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Exhibit Number	Offered By Company	Exhibit Number	Offered By F. P. C. Staff
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5. COMPANY WITNESS TONKIN'S EXHIBIT NO. 4 ENTITLED: "The Company's Properties, Markets, Sources of Gas Supply and the Development of Its Properties: Explanation of Company Exhibits Nos. 1, 2 and 3—Written Statement of Loring L. Tonkin."

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STATEMENT OF POSITION AND EXPERIENCE OF LORING L. TONKIN

1. Name, address and age

Loring L. Tonkin, 701 Milford Street, Clarksburg, West Virginia, age 52.

2. Education

High school, Oil City, Pennsylvania; graduated from Phillips Academy, Andover, Massachusetts, in 1908 and from Cornell University, Ithaca, New York, in 1912 with the degree of Mechanical Engineer.

3. Present position

President, General Manager and Director of Hope Natural Gas Company.

4. Experience

While attending school and college I worked every summer from 1903 to 1911 for Hope Natural Gas Company and affiliated gas companies on compressor station and pipe line construction. In June 1912 I went to work permanently for Hope Natural Gas Company serving first as Meter Engineer (1912) and successively as Assistant Engineer in the Company's compressor station department (1913-1915); Division Engineer in charge of construction and operation of compressor stations (1915-1918); Assistant Chief Engineer and Chief Gas Dispatcher (1919-1920); Chief Engineer, Assistant General Superintendent and Chief Gas Dispatcher (1920-1932); Vice President, Chief Engineer and Director (1932-1939); and President, General Manager and Director from February 1939 to date.

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In the course of my services for the Company I have from time to time had charge of substantially all branches

of its operations, including the operation and construction of compressor stations, the dispatching of all of its gas, the operation of its trunk line system, the operation of its distribution plants, the operation of its wells and of its leasing, drilling and other field activities.

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WRITTEN STATEMENT OF LORING L. TONKIN

A. Matters Covered By This Exhibit

1. The Hope Company's principal sales are as follows:

To	*1938 Sales (M.c.f.)*
The East Ohio Gas Company	30,316,773
The Peoples Natural Gas Company	2,870,545
The River Gas Company	222,615
Fayette County Gas Company	837,986
The Manufacturers Light & Heat Company	4,772,083
West Virginia domestic, industrial, field and other consumers	8,900,612
Total	47,920,614

2. Of these companies East Ohio, Peoples and River are wholly owned subsidiaries of Standard Oil Company (New Jersey) as is the Hope Company. Fayette and Manufacturers are not affiliated with the Company in any way.

3. There have been prepared by me or under my supervision from the books of the Company and its affiliated companies the following Company exhibits:

Co.X.1 —Map of Main Pipe Line Systems of Hope Natural Gas Co., The East Ohio Gas Co., The Peoples Natural Gas Co. and The River Gas Co.—1939.

Co.X.1A—Reduced Scale Copy of Company Exhibit No. 1.

Co.X.2 —Hope Natural Gas Company—statistics as to the Company's Properties, Markets and Sources of Gas Supply.

Co.X.3 —Hope Natural Gas Company—Interval Maps Showing the Development of the Company's Properties:

Map No. 1—1901
Map No. 2—1906
Map No. 3—1911

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Map No. 4—1916
Map No. 5—1921
Map No. 6—1926
Map No. 7—1931
Map No. 8—1936
Map No. 9—1939

Co.X.3A—Reduced Scale Copies of Company Exhibit No. 3.

Co.X.4 —This exhibit explaining Company Exhibits Nos. 1, 2 and 3.

4. This written statement will describe generally the Company's properties, markets, sources of gas supply and its operations, and will trace briefly the development of its properties, referring frequently to these exhibits by the indicated abbreviations.

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B. General Descriptions Of The Properties Shown On The Main Pipe Line System Map, Co.X.1

1. Co.X.1 (and its reduction, Co.X.1A) shows parts of the States of West Virginia, Pennsylvania and Ohio with the main pipe line systems of the Hope, East Ohio, Peoples and River Companies as of December 31, 1938 shown thereon.

2. In Ohio there is shown by dark blue lines the main transmission system of East Ohio starting at the Ohio River at Clarington and Round Bottom Measuring Stations and running north through the Canton, Massillon and Akron area to Cleveland, with easterly lines over to the

Youngstown district and southwesterly lines from the Danville and Wooster territory. East Ohio serves about 495,000 domestic consumers located in the Cleveland metropolitan area and in the other Ohio cities shown by green dots on the map, a total of 64 municipalities.

3. In Pennsylvania there is shown in light blue lines the main transmission system of Peoples. This system supplies the Pittsburgh district with part of its gas, has an easterly extension to Altoona and Tyrone, northerly extensions into Butler, Armstrong, Clarion, Jefferson and Elk Counties and a northwesterly extension which connects with the East Ohio system at the Pennsylvania-Ohio state line. This latter is used when necessary during winter peak load periods for the delivery of Hope gas to East Ohio at the Pennsylvania-Ohio state line. During 1938 the Peoples Company had about 124,000 domestic consumers located in a portion of Pittsburgh and in the other Pennsylvania cities indicated in green on the map, and now has about 149,000 domestic consumers by reason of the merger of The Columbia Natural Gas Company with Peoples at the end of 1938.

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4. In the southeastern section of Ohio near the Ohio River are shown some scattered properties colored in maroon owned by The River Gas Company. This is a small company with about 9,000 consumers in Marietta and the other Ohio cities and villages shown in green on the map.

5. The pipe lines of the Manufacturers and Fayette Companies are not shown on C.X.1. Both are gas companies distributing natural gas in various municipalities, Manufacturers in Pennsylvania, West Virginia and Ohio and Fayette in Pennsylvania.

6. In addition to selling gas to these five companies, Hope distributes natural gas in various communities in West Virginia, serving about 42,000 domestic consumers. The Company's principal distribution plants in West Vir-

ginia are at Clarksburg, Parkersburg, Weston, Mannington, Salem and Sistersville. The small green areas marked on the map indicate the larger of these distribution plants.

7. The Hope Company's deliveries to East Ohio are made at the West Virginia-Ohio state line at two points, near Clarington and near Round Bottom Stations on the Ohio River, where Hope's lines connect with those of East Ohio. Its deliveries to Peoples are made at the West Virginia-Pennsylvania state line at a point immediately south of the Brave Compressor Station of the Peoples Company and also near the southwest corner of Pennsylvania as indicated on Co.X.1. Its deliveries to the River Company are made at the West Virginia-Ohio state line at a number of points along the Ohio River between Parkersburg and Sistersville, but principally at Marietta, Ohio. Deliveries to the Fayette Company are made at the West Virginia-

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Pennsylvania state line at Wade Measuring Station and to the Manufacturers Company at Bates Measuring Station in northeastern Doddridge County, about 14 miles southeast of the Company's Hastings Compressor Station.

8. The properties of the Hope Company shown on Co.X.1 are its principal pipe lines, generally from 8 inch up to 20 inch in diameter, and its 47 active compressor stations. The pipe lines indicated in red, called "field lines" on the map, are the principal lines leading from a network of small gathering lines in the field to compressor stations. The lines indicated in green, called "transmission lines" on the map, carry the gas between the various compressor stations and from the compressor stations to points of delivery principally along the Ohio River and the Pennsylvania state line. The red squares indicate the Company's compressor stations, the largest being Hastings, approximately twenty miles southeast of the Ohio River. Hastings is the largest natural gas compressor station in the world.

9. The function of the Company's pipe line and compressor station system is to collect gas from its approximately 3,300 gas wells and from its 340 purchase contracts and to pump and transport that gas in a northerly direction and deliver it at the points of delivery heretofore described. Except for the local distribution systems shown by the green areas on the map and other smaller West Virginia communities these deliveries are all made to the north along the Ohio River, the Pennsylvania state line and at Bates in Doddridge County. It will be noted that the transmission system runs from the southern boundary of Boone County generally north to the delivery points heretofore noted. The pipe line distance from Clothier in Boone

County to Clarington and Round Bottom Stations on the Ohio River is over 178 miles. Each of these principal lines shown on the map is identified by a symbol. For example, the westerly discharge line leading from Hastings Compressor Station to Clarington on the Ohio River is marked H 106-20″. This means Hope's line No. H 106, 20 inches in diameter.

10. The Company's gathering lines and wells and the points of receipt of gas from contract vendors are not shown, inasmuch as on a map of this size, these lines, wells and points of delivery would show as a solid network and would make the map illegible.

11. As shown on page 1 of Co.X.2 the Hope Company's actual mileage of pipe lines and their 3″ equivalents as of the date of this map are as follows, classified in accordance with the Company's accounting records:

	Pipe Line Miles	*Miles of 3″ Equivalent*
Field lines	2,981	5,076
Transmission lines....	1,043	4,469
Distribution lines.....	892	929
Total	4,916	10,474

12. A word of explanation as to what is meant by "3-inch equivalent." The diameters of these various field and transmission lines range all the way up to 20 inches. It is, of course, misleading to compare a mile of 4-inch pipe, for example, with a mile of 20-inch pipe. To have some common equivalent to which all lengths of pipe is reduced it has become accepted practice in the industry to reduce everything to a 3-inch equivalent, i.e. a mile of 6-inch pipe is considered approximately two miles of 3-inch pipe, a mile of 18-inch pipe is considered approximately six miles of 3-inch pipe, etc.

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13. As likewise shown on page 1 of Co.X.2 the Company's 47 compressor stations shown on Co.X.1 have a total installed horsepower of 93,470. As shown on page 1A, these stations vary in size from very small compressor stations located in the field, such as the Seth Station in Boone County with an installed horsepower of 180, to the Company's principal compressor station at Hastings in Wetzel County with an installed horsepower of 29,225.

14. Page 1 of Co.X.2 shows the other data as to the Company's properties which could not be shown on Co.X.1. As of December 31, 1938 it had 3,302 gas wells, 337,790 operated acres and 647,180 unoperated acres. These gas wells and gas leaseholds are widely scattered, principally through the central and northern parts of the West Virginia gas field in which the Company operates. The 340 contracts under which the Company buys gas supply gas to the Company from approximately 12,600 gas and combination gas and oil wells in addition to the gas wells owned and operated by the Company. Gas is received from these contract vendors at about 425 delivery points throughout the system with about 75% of the Company's purchased gas being delivered to it in the southern part of the system from Cabot Station in Calhoun County south.

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C. Hope's Gas Sales Obligations

(a) *Priorities in obligations*

1. The Company's distribution of natural gas in West Virginia is as a natural gas utility under the jurisdiction of the Public Service Commission of West Virginia. It serves in 22 West Virginia cities and towns, of which Clarksburg and Parkersburg are by far the largest, and in about 200 very small West Virginia communities. This local service in small cities and communities is a necessary incident of the Company's production activities. Columns (2) to (6) of page 2 of Co.X.2 indicate the extent of its sales in West Virginia, divided between domestic and commercial, industrial and field and other sales. The Company's approximately 42,000 domestic consumers in West Virginia have a primary right to be served in the event its available gas supply is not sufficient to meet all of its obligations. The Company's other sales in West Virginia are subject to curtailment in favor of domestic consumers of Hope in West Virginia and of domestic consumers of East Ohio and Peoples as hereinafter noted.

2. It will be observed from an examination of page 2 of Co.X.2 that the Company's West Virginia sales constitute a relatively small portion of its total business. All of these sales are made pursuant to rates subject to the jurisdiction of the West Virginia Commission and in accordance with the tariff schedules on file with that body.

3. The major portion of the Company's business consists of meeting its contractual obligations to East Ohio, Peoples, River, Fayette and Manufacturers, gas sold under these contracts moving out of the State of West Virginia

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into the States of Ohio and Pennsylvania except for part of the gas sold to Manufacturers. A true copy of each of the Company's present contracts with these companies, as

on file with the Federal Power Commission as rate schedules under the Natural Gas Act, is made an exhibit in this case. These contracts are as follows:

With The East Ohio Gas Company	Co.X.5
With The Peoples Natural Gas Company	Co.X.6
With The River Gas Company	Co.X.7
With Fayette County Gas Company	Co.X.8
With The Manufacturers Light & Heat Company	Co.X.9

4. The relative order of magnitude of the Company's sales under these contracts and under preceding contracts with these same companies is likewise shown on page 2 of Co.X.2. It will be observed by comparison of column (11) with the other columns on this page that Hope sales to East Ohio have for many years constituted far more than half of its total annual sales except for the years 1930 to 1934 when they dropped to about one half of the total sales. Hope's annual deliveries to the other four companies are very much smaller individually and in the aggregate than its sales to East Ohio.

5. While the terms of these five contracts are self-explanatory several general observations can be made. Under all of them Hope's first obligation is to supply the requirements of its domestic consumers in West Virginia. By its contracts with East Ohio and Peoples the Hope Company has obligated itself to supply the requirements of domestic consumers of those two companies and in case of shortage, after supplying its own domestic consumers, to

cut them back ratably in proportion to the number of domestic consumers attached to their lines. The gas sold by Hope, East Ohio and Peoples for industrial purposes is all subject to curtailment and has been curtailed whenever necessary to meet the demands of the domestic consumers of Hope, East Ohio and Peoples. Hope's contract with River specifically makes its requirements subject to the

prior rights of the domestic consumers of Hope and to Hope's obligations to East Ohio and Peoples. Its contracts with Fayette and Manufacturers specifically subject their requirements to the prior rights of the domestic consumers of Hope, East Ohio and Peoples. In other words, whenever necessary to supply the requirements of the domestic consumers of Hope, East Ohio and Peoples, deliveries to River, Fayette and Manufacturers may be curtailed.

6. Page 3A of Co.X.2 shows the number of the domestic and commercial consumers of Hope, East Ohio and Peoples for the individual companies and in total from 1899 to 1938. It is these consumers which Hope is under a primary obligation to supply.

(b) *Quantities required to be delivered*

1. Generally as to the quantities of gas which Hope is obligated to deliver under these contracts, Hope has an open commitment as to both East Ohio and Peoples to supply the requirements, whatever they may be, of the domestic consumers of these companies. In practice this obligation has been interpreted to mean all the requirements of East Ohio and Peoples that they are unable to satisfy from their respective fields in Ohio and Pennsylvania. This has resulted

in wide variations in the demands of these two companies from year to year, from month to month, from day to day and from hour to hour.

2. In the case of River, Hope is obligated to meet the requirements of River's consumers in various Ohio cities and towns to the extent that River does not obtain its supply from other sources. In recent years Hope has supplied an average of about 30% of River's annual requirements. This is a small company and no substantial annual quantities of gas are involved, as will be seen from examining column (9) on page 2 of Co.X.2.

3. In the case of Hope's contracts with Fayette and Manufacturers, provision is made in each contract for a specified annual quantity of gas to be delivered by Hope and specified percentages of this total annual quantity to be delivered in each month and from day to day. The present Fayette contract specifies the annual quantity at 850,000 M.c.f. and the Manufacturers contract specifies the total annual quantity to be delivered by Hope at 2,500,000 M.c.f. until April 30, 1940 and at 2,000,000 M.c.f. annually during the next two years. The result is that under these contracts with Fayette and Manufacturers, Hope knows precisely what deliveries it is expected to meet annually, each month and from day to day, whereas in the case of East Ohio and Peoples these quantities are not known.

(c) *Pressure obligations*

1. In addition to the differing quantities of gas which Hope is obligated to deliver under these five contracts mention should be made of the differences in delivery

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pressures. Under its contract with East Ohio, Hope is required to deliver gas at a pressure where its lines join the lines of East Ohio of at least 225 pounds and in practice for many years deliveries have been made in the winter season at pressures between 285 and 300 pounds. The final compression necessary to accomplish these deliveries occurs largely at the Hastings Station where the discharge lines to the Ohio River carry pressures up to 325 pounds. Additional deliveries by Hope to East Ohio in times of peak demand are made through the Peoples system, which connects with the East Ohio system at Petersburg south of Youngstown, Ohio. All gas sold by Hope to East Ohio is delivered to East Ohio at sufficient pressure so that it will flow through East Ohio's lines to consumers' burner tips throughout the East Ohio system. East Ohio does not further compress any of the gas it purchases from Hope. On

maximum peak days Hope delivers to East Ohio at Clarington and Round Bottom Stations on the Ohio River up to 165,000,000 cubic feet and at Petersburg around 8,000,000 to 9,000,000 cubic feet additional. On gas delivered to East Ohio at Petersburg, Hope pays Peoples a compressing and transportation charge.

2. Under its present contract with Peoples, Hope is obligated to make deliveries to Peoples at such pressure as Peoples may from time to time request and as can be maintained by Hope without increasing its pipe line or compressor station capacity. Most of the deliveries to Peoples are made at pressures varying from about 50 to 160 pounds directly into the suction lines of Peoples' Brave Compressor Station, where the gas purchased from Hope is compressed sufficiently to transmit it to Peoples' markets. In addition deliveries are made through Hope's lines H

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29-8″ and H 27-10″, which are connected to lines of the Peoples Company feeding into the low stage pumps at Brave Station. These low stage pumps pull the pressure on these lines of Hope down to about 5 pounds. In other words, the gas delivered through these two Hope lines is drawn out of the Hope lines and wells directly by compressors at the Peoples' Brave Station. This particular gas has to be pumped twice by the Peoples Company at its Brave Station to reach its markets. In periods of extreme demand, deliveries are also made to Peoples through Hope's line H 6-16″ from Hastings Compressor Station, at state line pressures of about 100 pounds. Normally this line serves as a suction line into Hastings Station. When deliveries are made through this line to Peoples, it further compresses this gas at Brave Station to reach its markets.

3. The prices fixed in both the East Ohio and Peoples contracts contemplate delivery of gas by Hope with pressures sufficient to reach the consumers served by these two companies. Since Hope's deliveries to Peoples are not at

sufficient pressure to reach Peoples' markets and Peoples must compress the gas purchased from Hope at its Brave Compressor Station, the contract with Peoples provides for payment by Hope to Peoples of 3¢ per M.c.f. so long as Peoples maintains its Brave Compressor Station.

4. Hope's delivery pressure obligations under its contract with River read substantially like those of its contract with Peoples and in practice deliveries are made at pressures of about 35 pounds.

5. Hope's Fayette contract provides that delivery pressures will be sufficient to meet the requirements of

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Fayette, which in practice has meant deliveries at field pressures of about 60 to 100 pounds at the delivery point at Wade on the West Virginia-Pennsylvania state line.

6. For several recent years Fayette has taken gas from an isolated Peoples system well in Fayette County, Pennsylvania, and Peoples has secured an equivalent amount of gas from Hope without charge over and above its contract takings. The gas so exchanged is billed as if delivered by Hope to Fayette at Wade.

7. In the case of Manufacturers, Hope's delivery pressure obligation is specified at not less than 60 pounds and in practice deliveries are made at field pressures ranging from about 60 to 70 pounds. It will be recalled that these deliveries are made at Bates in Doddridge County, West Virginia in the middle of Hope's own production system. These deliveries go immediately into the suction lines of Manufacturers' Sedalia Compressor Station which pumps this gas and Manufacturers' own local supplies for delivery in Pennsylvania and elsewhere.

(d) *In general*

1. From this brief review it will be noted that Hope's contract obligations both as to quantities and delivery

pressures vary substantially between its five major gas sales contracts, with its obligations to East Ohio and Peoples and its delivery pressures to East Ohio calling for substantially greater service than in the case of the other contracts.

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D. Annual Demands Resulting From Hope's Gas Sales Obligations

1. In view of the character of the Company's gas sales obligations, particularly its open-end obligations to East Ohio and Peoples, it is apparent that the extent of the demands upon the Company's system must be determined by an analysis of what has actually happened in addition to what the Company's various contracts say. This analysis requires an examination of the statistics as to both the annual demands upon the Hope Company's system and the peak load demands. This portion of this exhibit deals with the annual demands upon the Company's system and the next portion will discuss the peak load problem.

2. Co.X.2 at pages 2 to 9 sets forth the statistics as to these annual demands both in statement and chart form.

(a) *Annual demands from West Virginia consumers*

1. On page 2 of Co.X.2 there is shown the number of West Virginia consumers of Hope, the amount of gas sold in West Virginia for various purposes and in column (6) the total West Virginia sales, for the 40-year period 1899 to 1938. It will be noted from columns (2) and (3) that the number of domestic and commercial consumers as well as the amount of domestic and commercial sales has gradually increased over the years and Hope now supplies annually about 4½ billion feet to its own 42,000 consumers.

2. Column (4) shows the West Virginia industrial sales of Hope. In 1921, due to the depression of that year, industrial sales fell sharply. They did not again reach their pre-1921 level until 1936 and 1937. These West Vir-

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ginia industrial sales are largely steady load gas, principally because of the glass and some other similar industries whose normal operations are continuous.

3. In column (5) it will be noted that from 1902 to 1908 Hope's West Virginia field sales were very large, reaching a peak of 20 billion feet in 1904. They have now declined to less than 1 billion feet per year. In the boom period of oil and gas exploration in West Virginia large amounts of gas were sold in the field for drilling operations. It was burned in huge quantities under boilers. With the boom period over, there is no longer the demand for this gas in the field.

4. Column (6) shows Hope's total West Virginia sales. The relatively small proportion of Hope's total sales represented by these West Virginia sales appears from a comparison of columns (6) and (12). The chart on page 3 of Co.X.2 illustrates these figures, the various shades of blue representing the Company's various West Virginia sales.

(b) *Annual demands from Manufacturers and Fayette*

1. These two companies both belong to the Columbia Gas & Electric group. The only precise statistical information Hope has available as to them is its sales to each of these companies. Published reports, however, show that Manufacturers secures the greater part of its supply from sources other than Hope. Hope's yearly sales to these companies are set forth in columns (7) and (8) on page 2 of Co.X.2 and in graph form on page 3. It will be noted that the annual sales to Manufacturers were rather stead-

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ily around 9 billion feet from 1910 to 1915, both inclusive; then for two years were at 14 billion feet; for two more years at 12 billion feet; for two more years at 11 billion feet; for the succeeding ten years from 1922 through 1931

they were around 10 billion feet and in recent years have been from approximately 7 to 5 billion feet. It will also be noticed from column (8) that Hope's sales to Fayette County Gas Company follow a similar uniform pattern, the sales of the last ten years being less than 1 billion feet each year.

2. The reason for this consistency in groups of years is that the quantities to be delivered by Hope each year to Manufacturers have always been fixed in advance under the contract. The same situation has been true of the Fayette deliveries for many years. In the case of East Ohio and Peoples, however, Hope's obligation is to supply the requirements of their domestic consumers whatever these may be. A glance at the chart on page 3 of Co.X.3 will show that this open obligation to East Ohio and Peoples has produced great fluctuations up and down over the years in the sales by Hope to East Ohio and Peoples.

(c) *Annual demands from River*

1. The River Company was not physically connected with the Hope Company's lines until the year 1910 in which year Hope made its first deliveries to River. Co.X.2, pages 2 and 3, shows that Hope's annual sales to this small company have always been a minor portion of its total business.

2. In Co.X.2, page 4, is set forth the statistical information as to the amount of gas handled year by year

by the River Company and the source of that gas. It will be noted that while the River Company procured the major part of its supply from Hope down to and including the year 1921, since that time it has procured the bulk of its supply from its own production and purchases and that in the year 1938 it purchased from Hope less than ¼ billion feet. This same data is shown in chart form on page 5 of Co.X.2.

(d) *Annual demands from Peoples*

1. While the Peoples Company had been in business since 1885 it was not until 1904 that its lines were connected with those of Hope and deliveries of West Virginia gas began. The general territory in which Peoples operates has already been described. It had on December 31, 1938, nearly 124,000 (now by consolidation with another company, 149,000) consumers attached to its lines and in the last five years has handled an average of 17 billion feet annually of which 22% was purchased from Hope.

2. In Co.X.2, page 6, is set forth the total amount of gas handled by Peoples from 1903 to 1938, both inclusive, and the amount and percentage of that gas purchased from Hope and produced and purchased in Pennsylvania. This data is shown in chart form on page 7. Note that this Peoples chart is shown in billions of cubic feet per year, as is the subsequent East Ohio chart, whereas the preceding River chart was shown in millions of cubic feet.

3. Column (4) of page 6, Co.X.2 shows that the demand upon Peoples for gas was generally upward from

1903 until it reached a peak in the year 1916. In that year Peoples marketed almost 41 billion feet. From this point Peoples' sales dropped in three years to less than 26 billion feet and following the depression of 1921 remained in the neighborhood of 20 billion feet until the depression of 1931. From 1931 to 1935 they dropped to 15 billion feet or less, went up to nearly 21 billion feet in 1937 and in the year 1938 were again 15 billion.

4. Peoples' maximum annual sales in 1916 and for a year or two before and after were caused by the industrial demands of the World War when other fuels were both expensive and difficult to obtain. Over half of the gas sold in this period was for industrial fuel purposes.

5. Reference to column (3) shows that the amount of gas produced and purchased in the Pennsylvania fields

has varied widely from year to year. The discoveries that have been made in Pennsylvania over the years have not been as large as those that occasionally occurred in East Ohio's territory hereinafter discussed, but they boosted the Pennsylvania production available to Peoples from a low of 8½ billion in 1911 to a high of 20 billion in 1920, and have maintained an average of about 15 billion for the three years 1936-1938.

6. The effect of declining sales after 1916 plus the additional discoveries in the Pennsylvania fields is shown in column (2). Hope's deliveries to Peoples reached a peak of 26 billion in 1916, declined to 6½ billion in 1919 and have further declined in the last fifteen years to less than 4 bil-

lion. The decline from 1916 to 1919 and for a few years thereafter was in part caused by the inability of Hope and Peoples to supply fully the industrial demands of that period.

7. The decline in Hope's annual sales to Peoples from over 26 billion feet in 1916 to 6½ billion feet in 1919 was a reduction of 19½ billion feet. This decline was made up of 4½ billion feet increase in the quantity of gas taken by Peoples from the Pennsylvania fields and the remaining 15 million feet was a reduction in Peoples' sales as well as those of Hope. Since the World War period Peoples has been able to supply a larger percentage of its total requirements from the Pennsylvania fields than theretofore, with the result that Hope's annual sales to Peoples in recent years have ranged from 3 to 4 billion feet per year.

8. The percentages of Peoples' annual supply purchased from Hope shown in column (5) vary widely from year to year. Beginning with the first full year that Hope was supplying Peoples, viz. 1905, they show a range from 73% furnished in 1912 to 5% furnished in 1925. Taking the 36-year average Hope has supplied Peoples with 38.7% of its total annual requirements, but in the year 1938 sup-

plied less than 19% of its annual requirements. Under present conditions it is anticipated that Peoples will require larger annual deliveries from Hope than for some time in the past unless immediate discoveries are made in the Pennsylvania fields.

9. The graph on page 7 of Co.X.2 shows at a glance the large purchases made by Peoples from Hope between 1906 and 1918, the decline in those purchases since that

year and the increased quantities of gas obtained by Peoples from other sources than Hope between the years 1913 and 1931 and again from 1935 to 1937.

(e) *Annual demands from East Ohio*

1. East Ohio was Hope's first and has always been its largest customer. Both companies were organized in 1898, at which time East Ohio accepted its first franchise for distribution of gas in the City of Akron, Ohio. Other franchises followed soon after and at the present time East Ohio distributes natural gas in Cleveland, Akron, Canton, Massillon, Youngstown and other Ohio municipalities, in all over 60, and has almost 500,000 domestic consumers connected to its lines. In the last three years East Ohio has handled annually an average of about 47 billion feet of gas of which Hope has supplied 70%.

2. Page 8 of Co.X.2 shows the total amount of gas handled by East Ohio during the 40-year period 1899 to 1938 both inclusive, and the source of its supply. Page 9 shows this same information in graph form.

3. Attention is called first to the total amount of gas handled by East Ohio shown in column (4) on page 8. It will be noted that the quantities of gas handled by it each year increased rapidly and continuously from 1899 to a peak in the year 1916 when it handled 64 billion feet. In the next few years its sales dropped until for the past

20 years its sales have fluctuated from a low of 35 billion in 1932 to a high of 50 billion in 1937, the average for this period being over 42 billion feet.

4. In column (5) is shown the per cent of East Ohio's annual demands met by Hope deliveries and in column (6)

the per cent met by production and purchases in the Ohio fields. From column (5) it will be noted that down to the year 1913 Hope was practically the sole source of supply for East Ohio; that two years later in 1915 Hope supplied only 38% of East Ohio's requirements, the balance coming from the Ohio fields; that in the following year Hope supplied 70% and until about the year 1927 continued to supply about 75% or more at which time the percentage supplied by Hope again began to decline, reaching a low of 51½% in 1932. Since that time it has increased until it is now again approximately 70%.

5. These two low points in East Ohio's demand on Hope in 1915 and again in 1932 illustrate one of the hazards of a producing natural gas company, dependent upon distant and fluctuating markets, such as Hope is. As shown by column (3) East Ohio had no Ohio production or purchases of any consequence until the year 1913. At that time a large field of gas was discovered in Lakewood immediately adjacent to the City of Cleveland. It was developed largely by independent operators drilling on very small plots of ground with the result that the field was quickly developed and was quickly depleted. In 1914, the second year of the Lakewood field, East Ohio took in Ohio nearly 18 billion feet and the next year over 32 billion feet. Although its demands in these years, as shown in column (4), had constantly increased, the result of these large purchases in Ohio was to reduce purchases from Hope from 32 billion feet in 1913 to 20 billion feet in 1915.

6. After the flush production of the Lakewood field had been taken, East Ohio continued to obtain from the

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Ohio fields about 10 billion feet a year down to and including 1926. In 1927 a field known as the Franklin-Jackson field in Summit and Stark Counties was discovered. This field reached its peak in 1932 in which year East Ohio took 17 billion feet from the Ohio fields. Annually from 1929 to and including 1937 it has taken around 15 billion feet from the Ohio fields. In 1938 it took 12½ billion feet in the Ohio fields.

7. The effect of the discovery of this Franklin-Jackson field on Hope's sales to East Ohio is shown in column (2). In 1929 East Ohio called upon Hope for 32 billion feet but in 1932 for only 18 billion feet, a decrease of 14 billion. More significant still, East Ohio's demand declined 12 billion feet between 1929 and 1932, shown in column (4), while its purchase and production of Ohio gas increased 2 billion feet, shown in column (3). In other words, while East Ohio's market declined 12 billion feet in those 4 years it did not place this loss of market proportionately upon the Ohio gas and the Hope gas but increased its takings of Ohio gas and thus threw on Hope not only the entire shrinkage in the market but further curtailed Hope by several additional billions of increased takings from the Ohio fields. This aggravated the natural decline in Hope's business due to depression years.

8. Taking the average of the 40-year period East Ohio has been dependent upon Hope for its supply to the extent of 73.3% and was dependent upon Hope in the year 1938 to the extent of 70.7%.

9. Reference to the graph on page 9 of Co.X.2 shows at a glance the effect of the tremendous production obtained

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from the Lakewood field for a short time following the year 1913. It also shows the more gradual building up of the Ohio supply that followed the discovery of the Franklin-Jackson field in 1927. Actually these two discoveries from

a point of view of total volume are more nearly of equal weight than this graph would indicate. The Lakewood field was exploited wastefully and rapidly as a town lot development. Accordingly it quickly rose to a peak in 1915 and as quickly declined. On the other hand the Franklin-Jackson field was developed principally by East Ohio itself and one or two other large operators. The development was sound and economical with the result that the gas was drawn out steadily over a long period of years without waste.

(f) *Total annual demands on Hope*

1. Page 2 of Co.X.2 is a summary of both the total sales and total gas handled by Hope for the years 1898 to 1938, both inclusive; page 3 shows the same data in graph form. Column (12) of page 2 shows the total sales and the preceding columns the classification of those sales. Columns (13), (14) and (15) show the quantities of gas that the Company produced annually but which was not sold. This consisted of free gas to lessors where leases so provided, gas used by Hope in its own operations for drilling, operating compressor stations, etc. and leakage or unaccounted for gas which has been estimated in column (15) for each of the years. These totals added to the actual sales give the total quantity of gas handled.

2. Referring to the total sales of Hope in column (12) the peak year of 1916 is immediately apparent. It is also

apparent from pages 6 and 8 that Hope did not get its share of the increasing demands of 1914 and 1915. These demands were much larger on East Ohio than those of 1913. Yet Hope's sales in both 1914 and 1915 were materially less than in 1913. As already explained this was principally due to additional discoveries in Ohio. The tremendous decline in Hope sales between 1916 and 1919 stands out sharply.

3. The effect of the world-wide depression that began in 1930 and has continued intermittently since that time is clearly shown in column (12). Hope sales in 1932 and 1933 were a little more than 37 billion, rising from that to nearly 59 billion in 1937 but again declining to 48 billion in 1938.

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E. Daily Demands Resulting From Hope's Gas Sales Obligations

1. As heretofore indicated, under its public service and contractual obligations the Hope Company's first duty is to supply the domestic consumers of itself in West Virginia and of East Ohio and Peoples in Ohio and Pennsylvania. It has an open-end commitment as to these consumers and it is therefore important to an understanding of the Company's business and its actual obligations to know the character of the domestic demands upon Hope as distinguished from other types of businesses.

2. The outstanding characteristic of this domestic business is that it fluctuates widely from day to day with the weather and can only be determined to the extent that temperatures and wind velocities can be predicted. While annual industrial demands vary with general business activity, they are comparatively steady, day by day, and predictable in advance for current operating purposes. Principally by reason of the domestic demands the Company's actual sales obligations vary more widely on an hour to hour and day to day basis than on the annual basis heretofore discussed.

3. By way of illustration of this general situation, which is self-evident to natural gas men working in the Appalachian field, the charts on pages 10, 11, and 11A of Co.X.2 have been prepared. Page 10 shows the approximate day by day sales by Hope and East Ohio to the domestic and industrial consumers of these two companies for the year 1936. The combined East Ohio and Hope ap-

proximate daily industrial sales are shown by the light lines at the bottom of the chart and the approximate daily

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sales to domestic consumers by the black lines on the top of the chart. Page 11 shows the same type of statistics for the year 1938 and page 11A for the six months ended January 31, 1940. It might be noted that the East Ohio estimates reflected on these pages are based on inputs into the East Ohio system and a subtraction of estimated daily industrial sales, field sales and gas used in operations from the total inputs to ascertain the approximate daily sales to domestic consumers. This method considerably understates East Ohio's sales to domestic consumers on days of extreme demand. On such days part of the deliveries to consumers are of gas previously packed into the lines at high pressures which pressures fall as greater and greater demands are met.

4. Generally it should be observed that the year 1936 was a year of larger annual sales for both Hope and East Ohio than the year 1938 as will be apparent from columns (12) on page 2 and (4) on page 8 of Co.X.2.

5. From the chart for 1936 on page 10 it will be seen that generally during the first six months of that year the industrial demand on Sunday of each week did not vary greatly from 60 million M.c.f. On Mondays this demand rose to about 70 million. On Tuesday, Wednesday and Thursday, it held between 70 and 80 million. On Friday the demand dropped back to below 70 million, and on Saturday to between 40 and 50 million. The pattern for each week is the same. On only three days during these six months, including the very severe weather of January and February of 1936, did it exceed 80 million feet.

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6. During the last half of the year 1936 the pattern is much the same and the quantities are the same except that somewhat increased industrial activity is indicated by the

fact that on some week days of the last three months of the year the demand rose slightly above 85 million.

7. For the year 1938, shown on page 11 of Co.X.2, the pattern of industrial demand each week is again the same, although the industrial demands throughout that year were lower than in 1936. In the first half of 1938 it was only an occasional day when the demand exceeded 60 million. This situation continued until the fall of that year when the demand increased slightly but reached 80 million on only one day.

8. The domestic demand on the other hand varied widely from month to month and from day to day. As shown on page 10, on February 18, 1936 the domestic demand was around 180 and on February 19 it was 185 million although February 25 it was only 105 million, a drop of 80 million per day in less than a week.

9. If we compare the week beginning February 16, 1936, with the week beginning August 16, 1936, immediately below it on the chart, page 10, it will be observed that the industrial demand was about the same day for day in August that it was in February, beginning at about 55 million on Sunday, rising to 70 on Monday and holding there on Tuesday, Wednesday and Thursday, declining to about 60 million on Friday and to 40 million on Saturday. The domestic demand, however, for August on Sunday, the 16th, was only 30 million compared with 135 for the corresponding Sunday in February. On August 17, it was 55 compared with 140 in February. On the 18th it was be-

tween 55 and 60 compared with 180 million. On the 19th it was 50 million compared with 185. On the 20th it was 55 million compared with about 170. On the 21st it was 45 compared with 170 and on the 22nd it was 55 compared with 165.

10. Taking these corresponding weeks in February and August in their totals, the domestic demand for the

week in August was 350 million and for the corresponding week in February was 1150 million or over three times as great. The totals of these same weekly demands in February and August for the industrial consumers were about the same.

11. As to the temperatures prevailing during the years 1936 to 1938, the months of January and February of 1936 were much colder than January and February of 1938 and it will be noted from a comparison of the charts at pages 10 and 11 that the demand for domestic gas was much greater in these months during 1936 than in similar months during 1938.

12. The most recent severe cold spell experienced by the Company occurred in January 1940 and the chart appearing at page 11A of Co.X.2 shows the estimated daily sales to domestic and industrial consumers by Hope and East Ohio for the six months ending with January 1940. For the last two days of December 1939 and for January 1940 these figures exclude sales by Hope which were formerly made by Reserve Gas Company whose properties Hope acquired on December 30, 1939.

13. Comparing January, 1940 on page 11A with January and February, 1938 on page 11 and January and February, 1936 on page 10, it will be observed that East Ohio's and Hope's total daily sales to domestic and industrial consumers reached greater peaks and with more fre-

quency in January, 1940 than in either the comparatively mild winter of 1937-1938 or the extremely cold winter of 1935-1936. For example on at least six days in January, 1940 the combined domestic and industrial sales exceeded 260 million cubic feet whereas 260 million cubic feet was approached only once in the periods covered by the preceding charts, namely on January 23, 1936 as shown on page 10.

14. Comparing the black bars in these charts, which show the combined domestic sales of the two companies, it will be observed that the demands of domestic consumers were substantially higher in January, 1940 than during the last severe cold spell during January and February, 1936. During 1936 the combined domestic demand never exceeded 200 million cubic feet. On January 19, 1940 it exceeded 225 million cubic feet. Actually, as noted above, both the 1936 and 1940 sales to domestic consumers on peak days were considerably larger than the figures shown on the charts by reason of the fact that the East Ohio domestic estimates are based on input figures and do not take into account gas sold from line pack. Thus on January 18, 1940 East Ohio's system inputs were about 230 million cubic feet, whereas a study of meters measuring gas going into East Ohio's city distribution plants indicated total sales on this day were about 242 million cubic feet.

15. The chart on page 11a again illustrates the comparative steadiness of industrial demands as between the winter and the summer months and the extremely fluctuating character of domestic demands which was commented upon above in connection with the 1936 chart on page 10. Also attention might be called to the fluctuations that oc-

cur in domestic demands even during such cold months as January, 1940. On January 13 the combined East Ohio and Hope domestic demand was only 114 million cubic feet, this being on a Saturday. On the following Friday, January 19, the domestic demand exceeded 225 million cubic feet.

16. As later explained, so great were the demands of domestic consumers during the period January 18 to January 21, 1940 that East Ohio had to curtail drastically its sales to industrial consumers, and it was only by such curtailment, the industrial curtailments by Peoples and the curtailment by Hope of Manufacturers that the demands

of domestic consumers were met. The light bars for January 18, 19, 20 and 21, 1940 on page 11A show the effect on industrial sales of this curtailment.

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F. Method of Operating Hope's Properties

1. The Hope Company's properties have been developed and are operated to meet its gas sales obligations as heretofore described. As will be apparent, its operating problems and the extent of the gas supply which it must have available are dependent not only upon its annual delivery obligations but upon the varying daily and hourly demands which it must meet.

2. As heretofore stated, the demands which Hope is obligated to supply come generally from two classes of consumers, domestic and industrial. Industrial demand does not vary with the weather but with industrial conditions. Thus in years of great industrial activity such as 1916, 1929 and 1937 it is relatively high and conversely in periods of industrial depression such as 1921 and 1932 it is low, but at all times it is fairly uniform throughout the seasons and from week to week.

3. The domestic load on the other hand depends on the weather. As noted above, through June, July and August of each year it is a fairly steady load for cooking, hot water heating and refrigeration that does not vary widely from day to day, but during the balance of the 12 months, and particularly in the wintertime, it increases or diminishes rapidly. Freezing temperatures and a high wind off Lake Erie cause instant demand from East Ohio's domestic consumers for all the gas that Hope lines can carry. So with falling temperatures and winds in Western Pennsylvania. A few days later the wind dies down, more moderate temperatures prevail and the demand on Hope goes off accordingly.

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4. Hope may thus be called upon to handle on a peak day more than 325 million cubic feet and a few days later be handling only two-thirds of that amount and in the summer following less than one-fourth that amount.

5. These demands that may rapidly increase and as rapidly diminish must be met by turning on and turning off wells in the producing fields. In order that Hope's methods of keeping itself informed as to these varying demands and of operating its properties to meet them may be understood some discussion of its operating methods are necessary.

6. Hope's main office is in Clarksburg, West Virginia. From this office all field operations are directed. Located there are gas dispatchers on duty 24 hours of each day throughout the year. Their duties are extensive.

7. Hope has its own telegraph and telephone system and the dispatchers are in touch at all hours of the day and night not only with every part of Hope's system but with many points of consumption on the Peoples and East Ohio systems.

8. It is the gas dispatcher's responsibility to order wells owned by Hope turned on and off as the fluctuating load on the Company's system demands. When there is needed more gas at points of delivery the dispatcher likewise orders on additional engines in the various compressor stations so as to increase the amount of gas flowing through the system.

9. As an illustration and referring to the map, Co.X.1 and 1A, if the gas dispatcher at Clarksburg finds that he needs additional gas coming into Hastings Station he may order more compressors started in Smithburg, Schutte

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and Jones Station to increase the flow of gas to Hastings. At the same time he will have to start more engines at Hastings to get the gas away to Cleveland. When he orders

compressors on at Jones, for instance, ordinarily he would also order more wells turned into the lines in the vicinity of Jones in order to supply the Jones Station engines with sufficient gas to pump. The same is true of the 47 stations in the Hope system which are handled the same way.

10. On a hard pull the dispatcher has practically all the engines and all the compressor stations on the Hope system running. Then when the weather moderates the dispatcher has to reverse the whole process, shut down the compressor station engines and take off wells in the field. He will frequently take hundreds of wells off the line in one day due to warm weather coming in the middle of the winter, and a few days later put them all back on. In other words he must meet from hour to hour and day to day the demand coming on the entire system and frequently these changes in demand come with little, if any, advance notice.

11. Hope's producing territory in West Virginia is divided into 15 working districts, each having its own headquarters. During the daytime the gas dispatcher can get in touch with the district office to orders wells on and off. During the night there are at least two or three men in each district who have Company telephones in their homes where the gas dispatcher can get hold of them and these men can get in touch with the well tenders and get their men out. In winter full crews are maintained at compressor stations. Every compressor station on the system that

is operating reports to the gas dispatcher at Clarksburg every hour of the day and night telling how many engines are running and the suction and discharge pressures and the pressures carried on each engine. The dispatcher can thus tell at all times what the pressures are on the entire system and whether his orders to start or stop engines have been carried out.

12. The gas dispatcher also at all times knows the number of wells on the line and where these wells are located. If he orders 100 wells on in a certain district the district headquarters immediately sends out men to turn these wells on and as soon as they are on the line the district reports back to the dispatcher stating the wells that are then feeding on the line. In the same way wells are turned off and reported back to the dispatcher. In consequence he knows at all times how many wells he has feeding into the system.

13. Hope, of course, has not the same control over the wells of its vendors. With the exception of its first contract with Godfrey L. Cabot in 1918 in which uniform daily takings throughout the year were required, its major gas purchase contracts call for certain deliveries in the wintertime and for lesser amounts in summer, usually one-half to one-third as much. These deliveries are in both instances in nearly uniform daily amounts, i.e. a uniform amount during the winter season and a uniform amount during the summer season. On the average about 60% of the Company's purchased gas is taken in the winter and about 40% in the summer. In consequence the dispatcher at Clarksburg knows just about how much purchased gas

on any day is coming into the system and he uses Hope's own production which alone is fully under his control to make up the difference between this purchased gas and the demand.

14. The gas dispatcher also not only gets hourly reports from the compressor stations as above stated but he also receives reports of the pressures at Clarington and Round Bottom on the Ohio River, at Price Farm and Gross Farm along East Ohio's system and at Dunham and Richardson Stations at Cleveland. He also gets the pressures at Gross Farm for East Ohio's lines running east to Youngstown. Hourly reports as to temperatures at Cleve-

land and Pittsburgh are likewise wired to the dispatcher, as well as the Weather Bureau's daily forecast for these cities, which are transmitted to him as soon as received.

15. When these hourly reports show pressures dropping, for example on the East Ohio system, the dispatcher immediately has Hastings start up more compressors to increase pressures at Clarington and Round Bottom. When he does this he necessarily starts more engines in compressor stations in the field and turns on more wells in order to get more gas to Hastings. He does the same thing with respect to the Peoples system, getting pressure reports not only from Brave Station but also from Pittsburgh. He likewise watches pressure conditions on the Hope system at various points of distribution.

16. The gas dispatcher thus has the responsibility from hour to hour of routing the gas supply to the points which have the greater need for gas. For instance if he finds there is a more severe pull on the East Ohio system

than on the Peoples system, he can switch more gas toward Hastings, or in case East Ohio is not pulling so heavily on the gas supply, he can switch additional gas to the Peoples Company. Also, for example, if Parkersburg is making a hard pull on the gas supply, the gas dispatcher can divert certain compressor stations to the use of the Parkersburg system and, when this Parkersburg demand declines, he can turn these compressing stations around by manipulation of gates so that they will pump to Hastings Station. It also is the gas dispatcher's duty, in cases of apparent shortages of gas, to carry out the decisions of the operating officials as to ordering factories turned off and curtailing deliveries to the purchasers who are subordinate to the primary rights of the Hope, East Ohio and Peoples domestic consumers.

17. The Charts, pages 12 to 16 of Co.X.2, indicate the approximate daily gas requirements upon the Hope system

(exclusive of free gas to lessors) supplied respectively by produced and purchased gas for the period July 1935 to the end of January 1940, both inclusive. Each block of seven vertical lines is a week beginning with Sunday. The light lines toward the bottom of the chart show the amount of purchased gas each day and the solid black lines the amount of gas produced by Hope from its own wells.

18. It will be noticed at once from the upper half of the chart on page 12 for the period July 1935 through June 1936, that the amount of purchased gas was fairly uniform at about 70 to 80 million feet of gas per day until the end of October at which time it increased to about 120 million feet per day. During the great pull on Hope's system in late January and in February it increased to around

140 million and remained at about 130 million in March and April. May 1st the reduced summer takings began.

19. This change between the winter takings of purchased gas and the summer takings is characteristic of practically all Hope's major contracts which provide for smaller takings in summer than in winter. Generally in May, June or July Hope tries to get the scheduled summer deliveries out of the way as rapidly as possible in order to cut down during August when it will be noted deliveries dropped below 80 million per day. In the latter part of September and in October Hope attempts to make up any deficiency existing in summer deliveries. On November 1st winter deliveries are again resumed.

20. This system of having fairly regular deliveries each day from vendors requires the Hope production system to meet all of the fluctuations up and down of the total demands above this purchased gas and makes very large fluctuations in the amount of Hope's own gas that is sold from day to day.

21. For example it will be noted from the chart on page 12 that the amount of Hope's own production during

the months of July, August and September, 1935, was sometimes more than 75 million feet in one day and was sometimes practically zero. Also, it varied widely from day to day.

22. About January 23, 1936, for a period of a month Hope was faced with a most serious peak load situation caused by sub-zero temperatures in the Appalachian regions and it is perhaps worthwhile to take time to notice how it met those demands.

23. It will be noted from the chart on page 12 that as late as January 19 the total demand on the Hope system was about 200 million feet per day which was met by about

125 million purchased gas and 75 million produced gas. On January 23 the demand rose to about 290 million feet which was met by about 140 million of purchased gas and 150 million of produced gas. On January 27, and again on January 31, the demand was practically 300 million feet, of which 140 to 150 million was purchased and the balance produced. Then on February 19 the demand rose to 308 million feet, of which 143 million was purchased and 165 million produced. It should be noted that 3 days before, to-wit February 16, the demand was less than 220 million and 4 days later the demand was 200 million. In this period of excessive demand in late January and well through February, 1936, Hope did procure some slight help from its gas purchase contracts, deliveries of purchased gas being slightly increased during that period. But the major fluctuations up and down had to be met by Hope's own wells which were called upon to deliver as high as 165 million feet a day although six days later they were delivering less than 55 million.

24. Hope had to meet an unusual condition on January 22, 1936. At one o'clock in the morning of that day the temperature was 28° above zero in Cleveland with just a

normal winter load on the Hope system. The temperature rose to 32° at 4:00 A. M., held around there until 7:00 A. M. and then dropped 11° in two hours. At about that time Hope received word that a severe storm with lower temperature was headed toward Cleveland. By 6:00 P. M. the temperature had dropped to 4° below zero and at 10:00 P. M. it was 10° below. The same thing happened at Pittsburgh. This storm hit the two communities unexpectedly with only a few hours notice and it was necessary for Hope to call its well tenders late in the afternoon and have them work all night in a blizzard turning on wells.

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25. On page 17 of Co.X.2, is shown day by day the number of Hope's wells, the wells available for use, i.e. not undergoing repair, below line pressure or otherwise unavailable, and the wells in use, i.e. turned into the line, during the winter of 1935-1936. It will be noted from column (7) that on January 21 Hope had 2,438 active wells turned into its lines. In the afternoon of the 22nd it called out its well tenders, had them work all night and on January 23 had 3,296 active wells on the line out of a total of 3,317 wells available for use. It will further be noted from the remaining figures in column (7) and those in column (10) that Hope kept substantially all available wells on the line until February 23 when the cold snap had abated and for the rest of the winter all demands were met by less than 2,500 wells.

26. The demands upon the Hope system shown by the succeeding charts, pages 13, 14, 15 and 16, never at any time exceeded 272 million feet per day until January, 1940, shown by the chart on page 16. As a matter of fact all the winter weather there shown until January, 1940, was moderate and less severe than normal.

27. During January, 1940, the Company was required to meet demands upon its system more severe than even those of January and February, 1936. On January 18,

1940, due to sub-zero temperature accompanied by stiff winds in Cleveland, Pittsburgh and elsewhere, the total demands upon the Company's system, exclusive of its sales obligations under the former Reserve Gas Company contracts, for the one day exceeded 323 million. This was

the greatest demand made on the Company's system since the World War period. This demand was met by 148 million feet of purchased gas and 175 million feet of produced gas from Hope's own wells, exclusive of the former Reserve Gas Company's wells. Even so, in order to meet the demands of domestic consumers, it was necessary for East Ohio and Peoples to curtail industrial users in Ohio and in the Pittsburgh district. Sales by East Ohio to both large and small industrial consumers were severely curtailed from Friday, January 19, to Monday, January 22, 1940, at which time the severe weather had somewhat abated. On January 19 East Ohio's curtailment and shut off orders affected deliveries to about 60 industrial plants. During this same period Hope's deliveries to the Manufacturers Light & Heat Company were curtailed.

28. The chart on page 16 shows this January, 1940 situation graphically and the tabulation of wells on page 22 which covers the entire year of 1939 plus January, 1940, indicates how all available Company wells were turned into the line and kept there continuously during the severe demands of January, 1940 in order to meet the Company's obligations to the extent they could be met. In particular the figures for January, 1940 on the chart at page 16 should be compared with those for July, 1939 appearing immediately above. This comparison illustrates both the tremendous differences as between the summer demands and the cold winter demands which the Company must be prepared to supply, and the manner in which winter peaks must be met from its own producing wells.

29. This method of meeting the Company's obligations which has been described—relying upon purchased gas for

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rather steady deliveries from day to day and calling upon Company produced gas to make up the fluctuations in the total demand both up and down—is one of the operating difficulties and business hazards of the natural gas business. It is not normally possible to make favorable gas purchase contracts in West Virginia unless the buyer agrees to take regular deliveries of gas from the seller. The independent gas producer who has no public utility obligations makes his investments in leases and wells with the idea of recovering as much gas as rapidly as possible. He is not interested in conserving his supply for peak loads or in deferring deliveries. To propose to him a contract that he deliver gas in accordance with the extremely varying daily, monthly and annual requirements of Hope's business would not interest him at any reasonable price.

30. The consequence is that the large purchasers of gas in the West Virginia field are required to make a firm commitment for all the gas produced by the independent producer, with sometimes a maximum daily commitment, and to continue those purchases during the life of the wells. The only recognition of varying demands that the buyers have been able to procure is the variation between the winter and the summer takings.

31. It should also be pointed out that the independent producer operates his own wells. If Hope were dependent upon him to increase production rapidly in times of peak demand there would be no way of insuring his compliance with any such obligation. To turn on wells for a few days of peak demand is costly and requires the maintenance of

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a separate organization for this purpose. An independent operator has no incentive for incurring these additional costs or for selling in such an irregular market.

32. It has therefore become customary in the natural gas industry for those companies that have public utility obligations for service to take care of the fluctuations in demand from their own producing fields. This enables them not only to meet peak demands promptly but to buy gas from an independent operator at a lower price than they otherwise would be required to pay.

33. At present Hope must hold itself in readiness at all times to meet a peak demand of 325 million feet or over, exclusive of the former Reserve Gas Company sales. From its contract vendors it can count on about 165 million feet. The balance of 160 million or more must come from its own wells. This means on winter days when the demand is for 200 million, Hope can sell only 35 million of its own gas and must hold in reserve 125 million feet for days of larger demand.

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SIGNED at Clarksburg, West Virginia, this March 19, 1940.

LORING L. TONKIN.

6. COMPANY WITNESS RHODES' EXHIBIT NO. 16-A ENTITLED: "Reproduction Cost New of Company Properties as of December 31, 1938—Written Statement of George I. Rhodes and Summary"

Table of Contents

PART F [Not Printed]

TRANSMISSION PLANT (continued)

Account 354-2 Compressor Station Equipment (continued)

Compressor Stations:

PART G [Not Printed]

TRANSMISSION PLANT (continued)

Account 354-2 Compressor Station Equipment (continued)

Compressor Stations:

PART H [Not Printed]

TRANSMISSION PLANT (concluded)

PART I [Not Printed]

GENERAL PLANT

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STATEMENT OF EXPERIENCE AND QUALIFICATIONS OF GEORGE I. RHODES

1. Name, address and age

George I. Rhodes, 239 Forest Avenue, Glenn Ridge, Essex County, New Jersey; age 56.

2. Education and professional societies

Massachusetts Institute of Technology (B. S., 1905). Member of American Gas Association, American Society of Civil Engineers, and American Society of Mechanical Engineers and Fellow of American Institute of Electrical Engineers.

3. Present position

Vice President and Director of Ford, Bacon & Davis, Inc., an independent firm of engineers that has been engaged since 1894 in the design, the supervision of construction, the construction itself and the operation of industrial properties, natural gas properties and other public utility properties; as well as in valuation work and the preparation of reports relating to cost estimates for proposed construction, for proposed corporate mergers, and for sale and purchase of properties and of reports relating to other general engineering and corporate matters; also Vice President and Director of Ford, Bacon & Davis Construction Corporation, a wholly owned subsidiary, engaged directly in the construction of such properties.

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The firm in addition to design and construction work has made valuations of more than $8,000,000,000 in properties in the last twenty years of which more than $1,250,000,000 have been gas properties. Among its important clients other than utilities and affiliates of Hope Natural Gas Company have been:

American Locomotive Company
American Radiator Company
American Rolling Mills Company
American Smelting & Refining Company
Armstrong Cork Company
Atlantic Refining Company

Borden Company
Botany Consolidated Mills, Inc.
Cities Service Oil Company
Crane Company
Endicott Johnson Corp.

General American Tank Car Corp.
General Cable Corp.
Ingersoll-Rand Company
B. B. & R. Knight Corp.

National Lead Company
National Refining Company
North American Cement Corp.
Pennsylvania-Dixie Cement Corp.
Phillips Petroleum Company
Plymouth Oil Company
Pure Oil Company

Quaker State Oil Refining Corp.
Remington Arms Company, Inc.
John A. Roebling's Sons Company
Scott Paper Company
Socony-Vacuum Oil Company, Inc.
Solvay Process Company
Susquehanna Silk Mills

Texas Corporation
Tide Water Oil Companies
Union Carbide & Carbon Corp.
United Air Lines Transport Corp.
United States Steel Corp.
Winchester Repeating Arms Company
Worthington Pump & Machinery Corp.

United States Government:

War Department
War Industrial Board
Alien Property Custodian
Emergency Fleet Corporation
Reconstruction Finance Corporation

(Loaned Chief Engineer for 2 years)

United States District Courts of:

Colorado, Delaware, Illinois,
Louisiana, New Jersey,
Southern District of New York,
Western District of Pennsylvania,
Eastern District of Pennsylvania

State of Louisiana, New Orleans Port Commission
State of New Jersey, State Tax Board
New Jersey Port and Harbor Development Commission
Port of New York Authority
Cook County, Ill. (Chicago), Department of Highways
Suffolk County, New York, water supply department

City of Chicago, water supply department
City of Indianapolis, municipal gas department
City of Los Angeles, municipal power and water departments
City of New York, Tax Commission
City of Philadelphia, Department of Transit
City of Seattle, Department of Lighting

4. Employment and experience other than in the natural gas business

(a) Summers while a student at Massachusetts Institute of Technology, surveyor in water works construction and laborer in public utility construction.

(b) 1905-6—Instructor in Electrical Engineering Laboratories of Massachusetts Institute of Technology.

(c) 1906-1911—Motive Power Department of Interborough Rapid Transit Co., New York, N. Y., at time of termination of employment being electrical engineer, having charge of all electrical design and, in addition, the construction and operation of all underground conduit and cable facilities of the motive power department of that company.

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(d) 1911-1917—Consulting engineer in the Boston office of White Weld & Co., investment bankers, examining and reporting upon properties financed or about to be financed, or in respect of which changes in securities deposited under collateral mortgages were required or contemplated; and, in addition, participating in the executive direction of construction, development and operation of certain gas and electric properties controlled by or operated under the direction of one of the partners of that firm.

(e) 1917 to date—With Ford, Bacon & Davis, Inc., having general charge of all preliminary reports and estimates of proposed projects, all design and all construction work carried out by that firm, giving particular attention to power systems, both steam and hydro, to industrial plants and to bridges, in addition to the natural gas work outlined below.

5. Experience in the natural gas and allied businesses

In 1923, made an estimate of the gas reserves of the Monroe (Louisiana) Gas Field, as a result of which financing was arranged for the construction by Ford, Bacon & Davis, Inc. of the natural gas burning power station of Louisiana Power & Light Co., consuming more than 30,000,000 cubic feet per day.

Working cooperatively with an associated Vice President, E. G. Hill shared responsibility with him in various degrees in all natural gas development work carried out

under the direction of Ford, Bacon & Davis, Inc. and Ford, Bacon & Davis Construction Corp., included in which are the following:

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Edmonton, Alberta, complete natural gas system, preliminary reconnaissance, design, supervision of construction and operation of completed property.

Monroe to New Orleans pipe line system with *Compressor stations, preliminary reconnaissance, purchase of gas reserves, design, construction and the operation of completed system.

Amarillo to Denver pipe line system with gasoline plant and compressor stations, *preliminary reconnaissance, design, supervision of line construction, actual compressor station and gasoline plant construction and the operation of completed system.

Monroe to Memphis and Jackson, Tennessee pipe line system construction.

Monroe to Eldorado (Arkansas) pipe line system construction.

*Monroe to St. Louis pipe line system *preliminary reconnaissance and *construction of pipe lines.

*Monroe to Atlanta pipe line system with compressor stations, *preliminary reconnaissance, *design, *supervision of line construction and *actual compressor station and *Mississippi River crossing construction, and the operation of completed system.

*Amarillo to Chicago pipe line system, preliminary reconnaissance, designs and costs estimates for one group of its promoters.

*Kansas section of Amarillo to Chicago pipe line *construction.

Illinois section of Amarillo to Chicago pipe line construction.

*El Paso to Douglas, Arizona and Cananea, Mexico pipe line system with compressor stations, *preliminary reconnaissance, *design and *supervision of construction.

*Amarillo to Kansas pipe line system, *design and *cost estimates of possible system contemplated to serve large part of State of Kansas.

*Amarillo to East St. Louis gasoline pipe line system with pumping stations, *design and *inspection of construction.

East Texas oil field to Shreveport oil pipe line construction.

Note: *Had prime responsibility on items marked with an asterisk. Associated Vice President E. G. Hill had prime responsibility on other items.

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Charleston, West Virginia to Kentucky state line, a liquid propane pipe line, design and construction.

Toledo to Detroit gasoline pipe line construction.

Philadelphia to Reading, Pennsylvania gasoline pipe line construction.

Other miscellaneous natural gas, gasoline and oil pipe lines, primarily construction, aggregating several hundred miles in length.

The properties and parts of properties so constructed under the direction of Ford, Bacon & Davis, Inc. cost more than $125,000,000. In the case of certain of the properties included in the above costing more than $60,000,000 the operating organizations were built up and the properties operated by Ford, Bacon & Davis, Inc. for various periods of years.

Since the fall of 1935, have been principally engaged on matters relating to valuation, cost determinations and analyses of operations of natural gas properties.

For ten years or more have given particular attention to pipe line corrosion problems and resulting depreciation. Also made intensive technical, electrical and mathematical studies of corrosion phenomena as related to the life of pipe lines and have cooperated with the United States Bureau of Standards in such matters.

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WRITTEN STATEMENT OF GEORGE I. RHODES

1. Employment By Hope Natural Gas Company

Ford, Bacon & Davis, Inc., was employed to determine the reproduction costs new and less depreciation of the properties of the Company for the purpose of the proceedings before the Federal Power Commission in which this exhibit is presented. It has in recent years made such determinations of cost of properties of the Company in connection with rate cases of The East Ohio Gas Company, an affiliated company, before the Public Utilities Commission of Ohio.

From the beginning of the present work I have been in responsible charge of it. The detail work has necessarily been done by a staff of engineers, accountants and clerks.

The principal engineers and accountants comprising this staff are regular employees of Ford, Bacon and Davis, Inc. Their number exceeded 30 at times of greatest activity when field and office work overlapped. They were assisted by upwards of 40 others engaged for the purpose. Regular employees of the Company have assisted on matters where special familiarity with the records or the property was needed to carry out the work. This staff began work in March, 1939 and has been continuously engaged since in preparing the data and making the estimates described and summarized in this exhibit.

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This exhibit gives the results of this determination of reproduction cost new and the inventory of the properties included in the determination and is divided into nine parts as follows:

PART A: Written Statement and Summary

PART B: Natural Gas Production Plant:
Account Nos. 330-1, 330-4, 330-5, 331-1, 331-2, 331-3 and 332-1

PART C: Natural Gas Production Plant:
Account Nos. 332-2, 333-1, 333-2, 334 and 337

PART D: Transmission Plant:
Account Nos. 351-12, 351-23, 352-2, 352-3, 352-4 and 353

PART E: Transmission Plant:
Account No. 354-2

PART F: Transmission Plant:
Account No. 354-2 (continued)

PART G: Transmission Plant:
Account No. 354-2 (continued)

PART H: Transmission Plant:
Account Nos. 354-2 (concluded), 354-3 and 354-4

PART I: General Plant:
Account Nos. 370, 371, 372, 373, 374, 375, 376, 377, 378 and 379

Reproduction cost new less depreciation is set forth in a separate Company exhibit.

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2. The Properties of the Company Covered by This Reproduction Cost Determination

The properties and operations of the Company are fully described in Exhibits Nos. 1, 2, 3 and 4 by Mr. Loring L. Tonkin, President of the Company, and these property descriptions need not be repeated here.

The reproduction cost estimate set forth in this exhibit includes the properties of the Company which comprises its production and transmission plants and jointly used general plant, with the exceptions here noted. It excludes natural gas leaseholds and rights, working capital and going concern value. It excludes the pipe lines, compressor station and related properties used to transport coke oven gas purchased from Domestic Coke Corporation which is used by the Company as boiler fuel in connection with its natural gas operations. It also excludes those properties, includ-

ing distribution and general, used solely for distribution of gas in West Virginia.

The items of property covered by this estimate have been classified by the Company in accordance with the new uniform system of accounts for gas utilities prescribed by the Public Service Commission of West Virginia, effective January 1, 1939. This classification is similar to the uniform system of accounts for natural gas companies adopted by the Federal Power Commission, effective January 1, 1940. In this exhibit such classification by the Company has been adopted and the summary shows the new account numbers. For reference purposes the summary also shows the corresponding old account numbers under the West Virginia uniform system of accounts which became applicable to the Company on January 1, 1923.

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3. Inventory of the Properties Covered by This Reproduction Cost Determination

The inventory of the operating units of the Company's properties used in this reproduction cost determination is as of December 31, 1938 and is the inventory prepared for use in connection with the determination of original cost under the new West Virginia classification of accounts.

This inventory is based on the Company's investment ledgers and other records, including those of the accounting department, those of the engineering and geological departments and those of the operating departments, and was coordinated and verified as necessary by field checks, inspections and surveys. In the process of verification use was also made of a detailed inventory of the Company's properties as of June 30, 1931 which was made and agreed upon in the 1931 *East Ohio-Cleveland* rate case before the Public Utilities Commission of Ohio by engineers representing the City of Cleveland, engineers of the Ohio Commission and Ford, Bacon & Davis, Inc., representing The East Ohio Gas Company.

Each operating unit of property was identified as to description and dimensions on the books and records of the Company and where necessary by engineers in the field. The several Company records relating to each such unit of property were compared and adjustments made for errors where found. Where appropriate the former agreed inventory relating to each such unit of property was checked in the field and was adjusted in detail to reflect all additions and removals from June 30, 1931 to December 31, 1938. An extensive field check was made of agreed quantities of work

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entering into the construction of many units of property as shown in the 1931 inventory, as a result of which these quantities were found satisfactory for determining the reproduction cost of the property.

All the Company's major lines had been surveyed as a matter of Company record. The actual lengths of 265 miles of other pipe lines were determined by measurements to verify the Company's records. These new surveys confirmed the substantial accuracy of the Company's records relating to these lines.

Inventories of buried equipment such as valves and fittings in pipe lines and in compressor station yards were made from records and drawings and verified in the field to the extent possible. They could not of course be uncovered for measurement or detailed count. In making such inventories the identifiable groups of valves and fittings in necessary use were listed and details making up such assemblies were used in accord with accepted Company and industry practice.

The inventories so prepared and checked constitute the basis of the original cost determination referred to above and the basis of the reproduction cost determination here presented. The inventories in both cases are identical as to operating units of property.

4. Basic Procedure Followed in This Reproduction Cost Determination

This reproduction cost estimate of the Company's properties included in the inventory determined as set forth above is that which would be incurred through its reproduction for a newly-organized independent corporation as a major construction operation on a three year construction program. The estimated cost of raising the funds to pay for such construction has not been included.

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The cost of reproduction is that applicable to the inventory of the Company's property as it existed on December 31, 1938 with labor rates and material prices those prevailing during the winter of 1938-1939 and with labor and equipment performances those of current experience. Since that time the level of these rates and prices has remained substantially the same.

The general methods of construction commonly used in large developments were applied in determining the reproduction cost of the Company's property. The Company would purchase all materials such as pipe, well equipment and compressor station equipment, etc. entering permanently into the construction, except building materials and like details. All such major materials would be delivered to contractors at nearest railroad sidings and the contractors would make the installation. In all building and miscellaneous construction, however, the contractors would furnish materials as well as labor. The installation of field meters and regulators and like detailed work closely associated with placing the property in operation would be carried out by the Company's own forces.

Material and equipment prices used are those quoted by manufacturers or vendors for materials and equipment of the specifications and quality used in the actual construction of the property. Prices were requested reflecting actual sales prices at the best discounts for materials and

equipment in the quantity required and reflecting the full purchasing power of an adequately financed construction operation of the size involved. Where equipment was no longer being manufactured as specified the costs of superseding equipment at lowest quoted prices of competent

manufacturers were used as a basis of pricing. Wrought iron pipe was priced as steel pipe. Well casing used as pipe was priced at the price per pound of line pipe, which is lower than that of casing.

Freight rates on material were equalized to average destination of that material so that in the priced inventory like items of equipment in different locations are priced at the same cost.

The labor rates used were the result of an extensive investigation of wages prevailing before and after the end of 1938 in construction work and in industry in and about the territory occupied by the Company's property.

Based on that investigation the labor rates used were chosen as those required to provide the number of men necessary to carry out the construction program, estimated to reach about 13,000 at the peak of construction. The wages of common labor which dominate in the cost of constructing a natural gas property were taken at 45 cents per hour. Appropriately higher wages were taken for semi-skilled and skilled labor, straw bosses, working foreman, foreman, etc., all in accordance with the practices of the construction industry.

Unit costs were developed to reflect the construction conditions prevailing in the territory occupied by the Company's property as determined by an extensive field survey made for the purpose. The use of construction machinery was included wherever economical. These unit costs were developed for a considerable number of types of buildings and of classes of equipment and assemblies which were given identifying numbers. Reference to these types and

classes by number appear in the priced inventory opposite each item to which they were applied.

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In the priced inventory there are no allowances for contingencies and omissions other than those included in the unit costs. The unit costs of specified items of machinery and equipment are the costs as quoted by manufacturers plus freight to average points of delivery and an allowance for miscellaneous material costs described below. The other unit costs involving labor alone or labor and material were developed from basic operations by the use of methods described below in appropriate sections covering each of the several major classes of property. The typewriting of unit cost developments has been omitted in the interest of brevity but such developments are available for examination in convenient form in the working papers.

In the unit cost developments the cost of insurance related to payrolls is included as labor cost at rates quoted by insurance agencies effective as of the inventory date. There are similarly included as labor cost, federal and state unemployment insurance taxes and federal old age benefits tax.

Included in the development of the unit costs are allowances for miscellaneous material costs and miscellaneous labor costs to reflect those costs necessarily incurred and contingencies met in the actual construction work over and above the cost of the specified items of material and hours of labor. As related to materials these miscellaneous costs arise from causes such as purchasing, expediting shipment and checking receipt of materials, and ware house activities as required, together with loss, damage and wastage of materials and other contingencies. As related to labor these miscellaneous costs arise from causes such as bad weather and other contingencies affecting performance, the

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use and wastage of tools, the use of equipment, and the field office and supervisory costs. Contractors' allowances where made cover the contractor's West Virginia gross income tax, general overheads, insurance against abnormal risks and a margin of profit.

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[Detailed explanation of determination of unit costs for various types of properties omitted.]

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11. Undistributed Construction Costs

In addition to the costs incurred by the construction forces there are other costs relating to the project as a whole rather than to its separate parts which are as necessary as the payments for material installed and the wages of laborers.

These general or undistributed construction costs arise principally from (a) the engineering work necessary to design, supervise and inspect construction, and to test, check and turn over to the management an operative plant, (b) preliminary investigations and reports on the project, nego-

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tiations with the public authorities and others with respect to permits, taxes, and other matters, expenses in connection with the receipt and disbursements of funds and accounting therefor, payment of insurance and taxes applicable to the construction period, the assembling of an operating organization and many other costs, and (c) interest on the money expended for construction of the various parts of the project until they can be put into operation.

These general costs may also include the cost of assembling the funds required for construction, but no provision for such costs is included in the reproduction cost new set forth in this exhibit.

In the 1931 *East Ohio-Cleveland* rate case before the Public Utilities Commission of Ohio these undistributed

construction costs were the subject of conferences between engineers representing the City of Cleveland, engineers of the Ohio Commission and engineers of Ford, Bacon & Davis, Inc., representing The East Ohio Gas Company. These engineers finally agreed upon the following to be added to the reproduction cost new of the priced inventory of the property of the Hope Natural Gas Company:

Preliminary organization expense	0.5%
Engineering and superintendence during construction	4.5
Administrative and legal expense during construction	2.0
Taxes during construction	2.0
Interest during construction	8.0

The last item, of course, was to be applied to the total of the priced inventory and the other undistributed construction costs above stated. In the aggregate the allowance thus amounts to 17.72%.

A similar agreement was later entered into in the 1932 *East Ohio-Akron* rate case before the Ohio Commission.

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That Commission itself used the undistributed construction costs for the Hope Natural Gas Company's property above set forth in the 1932 *East Ohio-Akron* case and the 1937 *East Ohio-Cleveland* case.

In view of the repeated use of the above allowance by engineers representing the various parties to rate controversies involving this same property and by the Ohio Commission in its findings relating thereto, the same allowances have been used here. While my own experience and the experience of Ford, Bacon & Davis, Inc. in construction work of this kind indicates that these allowances on the whole understate the full amount of undistributed construction costs that would be actually incurred upon a reproduction of this property, nevertheless I have adopted them in the aggregate as the minimum over-all allowances that are required.

12. Cost of Developing the Property as a Going Concern

All of the elements of cost described above relate solely to the construction of the bare bones of the physical property or plant of the Company. They include no amounts whatsoever for the costs involved in the negotiation of gas purchase and sales contracts or for the costs of seasoning of the property and the development of an efficient operating organization. Neither do they include any of the other additional costs which arise during the period required to develop the full use of the property. In the development of a new property as a major operation all of such costs are experienced and funds must be provided from some source to meet these expenditures. Nevertheless the cost of reproducing the property of the Company set forth in this exhibit contains no allowance for the cost of establishing the property of the Company as a going concern over and above the bare cost of its construction or any other of the allowances commonly referred to as going concern value.

13. Summaries.

The estimated cost of reproduction new as of December 31, 1938 of the production and transmission properties of the Company, together with its general properties used jointly in the production, transmission and distribution of gas, all as described above, are set forth in detail in the priced inventories which constitute Parts B to I of this exhibit. These costs are summarized by accounts in the statement on the following pages of this Part A which shows:

Hope Natural Gas Company
Estimated Cost of Reproduction New as of December 31, 1938

Natural Gas Production Plant (exclusive of leaseholds and properties used to transport coke oven gas)	$50,167,205
Transmission Plant (exclusive of properties used to transport coke oven gas)	29,131,101
General Plant (Jointly Used) (exclusive of properties used to transport coke oven gas)	1,379,451
Total of Above	$80,677,757
Undistributed Construction Costs	14,296,099
Total Natural Gas Production Plant, Transmission Plant and General Plant (Jointly Used) (exclusive of leaseholds, properties used to transport coke oven gas, working capital and going concern costs or value)	$94,973,856

SIGNED at Clarksburg, West Virginia, this May 6, 1940.

GEO. I. RHODES.

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HOPE NATURAL GAS COMPANY

Natural Gas Production Plant, Transmission Plant and General Plant (Jointly Used) Estimated Cost of Reproduction New as of December 31, 1938

(Exclusive of Leaseholds, Properties Used to Transport Coke Oven Gas, Working Capital and Going Concern Costs or Value)

SUMMARY BY ACCOUNTS

Account Nos. Old	Account Nos. New W. Va. P. S. C.	Description	Total Cost
Natural Gas Production Plant (exclusive of leaseholds and properties used to transport coke oven gas)			
204	330-1	Natural Gas Producing Lands	$ 2,275
206	330-4	Rights of Way	772,814
204	330-5	Other Land and Land Rights	21,045
210	331-1	Gas Well Structures	11,912
209	331-2	Field Measuring and Regulating Station Structures	58,222
210	331-3	Other Production System Structures	374,267
211	332-1	Producing Gas Wells—Well Construction	19,321,139
212	332-2	Producing Gas Wells—Well Equipment	10,874,199
213, 214	333-1	Field Lines	17,282,312
215, 217	333-2	Field Measuring and Regulating Station Equipment	307,222
216	334	Drilling and Cleaning Equipment	1,028,888
249, 251, 256, 257	337	Other Production Equipment	112,910
		Total Natural Gas Production Plant (exclusive of leaseholds and properties used to transport coke oven gas)	**$50,167,205**
Transmission Plant (exclusive of properties used to transport coke oven gas)			
218	351-12	Land	$ 155,842
220	351-23	Rights of Way	554,352
221, 223	352-2	Compressor Station Structures	1,957,473
222	352-3	Transmission System Measuring and Regulating Station Structures	14,842
223	352-4	Other Transmission System Structures	12,507
226	353	Mains	16,500,288
224	354-2	Compressor Station Equipment	9,874,271
225	354-3	Transmission System Measuring and Regulating Equipment	30,731
249, 251, 256, 257	354-4	Other Transmission System Equipment	30,795
		Total Transmission Plant (exclusive of properties used to transport coke oven gas)	**$29,131,101**
General Plant (Jointly Used) (exclusive of properties used to transport coke oven gas)			
244, 245	370	Land and Land Rights	$ 75,018
247, 248	371	Structures and Improvements	297,298
249	372	Office Furniture and Equipment	210,047
252, 253, 256	373	Transportation Equipment	166,990
251	374	Stores Equipment	10,304
251, 256, 257	375	Shop Equipment	189,110
224, 257	376	Laboratory Equipment	3,971
257	377	Tools and Work Equipment	5,365
255	378	Communication Equipment	419,860
249, 257	379	Miscellaneous Equipment	1,488
		Total General Plant (Jointly Used) (exclusive of properties used to transport coke oven gas)	**$ 1,379,451**
Total of Above			**$80,677,757**
Undistributed Construction Costs			**14,296,099**
Total Natural Gas Production Plant, Transmission Plant and General Plant (Jointly Used) (exclusive of leaseholds, properties used to transport coke oven gas, working capital and going concern costs or value)			**$94,973,856**

7. COMPANY WITNESS ANTONELLI'S EXHIBIT NO. 20 ENTITLED: "Original Cost and Original Cost Trended to 1938 Prices of the Company's Natural Gas Production Plant, Transmission Plant and General Plant (Jointly Used) Existing at December 31, 1938—Written Statement of Peter Antonelli"

Table of Contents

STATEMENTS

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STATEMENT OF EXPERIENCE AND QUALIFICATIONS OF PETER ANTONELLI

1. Name, address and age

Peter Antonelli, 592 Bard Avenue, Staten Island, New York; age 47.

2. Education

Crane Technical College, Chicago, Illinois; Cornell University, Ithaca, New York (M.E., 1919).

3. Present position

Member of the staff of Ford, Bacon & Davis, Inc., 39 Broadway, New York, New York.

4. Experience and qualifications

Upon graduating from Cornell University, I became employed by Ford, Bacon & Davis, Inc. and have been so continuously from that time. My work for this firm has been of an engineering and investigating nature, involving the examination of all kinds of operating properties such as power and light, steam, water, oil and manufactured and natural gas. I have specialized in natural gas work of all kinds and have done a great deal of valuation work. This valuation work has involved the preparation of field inventories, inspection of properties for determination of their condition, development of unit costs, conducting research into labor performances on various construction enterprises, especially pipe lines, investigating basic material prices, analysis of direct material and labor overheads and general overheads and analyses and determinations of

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the original cost of properties. I have assisted in making preliminary investigations into the possibilities of pipe line construction, made preliminary estimates and the like.

The companies for which I have done work of the foregoing nature include the following:

Amarillo Gas Company
Arkansas Natural Gas Company
Arkansas Pipe Line Corporation
Atlantic Refining Company
Carpenter Steel Company
Central Hudson Gas Company
Coffeyville Gas & Fuel Company
Columbia Gas & Electric Corporation
Commonwealth & Southern Corporation
Consolidated Gas Company
Corning Light & Power Company

Dalhart Gas Company
Dayton Power & Light Company
Dominion Tar & Chemical Company
Duquesne Light Company
East Ohio Gas Company
Empire District Electric Company
Fredonia Gas Company
Hardin Wyandot Lighting Company
Hope Natural Gas Company
Kansas City Gas Company

Logan Gas Company
New York Steam Corporation
Niagara Lockport & Ontario Power Company
Ohio Producing Company
Oklahoma Natural Gas Company
Ouachita Natural Gas Company
Paducah Water Company
Pennsylvania Electric Company
The Peoples Natural Gas Company
Potter Gas Company
Puget Sound Power & Light Company

Sinclair Consolidated Oil Company
Southern Natural Gas Company
Standard Oil Company of Indiana
Standard Plate Glass Company
Tri State Gas Company

United Fuel Gas Company
Union Carbon & Carbide Company
Western Ohio Public Service Company
Winchester Repeating Arms Company

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WRITTEN STATEMENT OF PETER ANTONELLI

1. Matters Covered By This Exhibit

This exhibit sets forth the original cost of the production system, the transmission system and general properties of Hope Natural Gas Company as these properties existed at December 31, 1938, excluding those properties, both distribution and general, used solely for the distribution of gas in West Virginia. It explains the methods followed in determining this original cost. This exhibit also shows the original cost of these properties trended to 1938 prices, namely the original cost adjusted to the labor rates and material prices prevailing in 1938, and explains the methods used in determining this trended original cost.

On January 1, 1939 there became effective and applicable to the Company a new Uniform System of Accounts for Gas Utilities prescribed by the Public Service Commission of West Virginia, Exhibit No. 13 in the present proceedings. Under this new uniform system the Company was required to state its plant accounts on the basis of the original cost of the properties included therein.

In anticipation of the adoption by the West Virginia Commission of this new system of accounts, the Company in July, 1938 began the studies and investigations of its records necessary to determine accurately the original cost of its properties. It hired a special force ranging up to 40 individuals during the balance of 1938 and up to 120 in 1939 and 180 in 1940. This force, consisting of accountants, engineers, clerks, comptometer operators and others, has

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been continuously engaged during all of this period in making the studies and original cost determinations sum-

marized in this exhibit and has been under my personal direction and supervision since September, 1938.

The Company's accounting methods have varied from time to time during the long period of its existence. From its organization in 1898 to December 31, 1922 there was no system of accounts prescribed for the Company and it kept such books and records as it deemed necessary. During this period the Company followed various accounting methods, as accounting principles were not as fully developed as they are at present. Since the Company's natural gas business was an outgrowth of the oil business and was organized by persons connected with the oil business, it generally followed accounting methods then in use by oil companies. For example, in accordance with conservative oil company accounting methods the Company did not capitalize well construction costs.

Effective January 1, 1923 the Public Service Commission of West Virginia prescribed a uniform classification of accounts to be kept by all natural gas companies subject to its jurisdiction. This classification caused a number of major changes to be made in the Company's methods of keeping property records. A revised classification of accounts was prescribed by the West Virginia Commission, effective as of January 1, 1931, which was adopted by the Company January 1, 1932 and remained in effect until December 31, 1938. As noted above, effective January 1, 1939 the present new West Virginia system of accounts became applicable. These various uniform systems of accounts for

gas companies as prescribed by the Public Service Commission of West Virginia are in themselves not identical either in principle or in the methods of accounting permitted thereunder.

The cost of the Company's properties as capitalized on its books therefore reflects many different accounting methods and is not in accordance with the accounting principles reflected in the new 1939 West Virginia system of

accounts. However, irrespective of variations in accounting methods, the Company throughout its history by vouchers and otherwise has kept a complete and detailed record of all of its transactions. Since the Company has preserved substantially all original vouchers and all accounting books and records from the beginning of operations it was possible, by checking the vouchers and other available records pertaining to properties in existence at December 31, 1938, to determine accurately the original cost of substantially all of these properties irrespective of changes in accounting methods, and to estimate the original cost accurately of minor portions of the property where original vouchers were not available or where purchases of operating units or systems had been made from other utilities and no records of the original cost of such properties were available.

After the original cost of the Company's properties was determined this cost was adjusted by trends based on labor and material prices as shown in the Company's books to determine what the original cost would have been had the fluctuating labor rates and material prices paid by the Company in the past been the same as those paid in 1938. This adjustment corrects the original cost of the properties in existence at December 31, 1938 to reflect

changes in price levels and indicates what the original cost of these properties would have been had the general price level been constant at the 1938 level throughout the whole period of the construction of the Company's properties since 1898 on.

2. Inventory Of The Company's Properties As Of December 31, 1938

The first step in these determinations was to obtain an accurate inventory of the Company's properties as of December 31, 1938. To this end the following steps were taken:

(a) A transcription was made of the Company's investment ledgers detailing the various items of property owned by the Company as of December 31, 1938 as shown by its books. This transcription resulted in a complete book inventory of all of the Company's production system, transmission system and general properties (excluding its properties, both distribution and general, used solely for distribution of gas in West Virginia) except communication equipment, where the investment ledgers were not so detailed as to show the communication equipment in place at December 31, 1938. This book inventory was transcribed upon approximately 40,000 multi-column sheets.

(b) The December 31, 1938 book inventory as so transcribed was then checked, account by account, against all other available records pertaining to these properties in the Company's general office and in its field offices throughout its system. These records consisted of subsidiary property records in the Company's accounting department, records, maps and other data

pertaining to the property accounts in the Company's engineering and geological departments and in the operating departments in the field offices.

(c) This book inventory so prepared and checked against all office records was then further checked in the field. Substantially all of the visible property was verified by field observation as to its existence and description. The buried property such as pipe lines was checked in the field by a sampling method as to its existence and description. Thus the book inventory was corrected to reflect only property in existence at December 31, 1938.

In connection with the field check of compressor station structures and equipment, use was made of a

detailed inventory of the Company's properties as of June 30, 1931 which was made and agreed upon in the 1931 East Ohio-Cleveland rate case before the Public Utilities Commission of Ohio by engineers representing the City of Cleveland, engineers of the Ohio Commission and Ford, Bacon & Davis, Inc., representing The East Ohio Gas Company. This agreed 1931 inventory, adjusted to reflect all additions and retirements from June 30, 1931 to December 31, 1938 as checked in the field, was used to verify the book inventory of compressor stations and structures and to furnish more detailed descriptions and dimensions of property than appeared in the investment ledgers.

In the verification of the inventory of pipe lines new surveys were made wherever necessary to confirm the accuracy of inventory data on hand.

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(d) In the course of the preparation of the inventory it was found that the transcribed investment ledgers did not give a sufficiently detailed description for the property in certain accounts. Accordingly, in the course of the field check previously described, new physical inventories were made in the field as of December 31, 1938 for field and transmission measuring and regulating station equipment, shop equipment, office furniture and equipment, other production equipment, other transmission system equipment, garage equipment, communication equipment, pumping and bailing outfits, laboratory equipment and all structures except those at compressor stations.

The inventories so prepared and verified comprise the properties existing at December 31, 1938 for which the original cost and trended original cost were determined. They likewise constitute the basis of the reproduction cost determination presented in another Company exhibit.

In cases where the preparation and verification of this inventory showed that property no longer in existence was still carried on the books of the Company all necessary adjustments were made to eliminate the charges for such property. Where property was found by the field check which had not been recorded on the books, appropriate adjustments were made to include these items. Various adjustments were made to transfer property between accounts as prescribed by the new West Virginia system of accounts in order to classify the Company's plant accounts in accordance with this new system.

Statement C at pages 33 and 34 of this exhibit shows a classification of the inventory, transfer and correcting ad-

justments made to the amounts capitalized on the Company's books as of December 31, 1938. Columns (6) to (8) of this statement show the changes resulting from the inventory adjustments and transfers between accounts as above described.

3. General Procedures Followed In Original Cost Determination

A. Property Constructed by the Company

For each unit of property shown in the inventory the Company's records were examined to determine whether such property was constructed by the Company or purchased by the Company from another party. Different methods were necessarily required for determining the original cost of these two types of property. There is first explained here the general procedures used to determine the original cost of properties constructed by the Company itself and next the general procedures as to purchased property.

In transcribing the book inventory as previously explained there was likewise transcribed from the investment ledgers the cost of each item as capitalized on the

Company's books, and the voucher number and date of each voucher. These vouchers were carefully analyzed, and where such analysis disclosed them to be closing vouchers, transfer vouchers or inventory adjustment vouchers, the original vouchers containing the original entries pertaining to the unit of property were traced and analyzed. To trace the original vouchers, use was made of all of the available data in the Company's records including investment ledgers, voucher records, general ledgers, warehouse transfers, labor and teaming vouchers, etc. The actual costs disclosed by the original vouchers were recorded in all cases where the investment ledgers did not correctly set forth these costs.

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In the analysis of the actual cost of items constructed by the Company it was ascertained that particularly prior to 1923 some costs were charged to expense. For example, prior to 1923 all the costs of drilling the Company's wells were charged to expense. Accordingly the voucher analysis referred to above included an analysis of all operating expense vouchers pertaining to construction and improvement costs which had been charged to expense. All actual material and labor costs of property in existence at December 31, 1938 which had previously been charged to expense were recorded on the final original cost sheets.

Statement D at pages 35 and 36 of this exhibit sets forth an analysis and summary of these direct costs not heretofore capitalized by the Company.

The analysis of vouchers and records showed that Company expenditures for field supervision, field clerical work, warehouse handling, and other field costs in connection with equipment and plant construction had in many cases not been included in costs as capitalized by the Company on its books but had been charged to operating expenses. In order to determine the original cost of the Company's properties such field costs, termed "unloading, hauling and

warehouse handling costs" and "indirect field costs," had to be ascertained from an analysis of the Company's records covering the costs experienced in the performance of these construction activities. Unloading, hauling and warehouse handling costs and indirect field costs were ascertained and recorded on the final original cost sheets for the property in the following accounts:

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Acct. 332-1—Producing Gas Wells—Well Construction
Acct. 332-2—Producing Gas Wells—Well Equipment
Acct. 333-1—Field Lines:
Construction
Equipment
Acct. 333-2—Field Measuring and Regulating Station Equipment
Acct. 354-3—Transmission System Measuring and Regulating Equipment

Statement E at pages 37 to 40 of this exhibit explains the methods followed in determining these costs.

The analysis of the vouchers and records also showed that in most cases the Company's expenditures for general administrative supervision, engineering, accounting, purchasing, payroll and other like services in connection with the equipment and the plant construction had not been included in the costs capitalized by the Company but had been charged to operating expenses. To determine the original cost of the Company's properties in accordance with the accounting principles set out in the new West Virginia system of accounts it was therefore necessary to determine the amount of these expenditures incurred in connection with the construction and acquisition of the properties in existence at December 31, 1938. These expenditures, termed "overhead costs," were grouped as follows:

1. Purchasing department, including the traffic and invoice departments.
2. Payroll department.

3. Land department, including the leasing department.
4. General overhead, consisting of administrative, legal, accounting and engineering services.
5. Interest during construction.

A detailed study was made by calendar years from the inception of the Company until the end of 1938 to determine

what portion of the Company's expenditures for these departments and services should be charged to investment so that the original cost of the existing plant might be properly shown.

This study showed the proper percentages for these overheads to be added to the direct material and labor original costs. These percentages were accordingly applied on the final original cost sheets to direct material and labor original costs there shown where such overhead costs had not previously been included in the capital accounts. Interest during construction could not be obtained from an analysis of the Company's overhead expenditures since the Company has never included any charge for interest during construction in its plant accounts or in its operating expenses. Interest during construction was therefore applied at the rate of 6% per annum to construction projects requiring more than thirty days to build and costing more than $5,000.

Statement F at pages 41 to 52 sets forth first a description of the methods used in determining these overhead percentages and second a table summarizing them by years. The amounts of the various kinds of overhead costs and the total of these costs included in the original cost are shown in Statement G at pages 53 and 54 of this exhibit.

In general the original cost sheets covering property constructed by the Company therefore show for each item of property:

1. The cost at which capitalized on the Company's books.

2. Adjustments required by reason of corrections of the book inventory, transfers of property as between accounts and corrections to eliminate inaccuracies where the cost as capitalized on the Company's books was based on transfer or inventory adjustment vouchers.

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3. The costs of the property not capitalized by the Company consisting of:
   (a) Direct labor and material costs,
   (b) Unloading, hauling and warehouse handling costs,
   (c) Indirect field costs,
   (d) Overhead costs.
4. The total original cost of each inventoried item of property in existence at December 31, 1938.

B. Property Purchased by the Company

(1) *Purchased from non-utilities, or from other utilities where not an operating unit or system*

Where the analysis of the Company's records showed units of property in existence at December 31, 1938 which had been purchased from non-utility corporations or individuals, or from a public utility in cases where the item was not an operating unit or system, the original cost was recorded on the original cost sheets at the cost of acquisition to the Company, plus general overhead to cover administrative, legal, accounting and engineering services in connection with these purchases in the amount of one-fourth of the general overhead percentage determined for properties constructed by the Company. As in the case of properties constructed by the Company all pertinent vouchers and other records were carefully analyzed in order to record correctly the cost of acquisition on the original cost sheets.

(2) *Purchased from other utilities as an operating unit or system*

Where the analysis of the Company's records disclosed that property in existence at December 31, 1938 had been purchased as an operating unit or system from a public utility, the original cost of such property was determined

by an analysis of all the pertinent records and data that could be obtained. The amount of such property is small, comprising less than 7% of the total.

Certain of these public utilities such as Flaggy Meadow Gas Company, Mountain State Gas Company, Clarksburg Light and Heat Company and Reserve Gas Company were either affiliated with the Company or were purchased in their entirety. All of the existing books and records of these companies were available for examination and analysis. In such cases these records were analyzed and the original cost determined precisely as was done in the case of the Company's books and records for property constructed by the Company. As to other utility corporations such as Fayette County Gas Company and United Fuel Gas Company, the original cost of the properties in question was furnished by these companies at the request of the Hope Company. This data was fairly complete, but did not include overheads. All other companies from which original cost data was requested advised that they were unable to furnish the original cost of the properties purchased from them by the Hope Company. In such cases, involving minor amounts of property, the original cost was based on the Hope Company's experience in constructing similar properties under similar circumstances and during like periods.

Inasmuch as none of the original cost data obtained by inquiry from other utility corporations included overhead expenditures, the overhead percentages developed from the analysis of the Company's experience as described

above were applied. The studies made indicated that such an application resulted in a conservative estimate of the overhead expenditures actually incurred in the construction of these purchased properties.

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The original cost sheets listing purchased property contain references to vouchers of the predecessor company where available or to other sources of information used in the original cost determinations. The last column on each of these sheets shows the total original cost of all purchased properties determined on the basis here described.

4. Application Of General Original Cost Procedures To Major Classifications of Property

The general original cost procedures heretofore described were applied, account by account, to the properties in each plant account. This application may be briefly described by major classifications of property as follows:

Land. The original cost of each parcel of land was based on the deeds and original vouchers pertaining thereto. This cost includes the consideration paid, the cost of obtaining the deed, recording, abstracting and miscellaneous costs and land department and general overhead expenditures.

Natural gas leaseholds. The leasehold accounts include all the natural gas leaseholds, natural gas rights and royalties which the Company owned as of December 31, 1938, both those classified by the Company as operated and those classified as unoperated.

In determining the original cost of these leaseholds and rights the consideration paid by the Hope Company for the first lease taken or acquired by the Hope Company on each tract under lease at December 31, 1938 was ascertained and recorded on the original cost sheets. No distinction was drawn as to whether the lease was taken or ac-

quired from a farmer, individual or private company or another utility. There was likewise included the cost of

obtaining, recording and abstracting these first leases and gas rights and land department and general overhead expenditures.

The consideration paid by the Company was obtained from vouchers listed in the lease ledgers. The cost of obtaining leases acquired directly from land owners was secured from lease vouchers during the period 1921 to 1938 inclusive. Prior to 1921 such costs were estimated, where necessary, based on an analysis of the known cost of obtaining over 3,700 leases. Costs of recording and abstracting leaseholds were secured in most cases directly from the Company's records. Where estimates were necessary they were based on a summary of recording and abstracting costs contained in vouchers, statements and other records of the Company.

This original cost is the nominal acquisition cost of the particular tracts under lease at December 31, 1938 and does not reflect the substantial original exploration costs by way of delay rentals, dry hole expense and losses on cancelled leases incurred by the Company in exploring for, locating and developing these tracts.

Rights of way. The original cost of rights of way includes the consideration and advance damages paid, expenses incurred in obtaining and fees paid for recording and land department and general overhead expenditures. The original cost was obtained by an analysis of vouchers, original grants, inventory ledgers, and rights of way record books. In determining these costs the right of way over each farm or land tract was considered as a unit of property. Inventory adjustments were made on this basis where rights of way were not retired by the Company when a line was lifted.

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Gas Wells. The original cost of gas well equipment was generally determined from the Company's well investment ledgers. Since its inception the Company has recorded by individually numbered wells a description of the equipment in each well, also the size, quantity and cost, together with the voucher numbers and dates. Vouchers were checked wherever necessary. Warehousing, purchasing and general overhead expenditures and interest during construction where applicable were included.

Prior to 1923 well construction costs were not capitalized by the Company but were charged to expense. Accordingly well construction costs prior to 1923 were determined from an analysis of the original vouchers and well records. Beginning in 1923 well construction costs were generally capitalized and recorded in the well investment ledgers. These ledgers were used in determining the original cost of well construction from January 1, 1923 on, checked as necessary against vouchers. Indirect field costs, payroll, purchasing and general overhead expenditures and interest during construction where applicable were included in well construction.

The original cost of wells drilled by the Company or for the Company by a contractor when the Company furnished the rig reflects the average cost of drilling rigs, after elimination of recorded arbitrary charges for use of derricks, bull wheels, sand reels, etc.

Pipe lines. For lines built or acquired subsequent to 1919 the investment ledgers in most cases reflected the actual direct material and construction costs. All ledger entries of any appreciable amount for such lines were

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checked against the original vouchers for accuracy. Prior to 1920 the Company's investment ledgers did not segregate the cost of pipe lines by individual lines. The original cost of lines laid prior to 1920 and still in existence at De-

cember 31, 1938 was therefore determined from the original vouchers, the 1920 inventory voucher allocating total pipe line costs to individual lines being disregarded in this connection as not truly reflecting correct original cost. Original vouchers were found for all lines except for a few small field lines laid prior to 1907 where the original cost had to be estimated. These estimates were based on the known costs of lines laid by the Company at approximately the same period and in the same territory.

The original cost of pipe lines includes direct labor costs not included in the cost capitalized on the Company's books, indirect field and warehousing costs and overhead expenditures as described above, except that in the case of main and trunk lines indirect field costs and warehousing costs were not included. In the case of main and trunk lines indirect field costs were generally included among the direct construction costs as shown by the vouchers, and as a general rule warehousing costs were not incurred in the construction of these lines as the material was unloaded at the point of construction.

Compressor station structures and equipment. The original cost of the equipment in the Company's compressor stations was obtained from the investment ledgers, verified and corrected on the basis of the vouchers and invoices. These ledgers did not segregate the installation costs of

equipment erected prior to 1920 from the construction costs of the compressor station structures. It was likewise found that prior to 1920 no attempt was made to show on the Company's books the cost of individual compressor station buildings, nor was any record made of the number and size of the principal compressor station buildings erected during any construction period. Charges were shown for each compressor station as a whole. After 1920 the costs of the principal buildings at each compressor station were set up separately but in many instances materials were not

accurately charged and the costs of smaller buildings and miscellaneous items such as concrete walks, curbs, equipment foundations, etc. were absorbed in the major structures.

In view of these circumstances a special study was made of all vouchers, records and other available data pertaining to compressor station structures and equipment. In this analysis all major investment ledger entries were verified by an examination of the vouchers. The materials as enumerated in the purchase vouchers were summarized and the total quantities purchased were compared with the total materials reasonably necessary for the construction of the buildings at each station as shown in the agreed 1931 inventory (adjusted to date) previously referred to. In many instances local conditions which might affect the quantity of materials required were checked in the field by conferring with men who were in charge, or who worked on the various jobs. Upon completion of this study, the actual cost of the various materials such as sand, gravel, cement, lumber, etc. was prorated over the buildings comprising each compressor station, using as a basis the quantities contained in the agreed inventory. The costs of

labor, teaming, freight and engineering and supervision were then allocated to the buildings in like manner, subject to the necessary variations which local conditions or engineering judgment might require. The various material and labor costs thus derived were then summarized for each structure in the inventory. This summary also gives the date of construction of each structure, and information as to whether the work was performed by Company forces or by a contractor.

This analysis showed that a number of the structures existing at December 31, 1938 were not included in the Company's capital accounts. Where the cost of these structures was shown in the expense vouchers it was recorded on

the original cost sheets. In a few cases in the absence of actual cost records the original cost of structures was estimated on the basis of material prices and labor rates for the years involved as paid by the Company and obtained from a study of compressor station voucher records and payroll accounts from 1903 to 1938.

Included in the original cost of compressor station structures and equipment are direct material and labor costs not capitalized on the Company's books, purchasing, payroll and general overhead expenditures and interest during construction where applicable.

Other structures. For structures other than compressor station structures as included in the various structure accounts the Company's investment ledgers and vouchers were analyzed and all determinable actual costs were recorded on the original cost sheets. A special analysis was made to determine whether the material and labor costs as so found were consistent with the materials necessary for the structures as determinable from the new field inventories of these structures. In a few cases where partial

or complete costs of a structure had not been capitalized and could not be identified in expense vouchers, the omitted costs were estimated, based on known costs of similar structures, and these estimated costs were recorded on the original cost sheets as costs which had been charged to expense. In other respects the original costs of these various structures were completed in the same way as the original costs of the compressor station structures.

Miscellaneous and general equipment. The new field inventories made in connection with the original cost inventory as previously described included new inventories for the items contained in the miscellaneous and general equipment accounts. The vouchers for the major portion of the equipment listed in these new inventories were ex-

amined and the costs as set forth in these vouchers were recorded on the original cost sheets. This equipment included measuring and regulating equipment, shop equipment, office furniture and equipment, other production and other transmission system equipment, garage equipment, communication equipment, pumping and bailing outfits and laboratory equipment. For the items that could not be identified by voucher the Company's purchasing department records and vouchers showing the cost of similar items were used and in a few cases for certain items the original cost was determined by trending known costs.

Installation costs of communication equipment were based upon the costs of installing Company telephone lines and equipment for which the actual installation costs were determinable from the Company's records.

In completing the original cost determination for these accounts purchasing, payroll and general overhead expenditures were included where applicable.

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5. Details Of The Original Cost Determination

The details of this original cost determination are recorded on approximately 78,000 multi-column sheets. The final original cost sheets set forth specifically the inventory as of December 31, 1938, the original cost of each inventoried item, whether heretofore capitalized or not capitalized by the Company, and the voucher and other references showing specifically the source of the original cost determination. These detailed sheets are available at the Company's general office for analysis and check by all parties to the present proceeding and have been examined by members of the staff of the Federal Power Commission commencing in January, 1940. In the interest of economy and brevity these 78,000 sheets are not here reproduced.

6. General Procedures Followed In Trending The Original Cost To 1938 Prices.

In trending the original cost of the Company's properties existing at December 31, 1938 to reflect the 1938 price level it was necessary to develop numerous basic trends. As to the larger part in value of the Company's properties these trends were based on labor and material prices shown on its books and records.

In certain instances it was necessary to develop trends in part by reference to general price data accumulated by other natural gas companies, by Ford, Bacon & Davis, Inc. and by certain statistical services, but in every such case the data used in arriving at the trends were for the kinds of labor and material entering into the type of construction constituting natural gas properties such as those of the Hope Company.

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The original costs of the land, rights of way and leasehold accounts and a few minor accounts such as laboratory equipment, drilling and cleaning tools and automobiles were not trended. The original costs of properties in all other accounts were trended by the use of yearly trend factors with 1938 costs as 100. These factors for each account were obtained from trends of the particular labor and materials included in the properties in each account. In some instances composite factors were used, determined by trending representative items of property in each account.

The year by year trend factor so determined for each account was applied to the original cost incurred in each year for the property in that account which was still in existence at December 31, 1938. The resulting figures fairly show what would have been the original cost of the Company's present properties if these had been constructed over the years at the 1938 labor and material prices.

Statement H at pages 55 to 62 of this exhibit sets forth a description of the determination of these yearly trend factors. Statement I at pages 63 to 96 shows for each account the original cost of the properties in the account as existing at December 31, 1938, segregated by years first placed in public service, the trend factor for each year and the total original cost trended to 1938 prices. Statement J at pages 97 and 98 summarizes by years and for all of the Company's properties here involved the data shown in Statement I for each account.

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7. Details Of Trended Original Cost Determination

The details of the trending of the original cost of the Company's property to reflect 1938 labor rates and material prices are available at the general office of the Company for inspection by all parties to these proceedings. In the interest of economy and brevity they are not reproduced here.

8. Summaries Of Original Cost And Original Cost Trended To 1938 Prices

Statement A at pages 29 and 30 of this exhibit shows for each plant account the original cost and the original cost trended to 1938 prices of the natural gas production plant, transmission plant and general plant of the Company existing at December 31, 1938, excluding those properties, both distribution and general, used solely for distribution of gas in West Virginia.

At the end of Statement A there are deducted both the original and trended original costs of the Company's properties in these plant accounts which are used to transport coke oven gas. It will be noted from Statement A that the total original cost of the properties in these plant accounts of the Company, excluding the property used to transport coke oven gas, amounts to $69,735,637.86 and that this original cost trended to 1938 prices totals $105,101,912.

Statement B at pages 31 and 32 of this exhibit classifies the original cost of the Company's property, account by account, as between (1) properties constructed by the Company, purchased from non-utilities or from other utilities where not operating units or systems and (2) properties purchased by the Company from other utilities as

operating units or systems. It will be observed from Statement B that the original cost of properties constructed by the Company, etc., excluding property used to transport coke oven gas, amounts to $64,917,509.13 and that the original cost of properties purchased by the Company from other utilities as operating units or systems totals $4,818,128.73.

Statement B likewise shows for properties constructed by the Company, etc. the amount heretofore capitalized on the Company's books, the total inventory, transfer and correcting adjustments made in the course of the original cost determination, the amount of direct material and labor costs expensed, the amount of warehousing costs, the amount of indirect field costs and the total overhead expenditures incurred in connection with the construction and acquisition of these properties. As to properties acquired as operating units or systems from other utilities, Statement B shows the cost as heretofore capitalized on the books of the Company, the direct material and labor original cost of these properties and the warehousing, indirect field and overhead costs which have been added to complete the original cost of these properties. It will be noted that the costs heretofore capitalized on the Company's books for these utility properties purchased amount to $3,218,399.28 as against the original cost of these properties of $4,818,128.73.

Signed at Clarksburg, West Virginia, this May 14, 1940.

Peter Antonelli

Statement A

HOPE NATURAL GAS COMPANY

Original Cost and Original Cost Trended to 1938 Prices of Natural Gas Production Plant, Transmission Plant and General Plant (Jointly Used) Existing at December 31, 1938

Account Nos. Old	Account Nos. New W. Va. P. S. C.	SUMMARY BY ACCOUNTS Description	Original Cost	Original Cost Trended To 1938 Prices
(1)	(2)	(3)	(4)	(5)
Natural Gas Production Plant				
204	330-1	Natural Gas Producing Lands	$ 2,370.39	$ 2,370*
205	330-2	Natural Gas Producing Leaseholds:		
		Operated Leaseholds, Gas Rights and Royalties	1,684,635.98	1,684,636*
		Unoperated Leaseholds, Gas Rights and Royalties	681,882.21	681,882*
206	330-4	Rights of Way	704,021.57	704,022*
204	330-5	Other Land and Land Rights	22,125.56	22,126*
209	331-2	Field Measuring and Regulating Station Structures	40,773.27	41,799
210	331-3	Other Production System Structures	291,872.40	348,145
211	332-1	Producing Gas Wells—Well Construction (A)	17,783,637.13	34,384,320
212	332-2	Producing Gas Wells—Well Equipment	8,168,191.52	10,663,983
213, 214	333-1	Field Lines	12,356,757.34	17,544,243
215, 217	333-2	Field Measuring and Regulating Station Equipment	277,529.66	295,311
216	334	Drilling and Cleaning Equipment	604,936.40	601,353**
249, 251, 256, 257	337	Other Production Equipment	89,102.37	105,335
		Total Natural Gas Production Plant	**$42,707,835.80**	**$ 67,079,525**
Transmission Plant				
218	351-12	Land	$ 168,575.67	$ 168,576*
220	351-23	Rights of Way	453,168.53	453,169*
221, 223	352-2	Compressor Station Structures	1,811,605.37	2,498,445
222	352-3	Transmission System Measuring and Regulating Station Structures	13,950.88	20,896
223	352-4	Other Transmission System Structures	11,508.57	12,865
226	353	Mains	15,491,559.19	23,044,740
224	354-2	Compressor Station Equipment	8,644,011.79	11,536,567
225	354-3	Transmission System Measuring and Regulating Equipment	26,713.48	41,021
249, 251, 256, 257	354-4	Other Transmission System Equipment	23,041.90	26,049
		Total Transmission Plant	**$26,644,135.38**	**$ 37,802,328**
General Plant (Jointly Used)				
244, 245	370	Land and Land Rights	$ 98,187.72	$ 98,188*
247, 248	371	Structures and Improvements	274,427.36	306,129
249	372	Office Furniture and Equipment	195,911.07	217,548**
252, 253, 256	373	Transportation Equipment	148,540.34	151,163**
251	374	Stores Equipment	9,465.88	10,514
251, 256, 257	375	Shop Equipment	114,705.84	166,830
224, 257	376	Laboratory Equipment	1,070.22	1,070*
257	377	Tools and Work Equipment	4,634.27	4,634*
255	378	Communication Equipment	353,353.52	401,125**
249, 257	379	Miscellaneous Equipment	1,171.98	1,172*
		Total General Plant (Jointly Used)	**$ 1,201,468.20**	**$ 1,358,373**
		Total Natural Gas Production Plant, Transmission Plant and General Plant (Jointly Used)	**$70,553,439.38**	**$106,240,226**
Less: Property Used to Transport Coke Oven Gas				
	330-4	Rights of Way	$ 2,466.33	$ 2,466*
	333-1	Field Lines	54,876.63	77,950
	333-2	Field Measuring and Regulating Station Equipment	10,430.64	11,099
	351-12	Land	4,471.12	4,471*
	351-23	Rights of Way	10,774.54	10,775*
	352-2	Compressor Station Structures	85,659.91	118,152
	352-3	Transmission System Measuring and Regulating Station Structures	1,963.30	2,941
	353	Mains	310,963.02	462,743
	354-2	Compressor Station Equipment	330,481.17	441,230
	378	Communication Equipment	5,714.86	6,487**
		Total Property Used to Transport Coke Oven Gas	$ 817,801.52	$ 1,138,314
		Total (Exclusive of Property Used to Transport Coke Oven Gas)	**$69,735,637.86**	**$105,101,912**

NOTES: * Not trended.

** Trended in part.

(A) Includes Account 331-1: Gas Well Structures.

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Statement B

HOPE NATURAL GAS COMPANY

Original Cost and Original Cost Trended to 1938 Prices
Of
Natural Gas Production Plant, Transmission Plant and General Plant (Jointly Used)
Existing at December 31, 1938

Classification of Original Cost as Between Properties Constructed by the Company and Purchased by the Company

Account Nos. Old	Account Nos. New W. Va. P. S. C.	Description	Cost Capitalized Per Hope Natural Gas Company Books	Original Cost of Property Constructed by Hope, Purchased from Non-Utilities or from Other Utilities where not an Operating Unit or System: Cost Capitalized per Hope Books: Per Books	Cost Capitalized per Hope Books: Inventory, Transfer, and Correcting Adjustments	Direct Material and Labor Costs Not Capitalized	Unloading, Hauling and Warehouse Handling Costs	Indirect Field Costs	Overhead Costs	Total	Property Purchased by Hope from Other Utilities as an Operating Unit or System: Original Cost: Cost Capitalized Per Hope Books	Direct Material and Labor Costs to Other Utilities	Unloading, Hauling and Warehouse Handling Costs	Indirect Field Costs	Overhead Costs	Total	Total Original Cost	Weighted Average Trend To 1938 (1938 = 100)	Original Cost Trended to 1938 Prices
(1)	(2)	(3)	(4) = (5) + (12)	(5)	(6)	(7)	(8)	(9)	(10)	(11) = (5) to (10) incl.	(12)	(13)	(14)	(15)	(16)	(17) = (13) to (16) incl.	(18) = (11) + (17)	(19) = (18) ÷ (20)	(20)
Natural Gas Production Plant																			
204	330-1	Natural Gas Producing Lands	$ —	$ —	$ 1,243.75	$ 150.45	$ —	$ —	$ 67.46	$ 1,461.66	$ —	$ 880.00	$ —	$ —	$ 28.73	$ 908.73	$ 2,370.39	—	$ 2,370*
205	330-2	Natural Gas Producing Leaseholds:																	
		Operated Leaseholds, Gas Rights and Royalties	1,331,100.55	996,077.01	252,752.18	64,398.61	—	—	30,541.24	1,343,769.04	335,023.54	335,079.18	—	—	5,787.76	340,866.94	1,684,635.98	—	1,684,636*
		Unoperated Leaseholds, Gas Rights and Royalties	479,570.75	408,691.54	104,811.48	71,591.55	—	—	24,754.37	609,848.94	70,879.21	70,879.21	—	—	1,154.06	72,033.27	681,882.21	—	681,882*
206	330-4	Rights of Way	530,476.17	504,191.07	8,673.72	107,448.27	—	—	28,029.07	648,342.13	26,285.10	53,344.55	—	—	2,334.89	55,679.44	704,021.57	—	704,022*
204	330-5	Other Land and Land Rights	23,729.28	22,379.28	*4,820.76*†	375.75	—	—	932.26	18,867.53	1,350.00	3,109.50	—	—	148.53	3,258.03	22,125.56	—	22,126*
209	331-2	Field Measuring and Regulating Station Structures	30,244.11	25,820.84	*7,608.43*	17,235.46	—	—	1,869.70	37,317.57	4,423.27	3,309.92	—	—	145.78	3,455.70	40,773.27	97.5	41,799
210	331-3	Other Production System Structures	177,682.39	175,186.87	13,540.09	87,981.12	—	—	9,338.85	286,046.93	2,495.52	5,621.00	—	—	204.47	5,825.47	291,872.40	83.8	348,145
211	332-1	Producing Gas Wells—Well Construction (A)	4,370,612.79	4,359,378.54	*173,685.17*	11,279,554.08	—	339,794.73	337,387.69	16,342,429.87	11,234.25	1,375,321.74	—	29,534.34	36,351.18	1,441,207.26	17,783,637.13	51.7	34,384,320
212	332-2	Producing Gas Wells—Well Equipment	7,893,605.30	7,326,669.23	*219,793.49*	—	208,253.60	—	265,529.41	7,580,658.75	566,936.07	563,340.05	7,049.87	—	17,142.85	587,532.77	8,168,191.52	76.6	10,663,983
213, 214	333-1	Field Lines	10,991,297.37	9,875,131.36	*348,059.35*	897,429.98	174,199.64	55,752.90	426,691.27	11,081,145.80	1,116,166.01	1,219,861.17	11,436.63	8,909.92	35,403.82	1,275,611.54	12,356,757.34	70.4	17,544,243
215, 217	333-2	Field Measuring and Regulating Station Equipment	244,176.06	239,046.35	*50,166.49*	63,113.14	1,182.26	901.35	11,255.08	365,331.69	5,129.71	11,554.22	69.85	74.80	499.10	12,197.97	377,529.66	94.0	295,311
216	334	Drilling and Cleaning Equipment	387,555.33	387,555.33	202,949.49	—	—	—	9,236.66	599,741.48	—	4,993.92	—	—	201.00	5,194.92	604,936.40	100.6	601,353**
249, 251, 256, 257	337	Other Production Equipment	—	—	74,798.10	12,379.69	—	—	1,143.75	88,321.54	—	775.38	—	—	5.45	780.83	89,102.37	84.6	105,335
		Total Natural Gas Production Plant	$26,460,050.10	$24,320,127.42	*$ 145,364.88*	$12,601,658.10	$383,635.50	$396,448.98	$ 1,346,777.81	$38,903,282.93	$ 2,139,922.68	$ 3,648,069.84	$ 18,556.35	$ 38,519.06	$ 99,407.62	$ 3,804,552.87	$42,707,835.80	63.7	$67,079,525
Transmission Plant																			
218	351-12	Land	$ 152,660.05	$ 142,150.25	$ 8,437.02	$ 1,887.31	$ —	$ —	$ 8,079.34	$ 160,553.92	$ 10,509.80	$ 7,652.62	—	—	$ 369.13	$ 8,021.75	$ 168,575.67	—	$ 168,576*
220	351-23	Rights of Way	551,354.41	551,354.41	*159,852.40*	13,306.92	—	—	20,195.06	425,003.99	—	27,596.14	—	—	568.40	28,164.54	453,168.53	—	453,169*
221, 223	352-2	Compressor Station Structures	1,760,317.25	1,735,110.29	*334,278.77*	283,497.72	—	—	105,008.28	1,789,337.52	25,206.96	21,249.83	—	—	1,018.02	22,267.85	1,811,605.37	72.5	2,498,445
222	352-3	Transmission System Measuring and Regulating Station Structures	6,305.15	6,305.15	3,239.46	3,875.40	—	—	530.87	13,950.88	—	—	—	—	—	—	13,950.88	66.8	20,896
223	352-4	Other Transmission System Structures	6,709.29	6,709.29	66.40	4,133.11	—	—	599.77	11,508.57	—	—	—	—	—	—	11,508.57	89.5	12,865
226	353	Mains	14,614,229.98	13,692,381.83	*91,009.03*	182,149.84	—	—	893,488.28	14,677,010.92	921,848.15	800,423.77	—	—	14,124.50	814,548.27	15,491,559.19	67.2	23,044,740
224	354-2	Compressor Station Equipment	8,135,673.87	8,039,762.25	*519,898.79*	533,551.51	—	—	482,233.86	8,535,648.83	95,911.62	103,201.36	—	—	5,161.60	108,362.96	8,644,011.79	74.9	11,536,567
225	354-3	Transmission System Measuring and Regulating Equipment	26,234.00	26,234.00	*8,618.09*	7,781.40	49.02	—	1,267.15	26,713.48	—	—	—	—	—	—	26,713.48	65.1	41,021
249, 251, 256, 257	354-4	Other Transmission System Equipment	—	—	21,015.55	924.60	—	—	1,101.75	23,041.90	—	—	—	—	—	—	23,041.90	88.5	26,049
		Total Transmission Plant	$25,253,484.00	$24,200,007.47	*$ 1,080,898.65*	$ 1,031,107.81	$ 49.02	—	$ 1,512,504.36	$25,662,770.01	$ 1,053,476.53	$ 960,123.72	—	—	$ 21,241.65	$ 981,365.37	$26,644,135.38	70.5	$37,802,328

Notes: * Not trended.
** Trended in part.
(A) Includes Account 331-1: Gas Well Structures.
† ITALICS DENOTE RED FIGURES.

(Concluded on next page)

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HOPE NATURAL GAS COMPANY

Statement B (concluded)

Original Cost and Original Cost Trended to 1938 Prices
Of
Natural Gas Production Plant, Transmission Plant and General Plant (Jointly Used)
Existing at December 31, 1938

Classification of Original Cost as Between Properties Constructed by the Company and Purchased by the Company
(concluded)

Account Nos. Old	Account Nos. New W. Va. P. S. C.	Description	Original Cost of Property Constructed by Hope, Purchased from Non-Utilities or from Other Utilities where not an Operating Unit or System: Cost Capitalized Per Hope Natural Gas Company Books	Cost Capitalized per Hope Books: Per Books	Cost Capitalized per Hope Books: Inventory, Transfer, and Correcting Adjustments	Direct Material and Labor Costs Not Capitalized	Unloading, Hauling and Warehouse Handling Costs	Indirect Field Costs	Overhead Costs	Total	Property Purchased by Hope from Other Utilities as an Operating Unit or System, Original Cost: Cost Capitalized Per Hope Books	Direct Material and Labor Costs to Other Utilities	Unloading, Hauling and Warehouse Handling Costs	Indirect Field Costs	Overhead Costs	Total	Total Original Cost	Weighted Average Trend To 1938 (1938 = 100)	Original Cost Trended to 1938 Prices
(1)	(2)	(3)	(4) = (5) + (12)	(5)	(6)	(7)	(8)	(9)	(10)	(11) = (5) to (10) incl.	(12)	(13)	(14)	(15)	(16)	(17) = (13) to (16) incl.	(18) = (11) + (17)	(19) = (18) ÷ (20)	(20)
General Plant (Jointly Used)																			
244, 245	370	Land and Land Rights	$ 154,590.82	$ 141,226.54	*$ 64,809.61*	$ 298.51	$ —	$ —	$ 2,754.53	$ 79,469.97	$ 13,364.28	$ 17,817.50	$ —	$ —	$ 900.25	$ 18,717.75	$ 98,187.72	—	$ 98,188*
247, 248	371	Structures and Improvements	262,605.30	251,534.26	*28,836.61*	21,750.51	—	—	17,360.48	261,808.64	11,071.04	12,157.71	—	—	461.01	12,618.72	274,427.36	89.6	306,129
249	372	Office Furniture and Equipment	239,989.32	239,808.52	*61,305.98*	14,875.59	—	—	2,369.11	195,747.24	180.80	162.69	—	—	1.14	163.83	195,911.07	90.1	217,548**
252, 253, 256	373	Transportation Equipment	211,115.41	211,115.41	*68,800.92*	1,762.38	—	—	4,463.47	148,540.34	—	—	—	—	—	—	148,540.34	98.3	151,163
251	374	Stores Equipment	—	—	5,106.76	4,306.74	—	—	52.38	9,465.88	—	—	—	—	—	—	9,465.88	90.0	10,514
251, 256, 257	375	Shop Equipment	—	—	104,185.17	9,030.25	—	—	1,490.42	114,705.84	—	—	—	—	—	—	114,705.84	68.8	166,830
224, 257	376	Laboratory Equipment	—	—	1,003.40	40.00	0.52	—	26.30	1,070.22	—	—	—	—	—	—	1,070.22	—	1,070*
257	377	Tools and Work Equipment	449,871.11	449,871.11	*445,325.78*	—	—	—	88.94	4,634.27	—	—	—	—	—	—	4,634.27	—	4,634*
255	378	Communication Equipment	254,602.17	254,218.22	—	80,640.63	—	—	17,784.48	352,643.33	383.95	679.33	—	—	30.86	710.19	353,353.52	88.1	401,125**
249, 257	379	Miscellaneous Equipment	20,484.22	20,484.22	*19,336.38*	—	—	—	24.14	1,171.98	—	—	—	—	—	—	1,171.98	—	1,172*
		Total General Plant (Jointly Used)	$ 1,593,258.35	$ 1,568,258.28	*$ 578,119.95*	$ 132,704.61	$ 0.52	—	$ 46,414.25	$ 1,169,257.71	$ 25,000.07	$ 30,817.23	—	—	$ 1,393.26	$ 32,210.49	$ 1,201,468.20	88.4	$ 1,358,373
		Total Natural Gas Production Plant, Transmission Plant and General Plant (Jointly Used)	$53,306,792.45	$50,088,393.17	*$ 1,804,383.48*	$13,765,470.52	$383,685.04	$396,448.98	$ 2,905,696.42	$65,735,310.65	$ 3,218,399.28	$ 4,639,010.79	$ 18,556.35	$ 38,519.06	$ 122,042.53	$ 4,818,128.73	$70,553,439.38	66.4	$106,240,226
Less: **Property Used to Transport Coke Oven Gas**																			
	330-4	Rights of Way	$ 1,511.33	$ 1,511.33	$ 1.25	$ 771.10	$ —	$ —	$ 182.65	$ 2,466.33	$ —	$ —	$ —	$ —	$ —	$ —	$ 2,466.33	—	$ 2,466*
	333-1	Field Lines	46,789.06	46,789.06	*3,932.14*	7,619.51	230.76	307.68	3,861.76	54,876.63	—	—	—	—	—	—	54,876.63	70.4	77,950
	333-2	Field Measuring and Regulating Station Equipment	10,087.67	10,087.67	—	—	—	—	342.97	10,430.64	—	—	—	—	—	—	10,430.64	94.0	11,099
	351-12	Land	2,999.00	2,999.00	1,250.00	41.86	—	—	180.26	4,471.12	—	—	—	—	—	—	4,471.12	—	4,471*
	351-23	Rights of Way	3,936.58	3,936.58	*432.53*	6,928.89	—	—	341.60	10,774.54	—	—	—	—	—	—	10,774.54	—	10,775*
	352-2	Compressor Station Structures	48,702.94	48,702.94	*4,936.38*	37,577.52	—	—	4,315.83	85,659.91	—	—	—	—	—	—	85,659.91	72.5	118,152
	352-3	Transmission System Measuring and Regulating Station Structures	—	—	1,337.40	565.38	—	—	60.52	1,963.30	—	—	—	—	—	—	1,963.30	66.8	2,941
	353	Mains	204,951.29	204,951.29	38,403.63	51,316.12	—	—	16,291.98	310,963.02	—	—	—	—	—	—	310,963.02	67.2	462,743
	354-2	Compressor Station Equipment	251,667.32	251,667.32	*14,493.30*	79,835.81	—	—	13,471.34	330,481.17	—	—	—	—	—	—	330,481.17	74.8	441,230
	378	Communication Equipment	5,481.61	5,481.61	—	—	—	—	233.25	5,714.86	—	—	—	—	—	—	5,714.86	88.1	6,487**
		Total Property Used to Transport Coke Oven Gas	$ 576,126.80	$ 576,126.80	$ 17,197.93	$ 184,656.19	$ 230.76	$ 307.68	$ 39,282.16	$ 817,801.52							$ 817,801.52	71.8	$ 1,138,314
		Total (Exclusive of Property Used to Transport Coke Oven Gas)	$52,730,665.65	$49,512,266.37	*$ 1,821,581.41*	$13,580,814.33	$383,454.28	$396,141.30	$ 2,866,414.26	$64,917,509.13	$ 3,218,399.28	$ 4,639,010.79	$ 18,556.35	$ 38,519.06	$ 122,042.53	$ 4,818,128.73	$69,735,637.86	66.4	$105,101,912

Notes: * Not trended.
** Trended in part.
(A) Includes Account 331-1: Gas Well Structures.
† ITALICS DENOTE RED FIGURES.