%)	<u>1,771,000</u>	<u>19.68</u>
Profit after taxes	\$1,508,700	\$ 16.76

^{a/} Interest on borrowed funds and accelerated depreciation methods have not been incorporated in this projected statement.

Table 14

SALES REVENUE AT F.O.B.-WEST COAST PRICES
(Sales volume of 90 million sq. ft., 3/8-in.)

<u>Unsanded Plywood Type</u>	<u>Percent of Pro- duction</u>	<u>Equivalent Output (3/8") (MM sq. ft.)</u>	<u>Actual Output (MM sq. ft.)</u>	<u>List Price^{a/} (\$/M)</u>	<u>West Coast Sales Revenue</u>
3/4" 5-Ply CD	33.89	30.5	15.250	170	\$2,592,500
5/8" 5-Ply CD	5.00	4.5	2.700	150	405,000
1/2" 5-Ply CD	45.00	40.5	30.375	134	4,070,250
3/8" 3-Ply CD	<u>16.11</u>	<u>14.5</u>	<u>14.500</u>	95	<u>1,377,500</u>
	100.00	90.0	62.825		\$8,445,250

$\$8,445,250 \div 90 \text{ MM} = \$93.84/\text{M sq. ft., } 3/8"$

^{a/} Based on Crow's Newsletter, November 9, 1973.

Table 15

COMPARATIVE FREIGHT RATES ON SALES TO SELECTED METROPOLITAN AREAS,
WEST COAST VERSUS CRAWFORD, GEORGIA
(per thousand sq. ft. on a 3/8-in. basis)

<u>Destination</u>	<u>West Coast</u> ^{a/}	<u>Crawford, Ga.</u> ^{b/}	<u>Difference</u>
<u>Group A</u>			
Atlanta, Ga.-Chattanooga, Tenn.	\$23.96	\$ 2.46	\$21.50
Charlotte, N. C.	24.41	3.24	21.17
Savannah, Ga.	24.41	3.36	21.05
Birmingham, Ala.	23.74	3.60	20.14
Knoxville, Tenn.	23.96	4.08	19.88
Jacksonville, Fla.	24.41	4.68	19.73
Nashville, Tenn.	23.74	5.04	18.70
		Average Difference	20.31
<u>Group B</u>			
Richmond-Norfolk, Va.	24.41	6.72	17.69
Tampa-St. Petersburg, Fla.	24.41	6.72	17.69
Washington, D. C.-Baltimore, Md.	24.41	7.56	16.85
Charleston, W. Va.	24.07	7.56	16.51
Louisville, Ky.	23.74	6.72	17.02
Cincinnati-Dayton, O.	23.74	6.84	16.90
Miami, Fla.	24.41	7.56	16.85
Mobile, Ala.	22.84	6.00	16.84
		Average Difference	17.04
<u>Group C</u>			
Columbus, O.	23.96	10.68	13.28
Memphis, Tenn.	21.37	6.72	14.65
New Orleans, La.	21.37	7.08	14.29
Indianapolis, Ind.	23.62	10.20	13.42
Cleveland, O.	23.96	11.88	12.08
New York, N. Y.	24.64	12.00	12.64
		Average Difference	13.39

a/ Based on a shipping weight for Douglas fir plywood of 1,125 pounds per thousand square feet (3/8") and shipment in maximum-sized cars for lowest rate.

b/ Based on a shipping weight for southern pine plywood of 1,200 pounds per thousand square feet (3/8") and shipment in 60,000-pound carloads.

(continued)

Table 15 (continued)

Calculations

Sales to Group A are assumed at 75% of total shipments, those to Group B at 20%, and those to Group C at 5%. Net freight gain was calculated as follows:

Group A	75%	67.5 MM @ \$20.31/M = \$1,370,925
Group B	20%	18.0 MM @ \$17.04/M = \$ 306,720
Group C	<u>5%</u>	<u>4.5 MM @ \$13.39/M = \$ 60,255</u>
Total	100%	90.0 MM \$1,737,900

$$\$1,737,900 \div 90 \text{ MM} = \$19.31/\text{M sq. ft.}$$

Table 16
DIRECT LABOR REQUIREMENTS AND COSTS

<u>Job Title</u>	<u>Men per Shift</u>			<u>Total</u>	<u>Base Rate per Hour</u>	<u>Base Cost per Day^a/</u>
	<u>No. 1</u>	<u>No. 2</u>	<u>No. 3^a/</u>			
Log yard	3	3	0	6	\$2.86	\$ 137.28
Debarker	1	1	0	2	2.86	45.76
Cut-off saw	1	1	0	2	2.86	45.76
Water vats	2	1	0	3	2.70	64.80
Eight-foot lathe	1	1	0	2	3.74	59.84
Four-foot lathe	1	0	0	1	3.74	29.92
Eight-foot chipper	2	2	0	4	2.60	83.20
Eight-foot chipper spotter	2	2	0	4	2.60	83.20
Four-foot clipper	1	0	0	1	2.81	22.48
Eight-foot green chain	10	10	0	20	2.60	416.00
Four-foot green chain	3	0	0	3	2.60	62.40
Veneer dryer	3	3	3	9	3.16	227.52
Dryer tender	1	1	1	3	3.16	75.84
Dry veneer grading tables	6	6	6	18	2.60	374.40
Lift truck operator	2	2	2	6	2.76	132.48
Glue mixer	2	1	1	4	2.81	89.92
Glue spreader	12	6	6	24	2.81	539.52
Presses	2	1	1	4	3.01	96.32
Trim saw	1	0	0	1	2.86	22.88
Re-clip	1	1	0	2	2.81	44.96
Sander	2	0	0	2	2.81	44.96
Grade line	2	0	0	2	2.76	44.16
General labor	5	5	2	12	2.49	239.04
Shipping	4	4	0	8	2.49	159.36
Clipping	2	2	0	4	2.81	89.92
Maintenance	2	2	2	6	2.80	134.40
Steam boiler	2	2	2	6	2.60	124.80
Foreman	<u>3</u>	<u>3</u>	<u>2</u>	<u>8</u>	<u>3.74</u>	<u>239.36</u>
Total	79	60	28	167	\$2.80	\$3,730.48

(continued)

Table 16 (continued)

Calculations

Total base cost for two shifts:^{a/} \$3,730.48 per day.

Cost of payroll taxes, vacations, fringe benefits, overtime, and shift differential: 27% of base cost = \$1,007.23 per day.

Total direct labor costs: $\$3,730.48 + \$1,007.23 = \$4,737.71$ per day or
 $\$4,737.71 \times 250 \text{ days} = \$1,184,427.50$ per year
 $\$1,184,427.50 \div 90 \text{ MM bd. ft.} = \13.16 per M
bd. ft., 3/8".

^{a/} Throughout this report, the plant is described as having only two shifts because controlling operations in the green-ends section are shut down for the third shift. Operations associated with the presses are manned for all three shifts, however.

Table 17

MANUFACTURING AND RAW MATERIAL COSTS: SELECTED CALCULATIONS

I. Supervisory Personnel

General manager	\$ 35,000
Plant manager	25,000
Plant superintendent	20,000
Sales manager	20,000
Log procurement	20,000
Engineer	18,000
Chief mechanic	16,000
Chief accountant	16,000
5 clerks @ \$8,000	<u>40,000</u>
Total	\$210,000

$$\$210,000 \div 90 \text{ MM} = \$2.33/\text{M} (3/8")$$

II. Depreciation

Equipment	$\$3,578,000 \div 12 \text{ years} = \$298,000$
Building	$\$1,678,000 \div 35 \text{ years} = \underline{48,000}$
	\$346,000

III. Insurance

Plant investment	\$6,071,000
Inventory	<u>733,000</u>
Total	\$6,804,000

$$\$6,804,000 @ \$0.20/\$100 = \$13,600 \text{ per year}$$

IV. Property Tax

Oglethorpe County: \$17.75 per \$1,000 at 40% of actual value
 40% of \$6,071,000 = \$2,428,400 x 17.75 mills
 = \$43,104 per year

Table 17 (continued)

V. Fuel

Steam Requirements

Dryers	50,000 lbs./hr. x 24 =	1,200,000 lbs./day
Press	4,000 lbs./hr. x 24 =	96,000 lbs./day
Vats	<u>9,500</u> lbs./hr. x 24 =	<u>228,000</u> lbs./day
Total	63,500 lbs./hr.	1,524,000 lbs./day

1,524,000 lbs. of steam @ 1,200 Btu/lb. = 1,829 MM Btu

1,829 MM Btu ÷ 0.82 boiler efficiency = 2,230 MM Btu per day

2,230 MM Btu x 250 days = 557,500 MM Btu a year

Hog fuel generated in plant

Trim saw waste	37,500 M bd. ft. @ 110 lbs./M =	4,125,000 lbs.
Fines	37,500 M bd. ft. @ 230 lbs./M =	8,625,000 lbs.
Dry veneer waste	37,500 M bd. ft. @ 55 lbs./M =	2,062,000 lbs.
Bark	37,500 M bd. ft. @ 660 lbs./M =	24,750,000 lbs.

Heat value

Trim saw waste	4,125,000 lbs. @ 4,450 Btu =	18,356 MM Btu
Fines	8,625,000 lbs. @ 4,200 Btu =	36,225 MM Btu
Dry veneer waste	2,062,000 lbs. @ 9,000 Btu =	18,558 MM Btu
Bark	24,750,000 lbs. @ 3,115 Btu =	<u>77,096</u> MM Btu
Total		150,235 MM Btu

Purchased wood waste as fuel

557,500 MM Btu - 150,235 MM Btu = 407,265 MM Btu in need

407,265 MM Btu ÷ 3,115 Btu per lb. = 130,743,178 lbs. of bark
or wood waste or 65,372 tons @ \$5 per ton = \$326,860.

VI. Electricity

For 24-hour period, 5,061 kva, 80% power factor

Daily requirement estimated at 64,784 kwh

Assume 21 working days per month: 64,784 kwh x 21 = 1,360,464
kwh/month @ 1.2¢/kwh = \$16,326/month

\$16,326 x 12 = \$195,912 per year

(continued)

Table 17 (continued)

VII. Raw Materials -- Cost of Logs

Plywood production	90,000,000 (3/8") square feet per year
Assumed recovery	Log scale to finished plywood 2.4 (Scribner Decimal C)
Log requirement	$90,000,000 \div 2.4 = 37,500,000$ board feet
Annual log cost	$37,500,000 \text{ bd. ft.} \times \$90.00/\text{M} = \$3,375,000$
Cost per M (3/8")	$\$3,375,000 \div 90 \text{ MM} = \37.50

Table 18

NET ANNUAL REVENUE FROM SALE OF CHIPS

Veneer chips

$37,500 \text{ board feet log scale} \times 0.35 \text{ cords/M} = 13,125 \text{ cords}$

Core chips

$37,500 \text{ board feet log scale} \times 0.23 \text{ cords/M} = \underline{8,625} \text{ cords}$

Total chip production per year 21,750 cords

Sales price

F.o.b. destination	\$35.00 per cord
Delivery charge	<u>-3.50</u> per cord
F.o.b. mill	\$31.50 per cord

Gross revenue from chips

$21,750 \text{ cords} @ \$31.50 = \$685,125.00$

Alternate Calculations Based on 50% Sales to the European Market

A statement of projected profit and loss on the proposed production, based on 50% sales in the U. S. market and 50% sales in the European market, is given in Table 19. U. S. sales revenue at f.o.b.-West Coast prices on 45 million square feet, 3/8-inch basis, is calculated in Table 20. Freight gains on the sales in the U. S. market are shown in Table 21. European sales revenue on 45 million square feet, 3/8-inch basis, is given in Table 22, and estimated costs of shipments to the European market are presented in Table 23.

The contrast between sales returns from the U. S. market and those from the European market under current conditions is evident in Table 19. Net plywood sales revenue from the U. S. market would be \$4,533,420 compared with \$3,006,640 from the European market. Cost of goods sold (manufacturing costs) is the same as in the previous computation (Table 13).

Profit after taxes would be \$792,190 or about 13% of the fixed investment, as compared with \$1,508,700 or 24.8% of the fixed investment if the entire production is earmarked for the U. S. market.

Table 19

PROJECTED STATEMENT OF PROFIT AND LOSS BASED ON 50% SALES
IN THE U. S. MARKET AND 50% SALES IN THE EUROPEAN MARKET
(Typical operating year; annual production
of 90-million sq. ft., 3/8-in. basis)

<u>Plywood Sales Revenue</u>	<u>Total Amount</u>	<u>Average/M</u>
U. S. sales revenue		
Base price (Table 20)	\$4,222,650	\$ 93.84
Less: Trade discounts - 5%, 3% (7.85%)	(331,480)	(7.37)
Cash discounts - 2%	(84,450)	(1.88)
Sales cost - 3%	<u>(126,680)</u>	<u>(2.82)</u>
U. S. net base price revenue	\$3,680,040	\$ 81.77
Net freight gains (Table 21)	<u>853,380</u>	<u>18.96</u>
U. S. net plywood sales revenue	\$4,533,420	\$100.73
European sales revenue (Table 22)	\$5,478,650	\$121.75
Less: Costs of shipment and duty (Table 23)	(2,156,450)	(47.92)
Sales cost - 3%	(164,360)	(3.65)
Freight cost ^{a/}	<u>(151,200)</u>	<u>(3.36)</u>
European net plywood sales revenue	\$3,006,640	\$ 66.82
Total net plywood sales revenue	\$7,540,060	\$ 83.78
<u>Cost of Goods Sold</u> (Table 13)	\$6,502,900	\$ 72.25
<u>Profit</u>		
Plywood gross profit	\$1,037,160	\$ 11.53
Income from chips (Table 18)	<u>685,000</u>	<u>7.61</u>
Profit before taxes	\$1,722,160	\$ 19.14
Reserve for taxes (54%)	<u>929,970</u>	<u>10.33</u>
Profit after taxes	\$ 792,190	\$ 8.81

^{a/} Railroad freight from Lexington, Georgia, to Savannah, Georgia, at \$3.36/M, 3/8-inch basis.

Table 20

DOMESTIC SALES REVENUE AT F.O.B.-WEST COAST PRICES
(Sales volume of 45 million sq. ft., 3/8-in. thickness)

<u>Unsanded Plywood Type</u>	<u>Percent of Pro- duction</u>	<u>Equivalent Output (3/8") (MM sq. ft.)</u>	<u>Actual Output (MM sq. ft.)</u>	<u>List Price (\$/M)</u>	<u>West Coast Sales Revenue</u>
3/4" 5-Ply CD	16.94	15.25	7.625	170	\$1,296,250
5/8" 5-Ply CD	2.50	2.25	1.350	150	202,500
1/2" 5-Ply CD	22.50	20.25	15.188	134	2,035,150
3/8" 3-Ply CD	<u>8.06</u>	<u>7.25</u>	<u>7.250</u>	95	<u>688,750</u>
	50.00	45.00	31.413		\$4,222,650

Table 21

FREIGHT GAIN CALCULATIONS ON DOMESTIC SALES

Sales to Group A are assumed at 35% of total shipments, those to Group B at 10%, and those to Group C at 5%. Net freight gain was calculated as follows:

Group A	35%	31.50 MM @ \$20.31 = \$639,765
Group B	10%	9.00 MM @ \$17.04 = \$153,360
Group C	<u>5%</u>	<u>4.50 MM @ \$13.39 = 60,255</u>
Total	50%	45.00 MM \$853,380

Table 22
EUROPEAN SALES REVENUE
(Sales volume of 45 million sq. ft., 3/8-in. thickness)

<u>Unsanded Plywood Type</u>	<u>Percent of Pro- duction</u>	<u>Equivalent Output (3/8") (MM sq. ft.)</u>	<u>Actual Output (MM sq. ft.)</u>	<u>List Price (\$/M)</u>	<u>West Coast Sales Revenue</u>
3/4" 5-Ply CD	16.94	15.25	7.625	236	\$1,799,500
5/8" 5-Ply CD	2.50	2.25	1.350	200	270,000
1/2" 5-Ply CD	22.50	20.25	15.188	171	2,597,150
3/8" 3-Ply CD	<u>8.06</u>	<u>7.25</u>	<u>7.250</u>	112	<u>812,000</u>
	50.00	45.00	31.413		\$5,478,650

Table 23
ESTIMATED COSTS OF EUROPEAN SHIPMENTS

<u>Unsanded Plywood Type</u>	<u>Actual Shipments (MM sq. ft.)</u>	<u>Estimated Costs^{a/} (per thousand sq. ft.)</u>				<u>Total Costs</u>
		<u>Total</u>	<u>Ocean Freight</u>	<u>Customs Duty</u>	<u>Insurance</u>	
3/4" 5-Ply CD	7.625	95.22	70.50	23.02	1.70	\$ 726,050
5/8" 5-Ply CD	1.350	79.00	57.80	19.70	1.50	106,650
1/2" 5-Ply CD	15.188	66.25	48.30	16.65	1.30	1,006,200
3/8" 3-Ply CD	<u>7.250</u>	43.80	35.70	7.3	.80	<u>317,550</u>
	31.413					\$2,156,450

^{a/} Based on the average costs given in Table 9.

APPENDICES



A. R. SHIRLEY
DIRECTOR

Appendix 1

Georgia Forestry Commission

BOX 819 MACON, GEORGIA 31202

HUGH M. DIXON
Chairman, Vidalia
W. GEORGE BEASLEY
Lavonia
M. E. GARRISON
Homer
LUKE H. MORGAN
Eastman
ALEXANDER SESSOMS
Cogdell

July 18, 1969

Mr. M. T. Gresham
Northeast Georgia Planning
& Development Commission
P. O. Box 1724
Athens, Georgia

Dear Mr. Gresham:

We are pleased to give you the thinking of the Georgia Forestry Commission on Oglethorpe County and Lexington, Georgia, as a place for locating forest industry, particularly a plant to utilize pine and soft hardwoods for plywood, lumber and other similar materials.

The latest forest survey showed a 10% increase in commercial forest acreage for this area from 1953 to 1962 which amounted to 353,000 acres. In 1962, the 3,850,000 acres of commercial forest land was divided into 7% public, 62% private farm, 12% industry and 19% other private ownership.

Geographical location of Lexington will be favorable to an operation buying timber. Temperature and precipitation extremes are rare, with an average rainfall of 45 to 50 inches. Local topography is rolling to moderately hilly and an adequate road and rail network exists for transporting products to nearby markets. The port of Savannah is 200 miles away for export.

Closely related to location is the proximity of several cities for sources of supply and employee convenience. Athens, with 50,000 people, is 18 miles away. Atlanta, with 1.5 million people, is 85 miles distant. At Athens is the University of Georgia School of Forestry and the U. S. Forest Service research laboratory. Also located here is Athens Vocational Tech which is available for pre-hire or in-plant training. Other favorable considerations are two modern hospitals, numerous medical specialists and a municipal airport with regular passenger flights.

Population of this north Georgia area is conservative, with a rural or farm background mostly. An October 1968 labor analysis for the Athens Area Chamber of Commerce covered 15 counties in a 30 mile radius. This showed 48,741 persons potentially recruitable and trainable with 9,755 in a usual selection ratio potential.

Stumpage drain, combined with other factors of labor and location, mean that expansion of local timber procurement enterprises will be limited in many

Appendix 1 (continued)

Mr. M. T. Gresham
July 18, 1969
Page 2

areas of Georgia and surrounding states. Available information indicates the area of a 60 mile radius centered around Lexington probably has more remaining potential for forest industry growth than any place in the State.

To emphasize the location of Oglethorpe County and the existing forest industry, the following information is given.

There are 73 plants in the 30 county area or 60 mile radius which use timber other than pulpwood. The volume in 1967 was 246,281 MBF consisting of 178,101 MBF pine and 68,180 MBF hardwood. Recent and present prices for hardwood stumpage range from \$15 to \$25 MBF "Doyle" rule and pine stumpage ranged from \$35 to \$45 MBF "Scribner" rule. There are 21 woodusing plants within a 30 mile radius of Lexington that in 1967 purchased a total of 79,820 MBF of which 60,031 MBF was pine.

We estimate that the total forest growth at the present time is approximately double the present drain, or growth versus cut. This area is destined to continue to be rural in nature with forest acreages increasing rather than decreasing.

Interstate Highway 20, now under construction, from Augusta to Atlanta will be nearby and a connector between Interstates 20 and 16 to Savannah will soon be a reality.

We believe Lexington is the Number One location for forest industry of this type in Georgia.

If further information is desired, please advise.

Sincerely yours, *Ray Shirley*

Ray Shirley
Director *RS*

ARS/g

CC: Mr. Hamilton McWhorter, Jr.

Appendix 2

THE COE MANUFACTURING COMPANY

ESTABLISHED 1852

ROLLER DRYERS • VENEER MACHINERY

PAINESVILLE, OHIO, U.S.A. 44077

AREA CODE 216 / 352-9381

October 17, 1973

Engineering Experiment Station,
Georgia Institute of Technology,
Atlanta, Georgia 30332

Attention of Mr. Tze I Chiang
Senior Research Scientist

Dear Mr. Chiang:

Per our recent telephone conversation and your letter of October 12th, we are enclosing two prints of our Suggested Equipment List for the proposed Southern Pine plywood plant as being considered for Oglethorpe, Georgia.

From our recent telephone conversation we understand that the name of the concern contemplating building this plant is "Norcem".

We can appreciate that this submitted information may bring several questions to your mind and we will be pleased to answer them during our personal visit to your office within the next ten days. We will be contacting you to arrange for a meeting for a personal discussion in regard to this information.

Best personal regards.

Very truly yours,

THE COE MANUFACTURING CO.

Howard E. Price

HEP FP

encl

Proposed Pine Plywood Plant
Oglethorpe, Georgia

October, 1973
Howard E. Price

SUGGESTED EQUIPMENT LIST FOR PROPOSED SOUTHERN PINE PLYWOOD
PLANT WITH A PRODUCTION OF 90 MM SQUARE FEET OF 3/8" PLYWOOD
PER YEAR

<u>Coe Equipment</u>	<u>Estimated Total Cost Installed</u>
1 40 foot long Primary Block Conveyor for eight foot lathe, including 20 foot long Secondary Block Conveyor for eight foot lathe with set of hydraulically operated Pin Stops with hydraulically operated Block Even-Ender	\$ 30,200.00
1 Model 765 Lathe Charger for eight foot lathe	32,200.00
1 Style C-4 hydraulic Back-up Roll for 8 ft. lathe	8,500.00
1 110" knife length Model 249-D Lathe with dual hydraulic spindles	107,400.00
1 125/162 HP AC-DC Lathe Drive for eight foot lathe	36,300.00
1 Six deck, 150 foot long, 120" wide Tray System	59,800.00
1 Tray System Drive and Controls	24,800.00
2 113" knife length Model 366 air operated Clippers	60,400.00
1 60 foot Sloping Table from upstairs clipper	2,900.00
2 50 foot long Grading Conveyor Tables (green end)	6,400.00
1 110" Model 431 Knife Grinder	13,400.00

Revised Suggested Equipment List - Cont'dEstimated Total
Cost Installed

1	40 foot long Primary Block Conveyor for four foot lathe, including 20 foot long Secondary Block Conveyor for four foot lathe, with Set of hydraulically operated Pin Stops and hydraulically operated Block Even-ENDER for four foot lathe	\$ 28,400.00
1	Model 760 pendulum-type Lathe Charger for four foot lathe	24,200.00
1	56" knife length Model 263D Lathe with dual hydraulic spindles	78,700.00
1	60/80 HP AC-DC Lathe Drive for four foot lathe	24,600.00
1	Three deck, 60 foot long, 70" wide Tray System	20,000.00
1	Tray System Drive and Controls for three deck Tray System	20,000.00
1	69" Model 366 aud operated Clipper	22,500.00
1	50 foot long, four foot nominal width Green Chain Conveyor	2,500.00
2	Model 72 Dryer Feeders with X-lift and Side-Loading Conveyors	66,800.00
2	Model 972 Dryer Unloaders	33,000.00
1	18 section, 4 line, steam-heated Model 72 Veneer Dryer with three (3) forced cooling sections	324,400.00
1	15 section, 4 line, steam-heated Model 72 Veneer dryer with two (2) forced cooling sections	268,900.00
2	Moisture detecting systems	12,000.00

<u>Revised Suggested Equipment List - Cont'd</u>		<u>Estimated Total Cost Installed</u>
1	Coe Skoog Veneer Patches	\$ 20,500.00
1	Patch Blank Saw	3,600.00
1	Veneer Strip Saw	5,500.00
1	110" Style "W" Dry Clipper	6,000.00
1	Model 453 Coe-Tidland wide belt Sander	104,300.00
1	Fishtail Saw	5,500.00
1	Core Saw	9,000.00
1	Skinner and Cut-off Saw	55,000.00
1	Dry Scrap Hog	32,000.00
4	Glue Spreaders	55,000.00
2	Pre-presses	70,000.00
4	Trim Saws at Pre-press	17,000.00
2	Automatic Press Loaders	176,000.00
2	30-opening Hot Plate Presses	244,000.00
2	Press Unloaders and Stackers	92,000.00
1	Set Glue Mixing Equipment	50,000.00
1	Steel Band Strapping Machine	23,000.00
2	Green Veneer Waste Conveyors	15,000.00
1	Return Veneer Waste Conveyor	16,000.00
2	Green Veneer Chippers	66,000.00

<u>Revised Suggested Equipment List - Cont'd</u>		<u>Estimated Total Cost Installed</u>
1	Core Conveyor	\$ 8,200.00
1	Core Chipper	21,000.00
1	Pneumatic Chip Carloading System	62,000.00
1	Steam Generating Boiler	233,000.00
1	Steam (or water) Vat System	50,000.00
1	Trash Burner	22,000.00
1	Waste Conveyor to Trash Burner	18,000.00
2	Air Compressors	25,000.00
1	Log Yard Caterpillar Tractor	42,000.00
3	Fork Lift Trucks	65,000.00
1	Debarker and required Conveyors	83,000.00
1	Bucking Saw Station and required Conveyors	90,000.00
1	Panel Grade Line	<u>50,000.00</u>
Grand Total:		\$3,140,000.00