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OIL AND GAS
INDUSTRIES MANPOWER

A REPORT OF
THE NATIONAL PETROLEUM COUNCIL
1956

REPORT OF THE
NATIONAL PETROLEUM COUNCIL'S
COMMITTEE ON OIL AND GAS INDUSTRIES MANPOWER

May 17, 1956

CHAIRMAN OF THE COMMITTEE: W. W. VANDEVEER

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FINAL REPORT OF THE NATIONAL PETROLEUM COUNCIL'S
COMMITTEE ON OIL AND GAS INDUSTRIES MANPOWER

COMMITTEES

1. The Committee on Oil and Gas Industries Manpower was created by the National Petroleum Council upon the recommendation of the Agenda Committee in its report, which was adopted at the Council's meeting on May 4, 1955.
2. The Committee Chairman appointed a Technical Subcommittee to advise on survey technique and to draft a study report.

See Appendix 1 and 2 for membership of these Committees.

ASSIGNMENT

1. The Office of Oil and Gas, Department of the Interior, requested the National Petroleum Council to bring up-to-date its previous manpower studies including estimates of manpower engaged on July 1, 1955 in the petroleum and natural gas industries, classified by functional divisions of the industries, occupations, skills and geographical areas. It was contemplated that this request include data on manpower engaged in construction activities in the oil and natural gas industries, with tables or charts indicating numbers and skills employed, say, in building new refinery or plant facilities, additional storage or pipe lines, terminals, etc. It was also indicated that in view of the importance of manpower in

defense planning for the essential oil and natural gas industries and for the Armed Forces, estimates of manpower requirements should be frequently brought up-to-date.

See Appendix 3 for copy of May 4, 1955 request.

COMMITTEE PROCEDURE

1. The Technical Subcommittee was called together on June 14 and September 13, 1955, and finally on March 20 - 21, 1956 in the Council's Washington Office. Representatives of the Office of Oil and Gas attended part time; they outlined the specific data desired under the broad language of their May 4, 1955 request. Also, guidance was solicited from the Chairman of the Materials and Manpower Coordination Panel, Military Petroleum Advisory Board. Minutes of these meetings are part of the Council's Washington Office files.
2. The Technical Subcommittee considered the more specific types of studies indicated and explored ways and means to obtain meaningful data.
 - (a) Representatives of the Bureau of Old-Age Survivors' Insurance and Bureau of Employment Security were invited; they advised on Government sources of employment data.
 - (b) Contacts were made with such agencies as the Interstate Commerce Commission, Bureau of Mines, Maritime Administration, Corps of Engineers, Federal Power Commission and the National Science Foundation.

(c) Other contacts were made with the American Petroleum Institute, Independent Natural Gas Association, National Constructors Association, Pipe Line Contractors Association, American Association of Oilwell Drilling Contractors, National Tank Truck Carriers, Inc., Scientific Manpower Commission, representatives of several tanker/barge operators and several insurance companies.

3. These investigations resulted in specific recommendations on data sources and report drafting which were submitted to the Committee on Manpower July 15, 1955, and with their concurrence, subsequently read (without objection) at the Council's October 20 meeting in Washington. In brief these points were covered:

- (a) Use established sources of data, whenever possible and if reasonably valid, in lieu of direct questionnaire approach. Established sources make it possible to bring employment statistics up-to-date from time to time with a minimum of burden on the Industries and Government.
- (b) Use trade and contractor/constructor associations for regular and special source of data and advice because of their mutual interest. Their adoption of a practice of accumulating and issuing selected manpower statistics regularly would seem to be in the general interest of the industries they are a part of or serve.

- (c) Draft the Council's report under three main categories - estimated employment on or about July 1, 1955 for the functional divisions of the Oil Industry exclusive of retail outlets, and the Natural Gas Industry, including production and transmission up to the "city gate"; estimates of construction employment if practicable; and lists of critical skills and occupations as an authoritative standby manpower guide for use by Governmental agencies.

FINDINGS AND CONCLUSIONS

EMPLOYMENT

Study Limits

1. Employment data was limited to United States, Hawaii, and Alaska. Tanker figures represented U. S. seafaring employment in both foreign and domestic trade.
2. The scope was limited to the traditional functional divisions and operating and maintenance components.

These data generally include employment in activities conducted as part of an oil operation, for example - a refinery manufacturing petroleum coke, chemical grade aromatics, oxygenated compounds, phenols, CP oils, waxes, etc. Also, these data generally do not include employment in activities conducted separately, for example - a chemical subsidiary, carbon black, ammonia, butyl or other synthetic rubber operations.

Other than data specifically identified, no attempt has been made to estimate and include employment in general contracting activities - nor in activities which make commodities used in the oil and natural gas industries, for example - oil field equipment, fabricated vessels and auxiliaries, pumps, valves, instruments, pipe, tetraethyl lead and certain other chemicals.

Data Sources

1. The Bureau of Employment Security, Department of Labor, statistical reporting system was selected as an appropriate and best source of employment data. B.E.S. tabulates employment data each quarter period (with a lag of about 6 months after the quarter) for the main divisions of the oil industry. Natural gas transmission data is not identified separately in Utilities group codes.
2. This is a regular data source and the B.E.S. staff are prepared to continue this statistical service to the Office of Oil and Gas.
3. B.E.S. data is supplied under cooperative arrangements with State agencies. In some States only employers with 8 or more employees are required to report. However, as of January 1956, this minimum requirement is lowered to 4 or more employees. A procedure of estimating undercoverage is maintained and the figures used in this report are so adjusted.

4. Natural gas industry data was secured by direct questionnaire returns from 69 natural gas companies estimated to represent over 90% of the employment in production and transmission activities. The figures used in this report are adjusted to reflect total industry employment.
5. Other data used in this report were secured from special or regular reports from Government Agencies - or from trade association studies. Sources of data are identified in all tabulations.

BES Reporting Problems

Reliance on data supplied by BES alleviates the necessity for securing data through special questionnaires. It therefore behooves the companies to report employment data under proper codes. For example, although most companies report their refinery operations separately some other lump employment data of associated chemical fertilizer manufacturing or synthetic rubber facilities. One of the major problems is that some of the oil companies provide a single Statewide report which will include such activities as the central office, bulk tank stations and retail outlets. In other instances, production and distribution are reported on either a divisional or regional basis. In these circumstances, it is impossible for the Agencies to provide accurate distributions of employment by industry and by area.

Estimates - July 1, 1955

July 1, 1955 employment for the functional divisions of the oil and natural gas industries, exclusive of retail outlets and retail

services, is estimated at 863,800 persons. The table on page 8 summarizes these data, and where applicable by P.A.D. districts. B.E.S. data by State is subject to public disclosure restrictions - however, it is available to the Office of Oil and Gas on an interagency basis.

Age Distribution

1. Current information was developed by the Sub-committee to estimate the number of male employees in the industries by age groups. These data are significant in showing the proportion of the work force vulnerable to military services.
2. Oil Company data was supplied by several large insurance carriers who submitted composite figures for 24 companies. Natural gas company data were secured from sixty-nine companies by direct Sub-committee questionnaire sponsored by the Independent Natural Gas Association of America.
3. The following table shows the age distribution per 1000 male employees, based on an industry sampling covering 350,000 male employees:

<u>Age Group</u>	<u>Number of Employees</u>	
	<u>By Group</u>	<u>Cumulative</u>
Under 21	18	18
21 - 25	74	92
26 - 30	152	244
31 - 35	157	401
36 - 40	137	538
41 - 45	125	663
46 - 50	115	778
51 & Over	222	1000

ESTIMATED U. S. EMPLOYMENT IN THE OIL AND NATURAL GAS INDUSTRIES-JULY 1, 1955 (a)
(Exclusive of Retail Outlets and Retail Services)

FUNCTIONAL DIVISIONS AND COMPONENT	Number of Persons (in thousands)						Data Source Reference
	U. S. Total	PAD 1	PAD 2	PAD 3	PAD 4	PAD 5	
EXPLORATION AND PRODUCTION							
Crude Petroleum Production (b)	168.2	5.7	47.3	88.5	7.9	18.8	BES Code 131 (adj)
Natural Gas and Natural Gasoline Production	15.1	2.0	3.6	8.4	.5	.6	" " 132 (adj)
Other Natural Gas Production (c)	7.2	2.4	0.8	3.7	0.2	0.1	Direct Questionnaire
Oil and Gas Field Contract Services	123.0	2.7	34.2	70.6	6.9	8.6	BES Code 133 (adj)
Total	<u>313.5</u>	<u>12.8</u>	<u>85.9</u>	<u>171.2</u>	<u>15.5</u>	<u>28.1</u>	
MANUFACTURING							
Petroleum Refining	203.3	50.6	51.0	63.0	6.5	32.2	BES Code 291
Miscellaneous Products of Petroleum	6.1	2.7	1.8	0.8	-	0.8	" " 299 (adj)
Total	<u>209.4</u>	<u>53.3</u>	<u>52.8</u>	<u>63.8</u>	<u>6.5</u>	<u>33.0</u>	
TRANSPORTATION							
Oil Pipe Lines	26.7	2.5	10.8	12.3	0.9	0.2	BES Code 434
Deep Sea Tankers (U. S. Flag)	19.6						U.S. Maritime Adm.
Barges and Lake Tankers	1.2						Lake Carriers Assoc./ U.S. Engrs.
Tank Trucks (for hire)	27.5						Natl. T.T. Carriers, Inc.
Tank Cars (rental)	5.0						API
Natural Gas Transmission (up to city-gate)	33.0	5.1	12.8	13.2	0.7	1.2	Direct Questionnaire
Total	<u>113.0</u>						
DISTRIBUTION							
Petroleum Bulk Tank Stations	227.9	85.1	85.5	25.9	7.9	22.8	BES Code 512 (adj)
TOTAL OF FUNCTIONAL DIVISIONS	<u>863.8</u>	-	-	-	-	-	

- NOTES: (a) BES figures are from payrolls nearest the middle of June. Other figures are from June 30 or July 1 tabulations
- (b) Includes associated natural gas production.
- (c) Employment not reported by natural gas companies under BES Code 13

Employment of Females

1. The number of females employed in reporting oil companies was obtained in the Council's prior manpower studies. In 1948 the proportion of females in the total sample collected was 10 percent; in 1950 it was estimated at 10.8 percent.
2. Based on the opinion of insurance carriers and sampling of several oil companies, the Sub-committee feels that the 10 percent figure is still applicable. The composite returns of 69 natural gas companies showed female employment at 8.5 percent.

Employment of Technical Skills

1. No ready source of data was found indicating overall technical staff employed in the oil and natural gas industries. The National Science Foundation and the Scientific Manpower Commission in Washington had partial data but without correlation with total employment or other operating factors.
2. Since such information and the relationship to total employment is important to defense planning, the A.P.I. was asked and agreed to include a request for total scientific and engineering manpower data in a special survey which it was making on research and development expenditures.
3. Returns from 128 companies, their affiliates or their subsidiaries reporting employment of technical personnel, indicate over-all employment of 468,629 persons. The number of scientists reported is 11,887 and the number of engineers 21,204. This is a total of 33,091 technical personnel or seven technical personnel employed per 100 total employees.

4. Scientists and engineers employed in the oil and natural gas industries are a very vital category of manpower because of the basic technological nature of the activities involved, the products delivered and the services rendered. Accordingly, to the extent a national shortage may exist or develop in any of these categories, the oil and natural gas industries face a particularly crucial shortage.

CONSTRUCTION ACTIVITIES

1. Employment data for the construction and building trades is available in the B.E.S. series but not by separate industries such as oil and natural gas. Manpower is used mainly on a project basis and has considerable movement in and out of any one industry group in a community or labor market area. Even on a specific oil or natural gas industry project employment fluctuates and there are significant shifts in the kinds of crafts as construction progresses.
2. Because of this mobile characteristic, the Technical Sub-committee on Manpower concluded that a broad survey into the numbers engaged at a specific time, say, July 1, 1955, in construction activities in the oil and natural gas industries would not be too meaningful-- even if obtainable on some valid basis.
3. Further, they concluded that a study of numbers and skills needed to build a general category of facility without some specific

definition as to location, type, size, timing, as well as conditions of employment, could only obtain "shot-gun" results-- and probably, not too meaningful ones for application to specific military assumptions/solutions.

4. Accordingly, the Technical Sub-committee on Manpower recommended that in lieu of a Council study on construction employment, it would seem to serve the Office of Oil and Gas and the Military Petroleum Advisory Board better if they had direct liaison with and the assistance of interested contractor/constructor associations on such matters. The presumption being - that within direct channels such data requests could be given sharper definition while still having security coverage - and that, in turn, designated individuals in the respective associations could draw upon the past construction experience of appropriate members to obtain the requested estimates without disclosure of source.

The Office of Oil and Gas and representatives of the Military Petroleum Advisory Board sanctioned this approach.

5. Initially, contact was made with the National Constructors' Association and the Pipe Line Contractors' Association and their Executive Committees have indicated willingness to advise and cooperate in any reasonable request.

CRITICAL OCCUPATIONS

1. A recommended list of critical occupations in the Oil and Natural Gas Industries is included in Appendix 6.

2. The Technical Subcommittee submitted a preliminary draft to the following groups for their review and correction:
 - (a) Committee on Personnel Training - A.P.I. Division of Transportation.
 - (b) General Committee - A. P. I. Division of Production.
 - (c) Committee on Training - A. P. I. Division of Refining.
 - (d) Employee Relations Committee - Independent Natural Gas Association of America.
 - (e) Representatives of several tanker companies.
3. The Technical Subcommittee members have considered the views of these industry groups. They have added their own views representing 7 companies and 3 independent associations--and Appendix 6 is a fair compromise of what is inherently a difficult task.
4. It is felt that this list will constitute an authoritative manpower guide for the use of the Department of Defense and the Department of the Interior and the Military Petroleum Advisory Board, in connection with their studies concerning wartime manpower requirements. It should be borne in mind that this list will require revision from time to time to reflect changes in the industries.

RECOMMENDATIONS

In the course of this study certain conclusions were reached about the continuity of manpower statistics for the Oil and Natural Gas industries. These points are brought to the attention of the Council members:

1. Promote the continued use of the appropriate data sources in Government Agencies. The statistics are generally by-products resulting from statutory reporting by companies.
2. The usefulness of these data sources is dependent upon the accuracy and completeness of company reporting and Government Agency analysis and tabulation. More understanding should be exercised on the part of those persons making up and filing company employment returns by geographical location and by industrial statistical codes for such agencies as the Bureau of Employment Security, Bureau of Old-Age Survivors Insurance and the Bureau of Census.
3. Federal and State Agencies should be urged to maintain the code groups and proper allocation of company data which will yield meaningful data to the oil and natural gas industries.
4. Trade Associations issue significant operating statistics. It is recommended that they also include regular employment statistics in the general interest of the industries they are a part of or serve.

Respectfully submitted,

W. W. Vandever, Chairman
Committee on Oil and Gas
Industries Manpower

NATIONAL PETROLEUM COUNCIL

COMMITTEE ON OIL AND GAS INDUSTRIES MANPOWER

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C
O
P
Y

May 4, 1955

Mr. Walter S. Hallanan, Chairman
National Petroleum Council
1625 K Street, N. W.
Washington, D. C.

Dear Mr. Hallanan:

On January 26, 1950, the National Petroleum Council's Committee on Petroleum Industry Manpower submitted a report giving the results of a nationwide survey of petroleum industry manpower. This survey included an estimate of the manpower engaged at that time in the industry, classified by functional divisions of the industry, occupations and skills, and geographical areas. This report also included information on the number of males engaged in jobs requiring at least a year's replacement training, number of male employees who were members of the Armed Forces Reserve or National Guard units and the number of male employees over 35 years of age.

On May 9, 1951, the National Petroleum Council's Committee on Oil and Gas Industry Manpower made a second report on the manpower requirements of the petroleum and gas industries. This second study brought up to date the report of January 26, 1950.

At the request of the Departments of Defense and Interior, the Military Petroleum Advisory Board is currently undertaking a study of the wartime manpower requirements of the petroleum industry. The previous peacetime manpower reports of the National Petroleum Council are of great assistance in this study. Although the current Military Petroleum Advisory Board study will be completed in the near future, it is anticipated that periodically thereafter, the Government will require additional studies of the wartime manpower requirements of the petroleum and gas industries. The peacetime employment in the oil and gas industries, as reflected in the National Petroleum Council studies, is the basis of the Military Petroleum Advisory Board wartime studies.

In view of the importance of manpower in defense planning for the essential oil and gas industries and for the Armed Forces, the manpower requirements of these industries should be frequently brought up to date.

Because there has been significant expansion in the oil and gas industries since the last manpower survey was made by the National Petroleum Council, it is requested that the National Petroleum Council bring up to date the previous study and prepare a report thereon together with such recommendations as the Council may deem appropriate. It is requested that this new study include estimates of manpower engaged on July 1, 1955 in the petroleum and gas industries, classified by functional divisions of the industries, occupations, skills and geographical areas.

Sincerely yours,

/s/ Carroll D. Fentress

Carroll D. Fentress
Acting Director

EMPLOYMENT AND OPERATIONS DATA, CRUDE PETROLEUM AND NATURAL GAS
1950 - 1955

Year	Employment	Wells Data			Production Data	
		Completions All	Oil Wells Producing	Natural Gas Wells Producing	Crude Oil Production (Barrels Daily)	Total Production (Barrels Daily)
1950	254,200	43,287	465,870	64,900	5,407,052	5,906,000
1951	271,600	44,545	474,990	65,100	6,158,112	6,720,000
1952	289,800	45,895	488,520	65,450	6,256,383	6,868,000
1953	297,400	49,325	498,940	68,223	6,457,759	7,113,000
1954	298,800	54,051	511,200	70,192	6,346,090	7,035,000
1955 (June)	306,300 <u>a/</u>	27,287	N.A.	N.A.	6,776,000 <u>b/</u>	7,485,000 <u>b/</u>

a/ Employment figures include workers of Natural Gas Companies engaged in production of natural gas who were not reported under BES Code 13. Comparable data are not available for prior years.

b/ Average, first six months.

1/ Includes Crude Petroleum, Natural Gas Liquids and Benzol as reported by the Bureau of Mines in its Monthly Petroleum Statements.

N.A. Not Available.

OPERATING REFINERIES, CAPACITY AND EMPLOYMENT, 1950 - 1955

End of Year	Number Operating Refineries	Refinery Capacities (Bbls./Day)	Employment		
			Total	Refinery	Other Related 1/
1950	325	6,701,815	195,712	190,232	5,480
1951	327	7,161,366	205,864	198,578	7,286
1952	315	7,481,701	209,102	201,741	7,361
1953	308	7,782,103	212,408	205,810	6,598
1954	296	8,069,154	208,283	202,012	6,271
1955 A/	N.A.	N.A.	209,376	203,276	6,100

1/ Adjusted by Committee. Based on BES Code 299, Adjusted. See table on page 8.

A/ Employment, as of mid-June 1955. Number of refineries and operating capacity, adjusted to the year of operation as the Bureau of Mines reports as of the beginning of the year. Data for operating refineries and operating capacities will be available in mid-summer 1956.

No data are available to cover the year 1955. Further expansions in capacities, however, are indicated for that year as there was new throughput capacity under construction at the beginning of 1955 aggregating 146,800 barrels per day; also 234,370 barrels per day in new cracking capacities an expansion of nearly 10 percent.

Sources: Employment, Bureau of Employment Security; Refinery Data, Bureau of Mines INFORMATION Circulars.

RECOMMENDED LIST OF CRITICAL OCCUPATIONSIN OIL AND NATURAL GAS INDUSTRIES

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<u>RATING SYMBOL</u>	<u>DESCRIPTION</u>
A	Work requiring any or all of the following factors to such a degree that replacements are practically impossible to obtain under National Emergency conditions: precision, accuracy, long experience, knowledge of intricate machine operations, special education, or unusual aptitude.
B	Work requiring one year or longer to train replacements and involving any or all of the factors of precision, accuracy, familiarity with specified basic processes or special education.
C	Work requiring between six months and one year of training before a new worker is qualified with respect to skill, reliability, or production.
D	Work requiring less than six months of training before a new or upgraded employee is competent.
X	Jobs which basically require a four-year college training in a recognized professional school.

EXECUTIVE AND ADMINISTRATIVE

(General for all branches)

Seniors and Supervisors (XA) (A)
of all following listed functions:

Oil and Gas Exploration and
Production - Including Research
Oil Manufacturing - Including
Research and Technical Services
Oil Transportation
Pipe Line
Marine
Air, Rail and Truck Traffic
Oil Distribution
Gas Transmission
Corporate and Legal
Financial and Accounting
Personnel & Industrial Relations
Purchasing - Technical Equipment

The attached lists do not include executive and administrative employees. The degree to which such persons should be considered as "necessary men" to the industry, to production, transportation and manufacture & and coordination thereof depends upon whether or not they have a successor qualified to take their place who is not also immediately subject to military service, as well as the length of time necessary to train substitutes. Naturally these factors vary with every organization but should be given special consideration by any designated manpower agencies when requests for deferments are made.

EXPLORATION AND PRODUCTION

(May be a company, department or separate establishment)

Exploration and production is that branch of the petroleum industry which is concerned with the discovery, development and production of oil and gas fields. New fields can only be discovered by exploratory drilling—the so-called "wildcat" well. Incident to this work is the secondary objective of locating and exploiting deposits of uranium, sulphur and potash. All these activities from an organizational standpoint may be classified under following four categories, namely: Exploration, Drilling and Production, Land, and Research.

CRITICAL JOBS

Seniors and Supervisors of the following Exploration and Production Jobs: (XA) (A)

GENERAL FUNCTIONS

Key men responsible for the planning and direction in highly technical field—the discovery and production of oil and gas and other minerals.

EXPLORATION

Exploration is concerned with finding new oil, gas and mineral resources, to meet increasing demands and replace depleted reserves. It is conducted by two closely coordinated prospecting teams commonly known as Geological and Geophysical groups. These groups are assisted by Scouts who collect information on local industry activities such as, leasing and well-drilling.

CRITICAL JOBS

Captain (Marine Craft) (A)
 Draftsman (Geologic) (A)
 Driller (core hole) (B)
 Engineer (Marine Craft) (B)
 Geologist (XA)
 Geologist's Assistant (XD)
 Laboratory Technician (C)
 Log Plotter (C)
 Paleontologist (XA)
 Petrographer (XA)
 Stratigrapher (XA)
 Surveyor (B)

GENERAL FUNCTIONS

GEOLOGICAL - The Geological group consists of Geologists and Geological Specialists, such as Paleontologists and Stratigraphers, who collect, study and interpret geological data to determine the most favorable structures where new oil, gas and mineral reserves might be found. Geologists conduct surveys in the field and make maps of geological formations exposed at the earth's surface; they construct lithologic logs of the subsurface from drill cuttings and cores, and prepare maps of subsurface conditions and formations.

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EXPLORATION (CONT'D)CRITICAL JOBS

Captain (Marine Craft) (A)
 Civil Engineer (XA)
 Computer (C)
 Draftsman (Mechanical) (A)
 Driller (Shothole) (B)
 Electrical (A)
 Electrical Engineer (XA)
 Engineer (Marine Craft) (B)
 Equipment Designer (A)
 Equipment Mechanic (A)
 Geophysicist (XA)
 Geophysicist's Assistant (XD)
 Instrument Mechanic (A)
 Operations Assistant (A)
 Operator (B)
 Operator (VAR.) (C)
 Party Supervisor (B)
 Radar, Radio Operator (C)
 Radar, Radio Repairman (A)
 Seismologist (XA)
 Seismologist's Party Chief (XA)
 Shooter (C)
 Surveyor (B)

Chief Scout (A)
 Scout (C)

GENERAL FUNCTIONS

by correlating and integrating all available geological and geophysical information and data. Based on the results of this work, decisions are made to embark upon extensive exploration programs, acquire or surrender acreage, and drill wildcat wells. Consequently, academic and specialized training followed by practical experience are necessary to qualify for this work.

GEOPHYSICAL - The Geophysical group is composed of Geophysicists, Seismologists, Electrical Engineers and graduate Physicists and Mathematicians who conduct geophysical surveys in the field and based upon their interpretation of the results of this work construct maps showing subsurface formations and structures. This information is closely integrated with the results of studies made by the geologists. This group utilizes various complex physical and electrical instruments, such as the seismograph, gravimeter, magnetometer, and electrical-resistivity measuring devices. The jobs are highly technical and require people with academic and specialized training followed by practical experience to qualify for this work

SCOUTING - Scouts are responsible for the collection and dissemination of local drilling, land and geophysical data.

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DRILLING AND PRODUCTION

Drilling and Production---responsible for the drilling of wildcat wells at locations determined by Exploration; developing any resultant reserves including reserves acquired by purchase; producing these reserves; processing natural gas and maintaining the necessary production facilities. These activities may be most conveniently classified in three groups, namely: Production Operations, Engineering and Natural Gas Processing.

CRITICAL JOBS

Construction Foreman (B)
 Crude Oil and/or Volatiles
 Purchaser (A)
 Rig Building Foreman (B)
 Derrickman (B)
 District Gauger (B)
 Drilling Foreman (A)
 Driller (A)
 Electrician (A)
 Gang Pusher (C)
 Gauger (C)

Head Roustabout (B)
 Machinist (A)
 Mechanic (B)
 Material and Warehouse Supvr. (B)
 Operator Gas Lift (B)
 Operator Water Flood (B)
 Production Foreman (A)
 Pumper (C)
 Salt Water Disposal Foreman (B)
 Terminal Foreman (B)
 Tool Dresser (B)
 Welder (B)

Aircraft Dispatcher (B)
 Aircraft Pilot (A)
 Aircraft Co-Pilot (A)
 Aircraft Mechanic (A)
 Aircraft Engineer (A)
 Automotive Mechanic (B)
 Heavy Truck Driver (C)

Chemical Engineer (XA)
 Civil Engineer (XA)
 Corrosion Engineer (XA)
 Development Engineer (XA)
 Draftsman (B)
 Drilling Engineer (XA)
 Electrical Engineer (XA)
 Engineer Assistant (C)
 Exploitation Engineer (XA)
 Laboratory Technician (C)
 Log Engineer (XA)
 Mechanical Engineer (XA)

GENERAL FUNCTIONS

PRODUCTION OPERATIONS - Production operations is composed primarily of men with long practical experience in drilling and production operations. They are responsible for drilling, testing and treating exploratory and development wells and producing these wells in accordance with Federal, State, and Company regulations. Also, they are responsible for the day-to-day maintenance of production facilities and other oil field equipment.

Operate and maintain the aviation, automotive and other rolling stock needed to transport personnel and equipment between job locations.

PRODUCTION ENGINEERING - Production Engineering may be divided into Exploitation and Mechanical Engineering groups. Their functions are to study and recommend programs, techniques, and facilities to develop reserves so that maximum return can be obtained from the reservoir and also to improve the efficiency of operations. The Exploitation Engineering group plans the development of reserves from a subsurface viewpoint after their discovery. Accordingly, the work lies primarily in the fields of production

DRILLING AND PRODUCTION (CONT'D)CRITICAL JOBS

Mud Engineer (XA)
 Production Geologist (XA)
 Reservoir Engineer (XA)
 Subsurface Pressure Analyst(C)

Chemist (B)
 Chief Chemist (XA)
 Electrician (A)
 Gas Agent (A)
 Gas Engineer (XA)
 Gas Tester (B)
 Instrument Repairman (B)
 Loading Rack Foreman (B)
 Maintenance Foreman (A)
 Operator 1 (A)
 Plant Superintendent (A)
 Repairman (B)
 Shift Foreman and/or Stillman(A)
 Storekeeper (C)
 Welder (B)

GENERAL FUNCTIONS

geology, reservoir mechanics, and petrophysics. The other engineering problems, dealing with drilling, production facilities, construction, corrosion mitigation, and the mechanical aspects of off shore operations fall within the scope of the Mechanical Engineering group.

NATURAL GAS PROCESSING - Men engaged in the processing of natural gas including the recovery of propane, isobutane, butane, isopentane, natural gasoline and stabilized distillate, as well as the compression of gas for delivery to pipeline transportation companies, and for reservoir pressure maintenance both in cycling and in secondary recovery operations.

Plants designed to treat natural gas make use of one or more of the following processes: compression, absorption, adsorption, distillations, fractionation and refrigeration.

Auxiliary plant equipment includes steam and electrical generators and facilities to produce and treat cooling water

LAND

Land is responsible for the acquisition of land and leases, curing of titles, and the maintenance of land records, and royalty payments. These activities may be performed by two groups, generally designated as Land and Title and Rental groups.

CRITICAL JOBS

Draftsman (B)
 Land Agent (A)
 Land Man (A)
 Supervisor(Drafting & Surveying)
 (A)
 Survey Party Chief (A)
 Surveyor (B)

GENERAL FUNCTIONS

LAND - The Land men are - responsible for the acquisition of leases and curing titles They also acquire surfaceleases, rights-of-way, lease amendments and negotiate various types of other agreements.

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LAND (CONT'D)CRITICAL JOBS

Analyst (C)
 Senior Analyst (A)
 Supervisor (Rental & Records)(A)
 Supervisor (Title) (A)
 Supervisor (Title & Rental)(A)

GENERAL FUNCTIONS

TITLE AND RENTAL - The Title and Rental men are responsible for the maintenance of adequate land records insuring the prompt and accurate payment of lease rentals and royalties.

EXPLORATION AND PRODUCTION RESEARCH, PRODUCTION ENGINEERING RESEARCH, DRILLING RESEARCH AND OTHER TECHNICAL SERVICES

(May be a company, department or separate establishment)

CRITICAL JOBS

Chemical Engineer (XA)
 Chemist (XA)
 Civil Engineer (XA)
 Electrical Engineer (XA)
 Geologist (XA)
 Geophysicist (XA)
 Mathematician (XA)
 Mechanical Engineer (XA)
 Microbiologist (XA)
 Mining Engineer (XA)
 Petroleum Engineer (XA)
 Physicist (XA)
 Radio Engineer (XA)
 Seismologist (XA)

GENERAL FUNCTIONS

RESEARCH AND/OR DEVELOPMENT GROUPS-
 Variously called Research, Technical, Exploration, Geophysical, Production, Laboratories or Departments.

Highly skilled professional scientists and technologists, engineers, chemists, physicists and geologists working on improved and better methods for discovering oil and gas and minerals, for effectively exploiting discovered deposits of these materials, and for bringing these materials to the surface, and working toward the discovery, development and evaluation of new methods of finding, exploiting and producing crude oil, gas and minerals.

Draftsman (B)
 Electronic Mechanic (A)
 Instrument Maker (A)
 Laboratory Technician (C)
 Logging Operator (B)
 Machinist (A)
 Mechanic (B)
 Seismograph Inspector (A)
 Seismograph Operator (B)
 Shop Foreman (A)
 Surveyor (B)

Key technicians without formal professional training but with long and specialized experience in laboratory work, operating specialized instruments and apparatus required for or developed in the course of these researches; acting as assistants to professional men in such capacities that they may not be replaced by men who have been trained for short periods. This includes personnel of research shops who fabricate highly specialized apparatus and instruments for the carrying out of the research function.

EXPLORATION AND PRODUCTION RESEARCH, PRODUCTION ENGINEERING
RESEARCH, DRILLING RESEARCH AND OTHER TECHNICAL SERVICES (CONT'D)

CRITICAL JOBS

Electronic Mechanics (A)
Electronic Wireman (B)
Foreman (A)
Instrument Maker (A)
Mechanic (B)
Seismograph Inspector (A)
Shop Superintendent (A)

GENERAL FUNCTIONS

Key technicians without formal professional training but with long and specialized experience in fabricating, assembling and testing exploration equipment such as seismographs, magnetometers, gravimeters and well logging tools.

MANUFACTURING

(May be a company, department or separate establishment)

REFINERY OPERATIONS

PROCESS - The conversion of crude oil and other charging stocks into finished products, the main process steps being as follows:

DISTILLATION AND CRACKING - All types of atmospheric and vacuum distillation units; thermal and catalytic cracking units; reforming units; other high temperature or catalytic units such as hydrogenation, polymerization, etc.

GAS AND GASOLINE RECOVERY - Gas recovery operations; gasoline recovery and rectification; petroleum gas compressions; stabilization and debutanization of gasoline from refinery gas as basis for manufacture of high octane aviation gasoline.

SPECIAL PRODUCTS - Production of special products from petroleum which are not simple hydrocarbon fractions of crude petroleum; for example, such products as alkylate, benzene, iso-octane, toluene, wax, rubber base, alcohols, acetates, ketones, etc., including acid manufacturing.

LUBE OIL - All types of vacuum and extraction units; deasphalting and dewaxing units; filtering, blending and compounding processes.

TREATINGS - Acid, soda, phenol, SO₂, clay, doctor, copper, and other chemical treating of any petroleum products or by-products in either continuous or batch operation.

CRITICAL JOBSGENERAL FUNCTIONS

Seniors and Supervisors of
the following jobs: (XA)(A)

Key men essential for war production and responsible for direction of men, safety of men, and millions of dollars of metal equipment not replaceable during war time.

Shift Foreman or Stillman (A)
Operator (B)
Clean-Out Foreman (C)

Necessary men on units in full scale refinery process responsible for the equipment, the processing operations, products and men on their shift.

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REFINERY OPERATIONS (CONT'D)CRITICAL JOBS

Shift Foreman or Treater (A)
Operator (B) or
Treater Helper (B)

Filler and Package Foreman (B)
Oil Blender (and/or Compounder)
(B)
Grease Maker (A)
Refrigeration Engineers (C)

Seniors and Supervisors of the
following jobs: (XA)(A)

Dispatcher (A)
Cargo Blender (Ethyl)(A)
Pumper or Operator (B)
Head Shipping Man (A)
Rackman (C)
Dockman (C)

Seniors and Supervisors of the
following jobs: (A)

GENERAL FUNCTIONS

Necessary men-(Acid Treater, Crude Treater, Lube oil Treater, Wax Treater, Etc.) Direct and are responsible for chemical or clay treating to definite specifications in a full scale process operation, any one or all of the various petroleum fractions of products. Responsible for all chemicals and products equipment and personnel on their shift.

Necessary process unit operators and as such fully responsible for equipment, products, operations and personnel on their shift. Specific duties vary with the particular process, but generally are responsible for maintaining temperatures, flows, etc., to obtain desired products. Direct work of shift personnel.

OIL MOVEMENT, STORAGE & SHIPPING - Crude oil and product transfer, blending, mixing, loading and unloading tank cars, barges, and tankers.

Key men responsible for proper direction of men and products, and their blending to specifications.

Necessary men in directing shipping and the operation of steam driven or electric pumps and setting lines to move crude oil, finished and unfinished products, stocks in process, chemicals, etc. Must know lines and manifolds of a very complex system. Responsible for personnel, tank gauging and equipment (pumps, tanks, lines, etc.) blending of base stocks to specifications.

UTILITIES - Steam, electric power, water and air.

Key men responsible for utility operations under all conditions.

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REFINERY OPERATIONS (CONT'D)CRITICAL JOBS

Boilerhouse, Engineer and/or
Operator (A)
Water Tender (A)
Generator Operator (B)
Compressor Operator (B)

Seniors and Supervisors of the
following jobs: (A)

Automotive Equipment Mechanic(A)
Blacksmith (A)
Boilermakers (A)
Brickmason (A)
Bulldozer Operator (C)
Car Inspector (B)
Car Repairman (B)
Carpenter (A)
Crane Operator (A)
Electrician (A)
Equipment Inspector (A)
Insulator (B)
Instrument Repairman (A)
Leadburner (B)
Lineman(A)
Locomotive Operator (A)
Material Foreman (Warehouse)(A)
Machinist (Field and Shop)(A)
Metallizer (D)
Painter (C)
Pipefitter (A)
Rigger (A)
Salvage Mechanic (C)
Sheet Metal Worker (B)
Tool Repairman (C)
Transitman (B)
Welder (B)
Specification Welder (A)

GENERAL FUNCTIONS

Necessary men who may be required to be licensed operators in some states. Through sufficient experience are capable of meeting the varied emergency situations encountered in utility operations.

SKILLED CRAFTSMEN AND SERVICE GROUPS -
Necessary men directly engaged in maintenance and construction work essential to the continuous operations of a refinery; protection and delivery of products.

Key men responsible for planning and direction of maintenance, etc., and for safety of their crews.

Necessary mechanics who are specially experienced in refinery equipment, working pressures, and necessary safety standards, etc. Men who through a formal apprenticeship program (or its equivalent through job upgrading in the trade and on the job) are fully grounded in the basic skills and knowledge of their trade, have had sufficient experience to perform all necessary type work within the trade and are able to handle with normal supervision any job in their trade to completion from oral instruction, sketches, or the prints. (There may also be a trade within a trade, such as a riveter and caulker in the Boiler-maker trade.)

PROCESS AND PRODUCT RESEARCH, REFINERY TECHNOLOGY AND OTHER TECHNICAL SERVICES

(May be a company, department or separate establishment)

CRITICAL JOBS

Chemist (XA)
 Chemical Engineer (XA)
 Electrical Engineer (XA)
 Mathematician (XA)
 Mechanical Engineer (XA)
 Physicist (XA)

Glass Blower (Apparatus) (A)
 Foreman or Stillman (Pilot Plant) (A)
 Instrument Maker (A)
 Laboratory Technicians (B)
 Machinist (A)
 Test Engine Mechanic (A)

Chemical Engineer (XA)
 Civil Engineer (XA)
 Electrical Engineer (XA)
 Industrial Engineer (XA)
 Mechanical Engineer (XA)
 Petroleum Engineer (XA)
 Equipment Inspector (XA)
 Party Chief (B)

Designer, Equipment (A)
 Draftsman, Mechanical (A)
 Material Inspector (B)
 Expediter (B)

GENERAL FUNCTIONS

RESEARCH AND/OR DEVELOPMENT GROUPS - Variously called Research, Technical, Chemical, Development or Process Laboratories or Departments.

Highly skilled professional technologists, engineers, chemists and physicists working on improved and better methods for making known products and where necessary, working toward the discovery, development and evaluation of new products.

Key technicians without formal professional training but with long and specialized experience in laboratory work; operating pilot plants research engine installations, acting as assistants to professional men in such capacities that they may not be replaced by men who have been trained for short periods.

ENGINEERING GROUPS - Variously called Engineering, Process Engineering, Development Engineering, Departments or Division.

Highly skilled professional technologists, engineers engaged in many functions in connection with choosing, designing, obtaining materials for, erecting, testing and maintaining plants and equipment necessary for the conduct of the petroleum industry. Engaged in occupations calling for the use of professional training in the work carried out in engineering groups.

Highly skilled auxiliary engineering personnel engaged in plans necessary for the construction or renovation of petroleum equipment and plants.

PROCESS AND PRODUCT RESEARCH, REFINERY TECHNOLOGY AND OTHER TECHNICAL SERVICES
(CONT'D)

CRITICAL JOBS

Chemist (XA)
Engineer (XA)
Metallurgist (XA)

Chemist (XA)
Chemical Engineer (XA)
Petroleum Engineer (XA)
Mathematician (XA)

Chemist (XA)
Chemical Engineer (XA)
Physicist (XA)
Special Tester (B)
Tester (C)

Instrument Maker (A)

Industrial Engineer (XA)
Lubrication and Fuel Engineer (XA)
Production Engineer (XA)
Service Engineer (XA)

Seniors and Supervisors of all
the foregoing listed critical
jobs: (XA) (A)

GENERAL FUNCTIONS

MATERIALS TESTING OR METALLURGICAL LABORATORIES - Professionally trained specialists engaged in testing metals, alloys, refractories and other materials necessary in construction or maintenance of equipment.

PROCESS CONTROL GROUPS - Professionally trained technologists - specialists engaged in control or supervision of the operation of refinery processes such as distillation, cracking plants, etc, to insure quality and maximum production.

ANALYTICAL OR CONTROL LABORATORIES - Professionally trained supervisors and skilled technicians of long experience, carrying out analytical investigations, maintaining and making instruments or determining the composition or characteristics made by or necessary to the conduct of the petroleum business.

Skilled Technicians of long experience in instrument making and maintenance and analysis.

TECHNICAL SERVICE DEPARTMENTS - Professionally trained engineers (or equivalent experience) working with the armed forces, railroads, industries, in finding, developing or adopting special lubricants, motor fuels, and other petroleum products necessary to meet new or unusual requirements; assisting industry in proper lubrication and conservation of existing equipment, and working cooperatively with large industries in the development of improved equipment.

SUPERVISION - Necessary key men who plan and direct all the foregoing functions and upon whom rest the technical responsibility for production and its successful development and application.

OIL TRANSPORTATION

(May be a company, department or separate establishment)

Since oil must be transported in large quantities over long distances which often separate producing and consuming centers, transportation must be provided for the daily movement of predetermined quantities of crude and volatiles to refineries and of finished products from refineries to distribution centers. Shipments must be scheduled far in advance, checked and revised regularly to insure adequate and most economical transportation in compliance with Government, industry, and company regulations.

Owing to its nature, oil requires special arrangements for its transport in tankers, barges, pipelines and road or rail vehicles, which have to bear the disadvantage of lack of alternative uses and empty return journeys. Its storage presents greater problems than that of most other commodities.

It should be noted national or local emergency conditions may greatly affect transportation activities. For example; emergency conditions may require increased rates of operation, major revisions such as reversal of flow direction, dismantling and rebuilding facilities, conversion to other uses, transportation of new and different materials, integration of various owner's facilities into single systems and extension to new areas. These accentuate the need for personnel with technical training and especially for those with long experience which gives them knowledge of intricate equipment and operating systems.

CRITICAL JOBS

Seniors and Supervisors of the following Transportation jobs:
(A)(XA)

GENERAL FUNCTIONS

Key men responsible for the direction and planning of activities and facilities needed for providing transportation, both for crude oil and finished products in accordance with Governmental, industry, and company regulations.

PIPE LINE TRANSPORTATION

Pipe Line transportation of crude oil and volatiles from production areas to refineries and terminals for trans-shipment to tankers and barges, and the transportation of refined petroleum products from refineries, ship and barge terminals to distribution centers.

PIPE LINE TRANSPORTATION (CONT'D)CRITICAL JOBS

Chemist (XB)
 Civil Engineer (XA)
 Corrosion Engineer (XA)
 Draftsman (Civil)(A)
 Draftsman (Electrical)(A)
 Draftsman (Mechanical)(A)
 Electrical Engineer (XA)
 Mechanical Engineer (XA)

Dispatcher (A)
 Deliveryman (B)

Aircraft Patrol Pilot (A)
 Aircraft Mechanic (B)
 Carpenter Foreman (A)
 Connection Foreman (A)
 Material and Warehouse
 Supervisor (B)
 Pipe Line Construction
 Inspector (A)
 Pipe Line Crew Foreman (A)
 Shop Foreman (A)
 Tank Foreman (A)
 Welder Foreman (A)
 Work Equipment Operator (C)

Mechanic (A)
 Electrician (A)

Welder (B)

Station Superintendent (A)
 Chief Operator (Pump Station)(A)
 Operator (B)

GENERAL FUNCTIONS

ENGINEERING AND TECHNICAL - Require men with formal technical education or its equivalent in order to advise management on the technical phases of design, construction and operation of pipe line gathering, trunk line transportation and distribution systems for crude oil and products.

OIL MOVEMENT, STORAGE AND DISPATCHING - Responsible for allocation of space in pumping schedules and storage tanks for shipment of batches of oil of various grades from fields to refineries and marine terminals. The same problems apply to movement of gasoline and other products from refineries to distribution centers. Must allocate space and schedule movements in manner to make most efficient and effective use of facilities.

CONSTRUCTION, MAINTENANCE, REPAIR AND OPERATION - Must be able to direct field work in construction of pipe lines, tanks, and related facilities to comply with specifications. For maintenance and repair must know location of lines and know history and general condition of lines, tanks and other facilities not accessible for inspection.

Must be able to install, maintain and repair pumps, their drivers and auxiliary equipment.

Pipe line welding is specialized craft requiring on-the-job training.

In complete charge of pump station, responsible for oil movement, maintenance, repair and employee relations.

PIPE LINE TRANSPORTATION (CONT'D)CRITICAL JOBSGENERAL FUNCTIONS

Chief Deliveryman (A)
 Operator (Metering Station) (A)
 Terminal Man (C)
 Tester (Laboratory) (C)
 Loader (D)

Men responsible for delivery of crude or finished products from pipe lines to terminals; its measurement, storage, specification control and delivery to refineries, marine terminals or distribution locations.

Electrical Engineer (XA)
 Electrician (A)
 Foreman (A)
 Lineman (B)
 Radio Technician (B)
 Supervisor - Radio Communication(A)

COMMUNICATIONS - Responsible for design, installation, and maintenance of communications system which consists of automatic controls and sequence operation devices as well as transmission of intelligence for remote control of operations. This system may be any one or a combination of telephone and teletype, microwave or radio circuits.

Gaugers (C) and (D)

CRUDE OIL AND PRODUCTS MEASUREMENT - Must run oil from leases or products from storage so that most efficient use is made of the system, and be able to test oil for Basic Sediment and Water and other contaminants, to gauge or measure oil and products with acceptable accuracy, and comply with regulations of governmental agencies with regard to proration, etc.

Right-of-Way and Claims Agent (A)

RIGHT-OF-WAY AND CLAIMS - This department is responsible for obtaining rights-of-way, purchase of land and handling claims resulting from construction and operation.

MARINE TRANSPORTATION

The transportation of petroleum, its products and derivatives by tankers and barges on ocean and inland waterways. This activity requires men with a comprehensive knowledge of port conditions, bunkering facilities, supply points, safety precautions and Government regulations which can only be acquired through years of experience.

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MARINE TRANSPORTATION (CONT'D)CRITICAL JOBSGENERAL FUNCTIONS

Senior Dispatcher (Tanker
Operations and Schedules) (A)
Dispatcher (Tanker) (A)
Supervisor (Barge Operation) (B)
Supervisor (Tanker Charters) (A)

SCHEDULING AND OPERATIONS - Men who plan, coordinate, schedule and supervise shipments of petroleum, its products and derivatives, to and from refineries and marine terminals; who procure tonnage needed to supplement long term contract coverage of requirements; and who estimate demand and evaluate the performance by the carriers.

Senior Analyst (B)
Analyst (C)

Responsible for evaluation of costs and performance of marine transportation, and for maintenance of records thereof.

Port Captains (A)
Port Engineer (A)
Port Stewards (A)
Port Radio Engineers (A)
Port Dispatchers (A)

PORT OPERATION - Men directly engaged in superintending the loading and discharging of cargoes, or in expediting turnaround of tankers and barges in ports. The hazards involved and the coordination of activities necessary to avoid delays require experienced men.

Deck Officers (A)
Engineering Officers (A)
Seaman (Able Bodied) (B)
Steward (A)
Cook (A)
Oiler (C)
Pumpman (B)
Fireman (D)
Machinist (A)
Electrician (A)

INLAND WATERWAYS - Qualified officers and men who man tankers, tugs and barges operating in inland waters and who hold certificates issued by the Bureau of Marine Inspection and Navigation for ratings above Ordinary Seaman, Wiper or Messman.

Deck Officers (A)
Engineering Officers (A)
Radio Officers (A)
Seaman (Able Bodied) (A)
Steward (A)
Cook (A)
Oiler (B)
Fireman (B)
Machinist (A)
Electrician (A)
Pumpman (A)

SALT WATER SHIPPING - Qualified officers and men who man tankers and who hold licenses or certificates issued by the Bureau of Marine Inspection and Navigation above Ordinary Seaman, Wiper or Messman.

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AIR, RAIL, AND TRUCK TRAFFIC

Traffic is responsible for planning and directing the movement of petroleum, its products and derivatives as well as personnel and supplies by air, rail, and truck transportation and certain marine movements.

CRITICAL JOBS

Supervisor Tank Car (A)
Supervisor Rail Rates (A)
Supervisor Truck Transportation (A)
Supervisor Passenger Traffic (A)
Field Representative (A)

GENERAL FUNCTIONS

Men who plan and direct all air, rail, and truck transportation activities and certain marine movements. Responsibilities include negotiating and determining applicable rates, proper dispatching and routing and arranging for additional facilities when required in compliance with Government, industry, and company rules and regulations.

Responsible for analysis and evaluation of transportation costs and services; determination of rates and routes; control of movements and allocation of railway tank cars; preparation of freight rate statements for use in distribution and supply of products, crude oil and volatiles; hiring and contracting for adequate truck transport equipment; determination and analysis of Governmental Transportation rules and regulations.

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OIL DISTRIBUTION

(May be a company, department, or separate establishment)

Petroleum fuels are estimated to supply about half the energy used today in the United States. In addition to the familiar products - gasolines, kerosenes, fuel oils - a very wide range, which is constantly extending, of other products must be produced and distributed to satisfy technical progress in Armed Forces, industrial and other fields.

The supply of products comes from many sources and involves adequate transport and storage facilities with inter-related problems of coordination and timing of receipt and delivery.

Distribution is responsible for receipt of petroleum products and derivatives in large quantities by tank car, truck, pipe line, tanker or barge and delivery to resellers or other customers. Bulk plants or terminals in which these products are stored are located close to consuming centers; storage tanks, handling and transportation equipment are their tools. Customers supplied from such plants and terminals include service stations, commercial consumers, public utilities; transport companies, factories and the Armed Forces. In rural areas, the delivery to farms is one of the most important functions. In addition to storage and delivery, Distribution has an important role in supplying technical advice on product application.

CRITICAL JOBS

Seniors and Supervisors of the following jobs: (XA) (A)

Supervisor Scheduling & Dispatching (A)
 Supervisor Economics & Statistics (B)
 Supervisor Headquarters Orders (A)
 Senior Clerical Staff - Refinery, Marine & Pipeline Scheduling (B)
 Field Operating Representative (A)
 Field Service Engineers (XA)

GENERAL FUNCTIONS

Key men responsible for the direction and planning of activities and facilities needed for the distribution of petroleum products and providing for the continuity of supply by maintaining a balance of supply with demand in accordance with Government, industry, and company regulations.

Headquarters Personnel - Administrative control of the supply and distribution of refined products and the coordination of manufacturing schedules, storage, transportation requirements and special technical advice on product application.

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OIL DISTRIBUTION (CONT'D)CRITICAL JOBS

Plant Superintendent (A)
Bulk Plant and Terminal
Superintendents (A)
Bulk Plant and Terminal
Supervisors (A)
Maintenance Mechanics (B)
Bulk Plant and/or Terminal Man (C)
Truck Mechanics (B)
Truck Dispatchers (A)
Heavy Truck Operators (B)
Warehouse Supervisor (B)

GENERAL FUNCTIONS

Operating Personnel - Men responsible for receipt, physical control and storage delivery, and servicing of petroleum products to Armed services, essential industries, retail outlets and all requirements in connection with public health and safety.

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NATURAL GAS TRANSMISSION *

Natural gas transmission companies own, construct, and operate long distance, high-pressure pipe lines for the transmission of natural gas from producing areas to consuming areas, where it is sold to local public utility companies for distribution to individual customers or is sold directly to industrial customers.

Compressor stations are located at intervals along the pipe lines to maintain necessary pressures. To help minimize seasonal variations in gas demand, many natural gas transmission companies also maintain underground reservoirs where gas is stored during the summer for withdrawal during the peak demand winter months.

OPERATIONS

(May be department or separate facility)

CRITICAL JOBS

Seniors and Supervisors of
the following jobs: (XA) (A)

Communications Engineer (A)
Radio Technician (B)
Lineman (B)

Seniors and Supervisors of
the following jobs: (XA)(A)

Station Superintendent (A)
Plant Foreman (A)
Plant Operator (B)
Auxiliary Plant Operator (B)
Master Mechanic (A)
Electrician (A)
Machinist (A)
Repairman (C)
Mechanical Engineer (XA)

GENERAL FUNCTIONS

COMMUNICATIONS - Install, maintain, and operate the radio and telephone communications systems.

COMPRESSOR - Operate and maintain the compressor engines, auxiliary equipment, and other related facilities required to transmit the gas through the system. Increase and decrease facilities in operation as load needs change to obtain optimum operating efficiency.

*Gasoline Plant, Exploration and Production activities performed by the gas transmission companies are included in the oil industry list of critical occupations.

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OPERATIONS (CONT'D)CRITICAL JOBS

Seniors and Supervisors of
the following jobs: (XA)(A)

Chemical Engineer (XA)
Construction Engineer (XA)
Mechanical Engineer (XA)
Electrical Engineer (XA)
Civil Engineer (XA)
Party Chief (A)
Instrument Man (B)
Draftsman - Senior (A)
Draftsman (B)

Seniors and Supervisors of
the following jobs: (XA)(A)

Measurement Engineer (A)
Measurement Technician (B)
Meter Repairman (C)

Senior and Supervisors of
the following jobs: (XA)(A)

District Superintendent (A)
District Foreman (A)
Welder - Class A (A)
Heavy Equipment Operator (B)
Heavy Truck Driver (C)

Dispatcher - General (A)
Corrosion Engineer (A)
Corrosion Technician (B)
Spread Inspector (A)
Inspector (Specialist)(B)
Material Man (C)
Right-of-Way & Claims Agent (A)

GENERAL FUNCTIONS

ENGINEERING - Design, detail, and plan the construction of compressor station and pipeline facilities. Draft construction drawings and stake proposed right-of-way locations. Supervise the installation of equipment.

MEASUREMENT - Install, operate, and maintain the gas measurement facilities needed to measure and record volumes of gas. Test system gas for specific gravity, temperature, and moisture content and regulate the dehydration equipment.

PIPELINE - Operate, inspect, and maintain the pipeline and right-of-way. Perform minor or major construction projects to install facilities needed to provide additional service. Maintain twenty-four hour control of operations to regulate pressures and assure effective output and delivery of gas.

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OPERATIONS (CONT'D)CRITICAL JOBS

Seniors and Supervisors of
the following jobs: (XA)(A)

Mechanical Engineer (XA)
Electrical Engineer (XA)
Civil Engineer (XA)
Natural Gas Engineer (XA)
Process Engineer (XA)
Design Engineer (XA)
Chemist (XA)
Metallurgist (XA)
Laboratory Technician (B)

Seniors and Supervisors of
the following jobs: (XA)(A)

Aircraft Pilot (A)
Aircraft Co-Pilot (A)
Aircraft Patrol Pilot (A)
Aircraft Mechanic (A)
Aircraft Electrician (A)
Automotive Mechanic (B)

RESEARCH - Study operational and maintenance methods and procedures and review results. Design, construct, and test specialized equipment to improve operating efficiency. Develop new methods and processes.

TRANSPORTATION - Operate and maintain the aviation, automotive, and other rolling stock needed to transport personnel and equipment between job locations.

GAS DISPOSITIONCRITICAL JOBS

Seniors and Supervisors of
the following jobs: (XA)(A)

Reservoir Engineer (XA)
Petroleum Engineer (XA)
Geologist (XA)

Seniors and Supervisors of
the following jobs: (XA)(A)

Gas Contracts Representative (XA)
Sales Representative (XA)
Development Engineer (XA)
Industrial Engineer (XA)
Sales Analyst (A)
Lawyer (XA)

GENERAL FUNCTIONS

GAS SUPPLY - Determine factors of deliverability and amounts of gas under dedicated reserve contracts. Maintain records indicating available supply. Prepare reports and records for presentation at F. P. C. hearings.

SALES - Prepare and negotiate gas purchase and gas sales contracts with suppliers and consumers. Design and develop methods of utilizing available supply, requiring extensive knowledge of system design and capacity.

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