# THE BASIC TECHNICAL TERMINOLOGY

# OF THE PETROLEUM INDUSTRY

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# PREFACE

With the expansion of the petroleum industry and scientific and technological research has come a demand for secretaries capable of recording technical language both rapidly and accurately. While research has provided the basic vocabulary for several occupations and professions, there is today a lack of the specialized petroleum vocabulary that is needed by the stenographer in the petroleum industry or by the shorthand teacher in preparing specialized dictation materials. Before the schools in oil-producing communities can adequately prepare secretaries for the petroleum industry, it is necessary that they have in their possession the technical terms frequently used by secretaries in the major departments of the petroleum industry and the shorthand outlines for those terms. The identification of such terms would involve the analyses of office communications from the files of oil companies and of printed petroleum materials and the evaluation of the frequency of use of those terms by secretaries in the major departments of oil companies. The purpose of this study is to present a list of the technical terms considered to be those terms frequently used by secretaries in the major departments of the petroleum industry along with Gregg shorthand outlines for the terms. There were 1,088 such terms identified in this study.

Indebtedness is acknowledged to the members of my doctoral committee, Dr. M. R. Chauncey, Dr. J. Andrew Holley, and Professor Guy Lackey, for their guidance and their willingness at all times to provide assistance and helpful suggestions; to the secretaries in oil companies for their

evaluation of the technical terms obtained in this study; to the personnel managers and interviewers in oil companies, the Desk and Derrick Club of Tulsa, and the National Secretaries Association of Tulsa for their assistance in selecting the secretaries who evaluated the technical petroleum terms compiled in this study; to Pauline Poteet for the writing of the shorthand outlines included in this study; and to the following for the use of their office communications and printed petroleum materials used in this study: the Gulf Oil Corporation, Tulsa, Oklahoma; the Sunray-Mid-Continent Oil Company, Tulsa, Oklahoma; the Continental Oil Company, Ponca City, Oklahoma; and the Independent Petroleum Association of America, Tulsa, Oklahoma.

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# CHAPTER I

## INTRODUCTION

There is general recognition among business educators that analyses of the activities of a business nature that people engage in and the analyses of business opportunities available to them provide the schools with reliable data on which to determine vocational curriculums and on which to develop functional subject matter. Thus, the experiences and the content that contribute to the business activities in which people are engaged have become the aims of vocational and general business education.

Historically, business curriculums and course content in the public schools were based on traditions inherited from private business colleges rather than the personal and vocational needs of the learner. The offerings of the early private business colleges consisted mainly of handwriting, arithmetic, and bookkeeping. Bookkeeping was a "must." The invention of the typewriter in 1873 opened a new field for shorthand, and in 1878 both typewriting and shorthand were introduced into the curriculums of the private business colleges. In 1892, public commercial education was developed in the high schools. In the earliest years, the public schools copied the course offerings of private business colleges. These course offerings consisted on the whole of skill subjects taught in the business colleges, and the skill subjects were mainly shorthand and typewriting. The study of spelling vocabularies of personal and

business letters made by Ayres[1] in 1913 and the determination of the basic writing vocabulary of 10,000 words made by Horn[2] in 1926 revolulutionized the course content of shorthand. The Horn basic writing vocabulary was used as the basis of the preparation of the Anniversary Edition of Gregg shorthand in 1929. Gregg says:

> One of the first steps in planning the Anniversary Edition, therefore, was an exhaustive analysis of the words contained in the Horn and the Harvard studies of the comparative frequency of words.[3]

The development of the basic vocabulary of business letters of 10,000 words by Horn and Peterson[4] in 1943 further influenced the preparation of shorthand materials. The determination of the 10,000 words frequently used in writing and the determination of the 10,000 words used in business correspondence have been the basis of teaching materials for vocabulary used in functional shorthand subject matter.

Specialized teaching materials in shorthand are an outgrowth of these various vocabulary developments cited. The present trend is toward determining a technical vocabulary of specific occupations for the purpose of developing specialized courses based on technical vocabularies of specific occupations and toward developing curriculums based on specific needs of the job in which the stenographer may be placed.

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[1]Leonard P. Ayres, "The Spelling Vocabularies of Personal and Business Letters," Department of Child Hygiene Phamphlet E 126 (Russel Sage Foundation, New York /October, 1913/), 14 pp.

[2]Ernest Horn, "A Basic Writing Vocabulary," University of Iowa Monographs in Education IV (University of Iowa /Iowa City, 1922/), 233 pp.

[3]John Robert Gregg, Gregg Shorthand, Anniversary Edition (New York, 1929), pp. 167-169.

[4]Ernest Horn and Thelma Peterson, The Basic Vocabulary of Business Letters (New York, 1943), 236 pp.

From frequent contacts with personnel directors and interviewers in oil companies and with former students of the investigator, the investigator has gained considerable knowledge of the needs for developing vocational competence in stenographers for the petroleum industry. These people mentioned have pointed out some of the problems and the immediate needs of beginning stenographers in oil offices. One of the problems mentioned was a lack of understanding on the part of the stenographer of the technical vocabulary of the petroleum industry. These people also emphasized that equally important to a knowledge of technical petroleum terms was skill in recording such terms in shorthand and in translating dictation into a transcript that made sense. The former students of the investigator indicated that they had had to learn how to apply on the job those knowledges and skills previously acquired in the classroom.

For effectiveness on the job, then, it would seem that basic skills of shorthand are not sufficient to do the job. The learner must acquire ability to apply on a specific job specific skills and specific knowledges. It becomes apparent to the investigator that if shorthand teaching is to be done so that it will meet the needs of the learner for a specific job, it is imperative that the instructors of shorthand know the technical vocabulary of the petroleum industry and that they teach principles and give dictation in terms of the vocabulary that is necessary for vocational competence of the stenographer.

The general technical skill training vocational objective of business education is to develop competency in marketable business skills and techniques for which there is a need for training. Three specific vocational objectives of specialized training for business positions are (1) to prepare students for certain specific business occupations

to the point of employability, (2) to develop those skills required to perform successfully the duties of stenographers and secretaries, and (3) to develop a functioning type of occupational or vocational intelligence for those students who enter business occupations.[5]

The fact that these vocational objectives of specialized training for business positions have been generally recognized by business educators has special implications for the field of specialized technical stenographic training. Jobs available to students entering any major industry determine the extent and nature of specialized training to be offered in a given school. It would seem that business educators in oil-producing communities have definite responsibilities in meeting those occupational and vocational needs of students preparing for stenographic office work in the petroleum industry.

Because the investigator believes that a list of the technical terms frequently used in the petroleum industry and shorthand outlines for those terms would be of value to teachers who are training stenographers for specific jobs in a specific industry, she proposes to determine the technical terms frequently used by secretaries in the major departments of the petroleum industry and to construct shorthand outlines for those terms.

## The Problem

The primary purpose of this investigation is to contribute to the improvement of formal shorthand instruction in the schools and colleges of oil-producing communities. Both education and the petroleum industry have a common goal in the preparation of secretaries who can produce

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[5]H. G. Enterline, Trends of Thought in Business Education, Monograph 72 (Cincinnati, 1949), p. 9.

dictated material in acceptable form within a reasonable length of time. Because of this common interest, the investigator has attempted to determine the technical petroleum terms frequently used by secretaries in the major departments of the petroleum industry. The investigator has also attempted to devise short-cut forms for the sound combinations frequently occurring in the technical terms to be used in constructing shorthand outlines for the aforementioned terms.

Now, the purpose of determining the technical petroleum terms, the short-cut forms, and the shorthand outlines for those technical petroleum terms is that of training students for stenographic positions in the petroleum industry.

Specifically, the problems of this investigation are as follows:

1. What technical words and groups of words used frequently in the major departments of the petroleum industry are important for inclusion in a shorthand course designed for the training of students for stenographic work in the petroleum industry?

2. What syllables and words occurring frequently in the technical petroleum terms need short-cut forms that can be used in constructing outlines for new words that are likely to occur in classroom and office dictation?

3. What shorthand outlines should be constructed for these technical petroleum terms which include short-cut forms and will contribute directly to fluency in writing.

## The Purpose and Importance of Specialized Technical Shorthand in Training Stenographers for the Petroleum Industry

Are there specialized skills and occupational information which

the schools can give shorthand students in preparing them to function satisfactorily as stenographers in the petroleum industry? More specifically, on the basis of its usefulness in preparing students for stenographic work in the petroleum industry, can specialized shorthand be justified as a component part of the shorthand program? If so, what specialized skills and occupational information can the schools provide to students that will assist them in preparing for stenographic work in the petroleum industry?

Most of our schools now are committed to developing basic skills only, but the schools should take account of the fact that most students studying shorthand are doing so for the purpose of using their shorthand in specific occupations immediately upon completing their training. Since the schools are in a position to know the capacity, the ability, and the vocational desires of students and the occupational opportunities available to them, those students should be provided along with basic skills the occupational skills and the information for entrance into an occupation.[6]

In 1951, there were 3,439,621 students enrolled in business subjects in public secondary day schools in the United States. In 1952, there were 204,240 undergraduate students enrolled in collegiate business education in the United States.[7] While it cannot be assumed that all of the students enrolled in business education in secondary schools graduated

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[6]Educational Policies Commission, Education and Economic Well-Being in American Democracy, National Education Association of the United States and The American Association of School Administrators (Washington, D. C., 1940), p. 95.

[7]The American Business Education Yearbook, Volume XIII, Curriculum Patterns in Business Education (New York, 1956), p. 7.

in 1951, it can be assumed that a large number of those business students did not go to college. Because this is terminal formal education for a majority of secondary business students, it is important that schools provide these students with the type of training for which there is a need.

The present investigation involves an analysis of the terminology used in the major departments of the petroleum industry and the construction of short-cut-forms to be used in shorthand outlines including short cuts. The findings of this investigation should be of value to those who determine vocational curriculums and to those who develop functional shorthand subject matter. The significance of the findings for stenographic training is a possible opportunity for the improvement of existing shorthand programs. It would seem desirable for the shorthand programs in the schools of oil-producing communities to provide specialized technical shorthand for students preparing for stenographic positions in the petroleum industry.

The purpose of specialized technical shorthand is to develop in students the ability to take shorthand rapidly and to transcribe shorthand notes accurately. In order to accomplish these skills, the technical shorthand should be taught with the aim of students developing an understanding of the vocabulary used in an area of specialization and with the aim of students acquiring a knowledge of the shorthand principles for constructing outlines for those technical terms.

It is not generally recommended that shorthand students be permitted to enter a class in specialized technical shorthand until they have attained a shorthand recording speed of 100 words a minute and a typing speed of 50 words a minute. Specialized preparation should be placed in the curriculum as close as possible to the time of use and--in most

schools--it is included in the last semester of shorthand. Frequently, the last semester of shorthand training is an office practice course designed to coordinate knowledges, skills, and attitudes previously acquired and to develop further a specialized business vocabulary and transcription ability.

One of the purposes of this study is to devise short-cut forms for sound combinations recurring in the technical terms that are frequently used by secretaries in the major departments of the petroleum industry. In this study, the principles given in the Anniversary Edition Manual, the Simplified Shorthand Manual, and the Expert Shorthand Speed Course of Gregg shorthand are the authoritative designations for devising short-cut forms and for constructing shorthand outlines.

Shorthand is a symbolic language--a means of quickly translating into symbols oral words that represent thoughts or meanings. An understanding of the meanings of the symbols and an understanding of the principles for constructing symbols to be used in initiating outlines for spoken words are essential to fluency in writing shorthand. Thus, the purpose of shortened symbols--short-cut forms--is to enable the technical shorthand writer to construct brief yet legible outlines for the most frequently occurring words and phrases in dictation. It is important that the method employed in shorthand instruction include the principles for constructing short-cut forms, as the shorthand manual does not provide either in special vocabulary lists or in context all the short-cut forms and symbols which the learner is likely to have to write in office situations. Brewington says:

> The symbols, the one or more meanings of such symbols, the word-signs and special phrase patterns, are usually taken as the specific objectives of shorthand. The total

> number of combinations possible with all these variables constitutes the minimum essentials for every learner. In other words, it may not be necessary or desirable for a learner to master a complete system of writing. The purpose for which and the educational level at which the learner is studying shorthand determine the total number of symbols, meanings, rules, and special words and phrase patterns he must master at a certain speed with a certain degree of accuracy.[8]

Accordingly, the type and number of shorthand symbols to be mastered by students preparing for stenographic work in the petroleum industry should be determined by the purpose for which and the educational level at which the students are studying shorthand.

Dewey says that a structural analysis of shorthand reveals three main factors for which "dependable objective data are essential for constructing the specific symbols which should be mastered":

1. The relative frequency of the simple sound and commoner sound combinations of English.

2. The relative facility of the possible signs and typical sign combinations of shorthand.

3. The guiding principles of shorthand construction, including definition of terms and standards of measurements, as well as determination of criteria and procedures.[9]

Notable is the fact that Dewey does not recommend that teachers rely solely upon the symbols provided in textbooks, but believes that shorthand teachers should construct outlines for those symbols for which there is need.

It is not the purpose of this investigation to identify those

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[8]Ann Brewington, "Classroom Techniques in Teaching Shorthand," Improved Methods of Teaching the Business Subjects, Monograph 63 (Cincinnati, 1945), p. 6.

[9]Godfrey Dewey, "The Development of Shorthand Systems," Improved Methods of Teaching the Business Subjects, Monograph 63 (Cincinnati, 1945), p. 13.

shorthand symbols that should be mastered by every shorthand learner. Rather, it is the purpose of the investigator to point out that the type and number of shorthand symbols which should be mastered by students preparing for stenographic work in a specific occupation, such as petroleum, should include those used in dictation in that specific occupation. If shorthand textbooks do not supply the symbols needed, then it becomes the responsibility of shorthand teachers to devise and teach those symbols that are needed in classroom instruction and to teach principles that can be applied to constructing symbols as they are needed in office situations.

Accordingly, it is the belief of the investigator that minimum essentials for shorthand instruction in schools which train stenographers for the petroleum industry should include in the shorthand learning process an opportunity for (1) the development of a petroleum vocabulary based on the technical petroleum terms of very high frequency, (2) the acquiring of an understanding of the meaning of the technical petroleum terms of very high frequency, (3) the mastering of the short-cut forms included in the petroleum terms of very high frequency, and (5) the application of the principles of Gregg shorthand in the constructing of shorthand symbols for new words and phrases which occur in petroleum dictation.

There are indications at present that business educators believe that specialized shorthand for a specific occupation in a specific community should be developed and taught; and that shorthand outlines for that vocabulary should be constructed and practiced until the reaction becomes automatic.

It is the belief of the investigator that a list of technical terms frequently used by secretaries in the major departments of the petroleum industry and shorthand outlines for those terms would be of value to

shorthand instruction for the following reasons:

First, one of the major problems in shorthand instruction is that of determining the extent and nature of specialized shorthand that should be taught within a given school. It is generally recognized among business educators that the occupational aspects of local communities should be the basis on which local curriculums are developed. Thus, the extent and nature of specialized shorthand offered within a given school would depend upon the needs of the learners and the needs of business in a community. It would seem that specialized shorthand courses would not only be justified but recommended in those communities where stenographic majors would be employed by a large industry located nearby or by a major industry extending throughout the state. In Oklahoma, the petroleum industry is such an industry. It would seem desirable to discover the vocabulary frequently used by secretaries in the major departments of the petroleum industry and to adapt teaching procedures. Miller expresses this point of view in an article pertaining to the "rubber center of the world." She says:

> It would seem expedient for the school to concentrate on building a vocabulary for the students which would be adaptable to the rubber industry and its affiliated subsidiary businesses. For example, about the second week of employment, an employer may dictate a letter which involves terms such as "Bambury mixer," "collander," and others. Since he may be a rather rapid dictator, a new employee might have a difficult time taking this letter.
>
> After the shorthand students have finished the manual, the words that are a part of the rubber industry should be used in the advanced dictation classes. The business department would be rendering a service, not only to their students but to industry as a whole if they would take the time to build special vocabularies for the instruction of their students. Of course, this situation would be applicable to any locality where a particular industry is concentrated: Pennsylvania, the steel companies; Texas, the

> oil fields; the South, the textile industry; and the many other industries that make up American business.[10]

Second, one of the difficulties that secretaries have in taking dictation which includes new words is that they cannot execute automatically or recall immediately movements for specific sounds in the flow of dictation. Technical words that have not been heard before are difficult to construct under pressure of dictation. Even though the writer "gets something down," or records the term phonetically without knowing what it means or how it is spelled, he runs into an obstacle in transcribing. It would seem, therefore, that in order to minimize hesitation in dictation and in transcription, it would be advantageous to teach the technical petroleum terms of high frequency and to practice such terms until the reaction becomes automatic. To develop the ability to use dictation and transcription skills in effective combination on the job requires understanding and practice in the use of the vocabulary and related activities of the occupation in which the learner expects to use his skills and knowledges. Oliverio expressed this point when she says:

> Office practice teachers tend to confine much of their dictation to common sense materials. Students are given little practice in constructing outlines and then making sense out of relatively technical material. After some experience young office workers write with ease outlines for "polyethylene," "sequestering," "antiogram," and type from such outlines as quickly as they type the so-called high frequency words . . .. Why shouldn't the teacher provide this practice earlier than the beginning of a job?
>
> However, the objection is raised "Well, I might use the terminology of the glass manufacturing industry and then my students find employment in a medical clinic, or an industrial cleaning company. Then what good is the vocabulary for the glass factory? This is not too serious

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[10]Lilyn Miller, "The Secretary Speaks," UBEA Forum (December, 1952), p. 27.

> an argument. The skill and technique in developing a particular vocabulary will carry over and the students will know how to build a vocabulary in any situation in which employment is found . . . .[11]

It would seem, therefore, that the inclusion of the technical terms frequently used in the offices of the petroleum industry with shorthand outlines would assist materially in organizing the learning process and would be substantially a study of the meaning and of the structural makeup of the terms to be used by students in an occupation in a specific industry. A knowledge of the meaning of words and an understanding of the structural make-up of outlines are essential in learning to construct outlines readily, to record spoken words rapidly, and to transcribe notes accurately. Hicks says:

> An important part of business education is that of providing educational experience in the meanings of the business terms that will be read and used by our pupils. To provide understanding of these words is a desirable part of business education, whether it be in a shorthand class or in other business classes . . . .
>
> Shorthand dictation is based on business material. Such material, by its nature, consists of many technical business terms; that is, terms which are exclusively used in a business sense . . . . A pupil who does not know the meaning of a dictated word is likely to make an error in transcribing the dictation. The error may be one of spelling or incorrect usage, and is probably due to a lack of familiarity with the meaning of the word.[12]

## Definition of Terms

By "technical petroleum terms" is meant words and groups of words which either have an exclusive petroleum meaning or have a specialized

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[11]Mary Ellen Oliverio, "We Should Not Fail to Cover These Points in Office Courses," UBEA Forum (February, 1955), p. 18.

[12]Charles B. Hicks, "Shorthand and Business Vocabulary Understanding," UBEA Forum (October, 1950), p. 13.

meaning, form, or use within the petroleum industry.

By "techincal shorthand" is meant a systematic application of arbitrary symbols to handwriting that reduces the number of muscular movements and time required to record words and sentences in graphic outline.

By "shorthand outline" is meant a shorthand pattern composed of symbols such as a line, a dot, a circle, a curve, a hook, or a loop which may be written up or down, forward, or backward.[13]

By "short-cut form" is meant a shortened shorthand pattern or a character composed of one or more symbols which is distinctive in form, intensity, and size and is used to express a syllable or word.[14]

By "vocational competence" is meant "a reasonable degree of ability and performance in each of these factors: (1) capacity and aptitude, (2) personal characteristics, (3) background and general training, (4) basic business information, and (5) specialized information and skills.[15]

By "analysis" is meant an examination by the reading of petroleum office communications and of printed petroleum materials with the intention of selecting technical petroleum words and phrases used in context.

## Research Related to the Investigation

The research related to this investigation falls into two major classifications: (1) studies of business vocabulary, and (2) studies of petroleum vocabulary.

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[13]The American Business Education Yearbook, Volume II, Improving Learning and Achievement in Business Education (New York, 1945), p. 132.

[14]Ibid., p. 132.

[15]American Business Education Yearbook, Volume VII, Evaluating Competence for Business Occupations (New York, 1950), p. 4.

Studies of Business Vocabulary

In 1943, Horn and Peterson[16] had completed the analyzation of 5,136,815 running words in letters from twenty-six large classes of business and determined the 10,000 words of high frequency to be the basic vocabulary of business. These words are used as a basis for shorthand and typewriting materials. The words in the basic vocabulary of business were not classified by businesses. Neither was the list confined to technical terms. However, the relative frequency of each term was reported as to its position in the list. In 1926, Horn[17] compiled the basic writing vocabulary on the basis of frequency of use of terms in literature and personal and business letters. The primary purpose of Horn's basic writing vocabulary of 10,000 words was to provide words for spelling in the elementary schools. The words were also used for shorthand and typewriting materials.

The West Coast Lumbermen's Association prepared a handbook for lumber offices which is considered pertinent to the present investigation.[18] The handbook contains terms, definitions, and shorthand outlines which are applicable "only to the producing region in the West and to distributors of the product of their member sawmills."[19] The editors stated that the procedure used in compiling the glossary was to select terms from "seven authoritative publications which either contained lesser glossaries or

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[16]Ernest Horn and Thelma Peterson, The Basic Vocabulary of Business Letters (New York, 1943), pp. 1-236.

[17]Horn, A Basic Writing Vocabulary, pp. 1-223.

[18]West Coast Lumbermen's Association, Handbook for Lumber Offices (Oregon, 1953), 32 pp.

[19]Ibid., p. iv.

were distinguished by defining technical terms.[20] The purpose of the handbook was to aid office workers by standardizing the definitions of terms and by supplying shorthand outlines for the terms commonly used by member groups of the Association.

Berger[21] compiled a collection of letters and a glossary of terms with shorthand outlines used in the clothing and textile industry. The author indicated that the letters were chosen with a view of stressing the most commonly used textile terms and of giving the reader an understanding of the manufacturing processes. The glossary and shorthand outlines consisted of the most commonly used terms. The study is applicable to the present investigation in that the purposes for which the study of the vocabulary of the textile industry was made are similar to the purposes for which the present study of the vocabulary of the petroleum industry is being made--to assist students who desire to enter a specific industry as stenographers to get a knowledge of the vocabulary and a background of information concerning the field in which they expect to be employed.

The vocabulary studies of the technical terms used in the Army, the Navy, and in Civil Service are also closely related to the present investigation. Foote and Strong[22] compiled a list of 5,000 most-used Civil Service terms with shorthand outlines. No definitions were included. The authors state that they selected the terms that were frequently used

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[20] Ibid.

[21] Rosalind Wolford Berger, The Clothing and Textile Industry (New York, 1941), 92 pp.

[22] B. P. Foote and Earl P. Strong, Most-Used Civil Service Terms (New York, 1943), 109 pp.

by stenographers in the various departments of the Government. They do not indicate how the terms were selected, but they also state that "the list was carefully checked against the terms used by stenographic workers in the nineteen different agencies of the government."[23]

Jontig and Swem[24] compiled a list of 5,000 most-used Army terms with shorthand outlines. No definitions were included. The authors stated that they made an "exhaustive search of every medium in which Army terminology can be found, such as Army handbooks, magazines, and correspondence."[25] The authors indicated that the list was compiled for the purpose of assisting those who are doing stenographic work in the Army as well as those who are studying shorthand with Army stenographic work in view, either in a military or civilian capacity.

Newman[26] compiled a list of 3,000 most-used Navy terms written in shorthand. As is true of the two preceding service studies, no definitions were included. Newman stated that he had "gleaned" 45,000 words and phrases from notebooks which he had prepared during seventeen years of service as a yeoman in the Navy and that he had selected the 3,000 words and phrases which had special significance to the naval stenographer.

Studies of Petroleum Vocabulary

Three investigations have been made in the field of petroleum which are considered pertinent to the present investigation. These studies were analyzed for the purpose of obtaining technical terms for a master

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[23]Ibid., p. i.

[24]J. J. Jontig and Charles Lee Swem, Most Used Army Terms (New York, 1944), 125 pp.

[25]Ibid., p. i.

[26]Harry W. Newman, Most-Used Navy Terms (New York, 1942), 55 pp.

list of petroleum terms to be used in the present investigation.

Porter[27] developed the terms for his petroleum dictionary primarily from personal experiences as a petroleum engineer in oil companies in the United States and in South America. He started the dictionary as a hobby and stated that he "set himself the task of making the nomenclature of the petroleum industry in all its phases available to any one who might be interested."[28] The petroleum dictionary includes mainly engineering, geological, chemical, and electrical terms and definitions. It does not contain shorthand outlines. There were 213 technical terms selected from this petroleum dictionary for inclusion in the master list used in this study. The 213 terms were first verified to be important to this study by the head of the production department, School of Petroleum Science, University of Tulsa, and by the head of the manufacturing department of one of the major oil companies cooperating in this study.

Irizarry[29] compiled a glossary "containing more than 12,000 technical terms and idiomatic expressions used in all phases of the industry." The compilation is a comprehensive English-Spanish and Spanish-English glossary of the petroleum industry and allied activities. No definitions or shorthand outlines are included. It was stated in the introduction that the compilation was "a result of efforts of the editorial staff of Petroleo Americano to translate from the English technical articles and advertising literature on petroleum."[30] The significance of this glossary

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[27]Hollis P. Porter, Petroleum Dictionary for Office, Field, and Factory (Houston, 1948), 326 pp.

[28]Ibid., Foreword.

[29]Oscar B. Irizarry, Petroleo Interamericano's Glossary of the Petroleum Industry (Tulsa, 1947), 326 pp.

[30]Ibid., Part II, IV.

to the present investigation is that it served as a source to which the investigator could refer for verification of spelling and current word usage.

The American Petroleum Institute[31] prepared a glossary of terms used in petroleum refining, including definitions and shorthand outlines. The editor stated that the definitions were selected for general, rather than technical usage and that they were selected from "authoritative published sources."[32] There were 250 terms selected from this glossary for inclusion in the master list of petroleum terms used in this study. These 250 terms were first verified to be of importance to this study by refining department heads of two major oil companies in Tulsa, Oklahoma.

None of the compilers of the aforementioned petroleum glossaries made a frequency count of the technical terms included. However, the compilers of the above petroleum glossaries selected the technical terms either from personal experiences or from selected sources of printed publications. Only the glossary of terms used in petroleum refining contained shorthand outlines. Although the terms are used in petroleum context and in work activities, they could hardly be considered the terms frequently used by secretaries in oil offices or the technical petroleum terms considered important for shorthand instruction.

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[31]American Petroleum Institute, Glossary of Terms Used in Petroleum Refining (Baltimore, 1953), 188 pp.

[32]Ibid., Preface.

## General Procedures Followed in This Study

The plan of investigation in this study was to obtain a tentative list of technical terms used in the petroleum industry by analyzing petroleum office communications and by analyzing printed petroleum materials; to include those terms in a questionnaire which would indicate through a rating procedure by secretaries in oil offices to what degree they used the terms in their office situations; to determine the technical petroleum terms frequently used by secretaries in major departments of the petroleum industry; to classify the frequently used technical terms containing frequently recurring sound combinations; to devise short-cut forms for sound combinations for which a form is needed; and to construct shorthand outlines for those frequently used technical terms containing short-cut forms.

The procedures used to obtain the above data were developed in the following manner:

A master list of technical terms used in the petroleum industry was compiled by using the findings of actual business letters, reports and resolutions, and special lists of technical petroleum terms used in various departments of the petroleum industry, and the findings of thirteen general petroleum books, two petroleum handbooks, two volumes of mimeographed resolutions, three widely read petroleum periodicals, various house organs of oil companies, and oil news from two daily newspapers. The technical character of the petroleum terms was determined either by verification by department heads in the petroleum industry or by meanings and usage of the term in the printed materials examined.

The master list of 5,885 technical petroleum terms was converted into a questionnaire for rating by secretaries in major departments of

the petroleum industry. A questionnaire was submitted to fifty-two secretaries in eight major oil companies in Tulsa, Oklahoma, one major oil company in Ponca City, Oklahoma, and two professional women's organizations in Tulsa, Oklahoma. The rating scheme provided for any one of six degrees of opinion as to the frequency of use of the terms in the respondent's office situation. Fifty secretaries responded.

The ratings were tabulated and department averages and total rating averages were determined for each term. The 121 technical terms which were rated very high in frequency of use, the 457 technical terms rated high in frequency of use, and the 510 technical terms rated average in frequency of use were the technical petroleum terms which were considered in the judgment of the respondents rating the terms to be important to the secretaries in major departments of the petroleum industry. The frequency with which these 1,088 technical terms were used in office situations, the departments in which these terms were frequently used, and the total rating averages for these terms are shown in Table VI, Chapter IV.

An analysis was made of the 1,088 technical terms to determine the frequently occurring sound combinations in the terms. Technical terms were classified by frequently recurring syllable and word beginnings and by frequently recurring syllable and word endings. Short-cut forms were provided for the frequently recurring syllable and word beginnings and for the frequently recurring syllable and word endings for which no short-cut form existed or for which the established short-cut form needed to be shortened.

There were 60 frequently recurring syllable and word beginnings for which short-cut forms were provided and 289 frequently used technical petroleum words and phrases containing those sound combinations for

which shorthand outlines were constructed. The 60 syllable and word beginnings and the short-cut forms are shown in Table IV, Chapter III. The shorthand outlines for the 289 words and phrases including the short-cut forms are shown in Table VI, Chapter IV.

There were 39 frequently recurring syllable and word endings for which short-cut forms were provided and 218 frequently used technical petroleum words and phrases for which shorthand outlines were constructed. The 39 syllable and word endings and the short-cut forms are shown in Table V, Chapter III. The shorthand outlines for the 218 words and phrases including the short-cut forms are shown in Table VI, Chapter IV.

The report of the findings of this investigation included (1) the list of technical terms frequently used by secretaries in the major departments of the petroleum industry, (2) the department averages of the terms of very high, high, and average frequency of use, (3) the averages of the total ratings of the terms, and (4) the shorthand outlines for the technical petroleum terms including short-cut forms.

## Order of Presentation of the Report

Chapter II describes the development of a master list of technical terms used in the petroleum industry and the determination of the technical terms frequently used by secretaries in the major departments of the petroleum industry. Chapter III describes the devising of short-cut forms for the frequently occurring sound combinations in those technical terms and the construction of shorthand outlines for the technical terms including the short-cut forms. The findings of this study are given in Chapter IV. The summary of purpose, conclusions, and the recommendations of the investigation are given in Chapter V.

# CHAPTER II

## THE DETERMINATION OF THE TECHNICAL TERMS FREQUENTLY USED IN THE MAJOR DEPARTMENTS OF THE PETROLEUM INDUSTRY

The major problems to be considered in this chapter are (1) the development of a master list of technical terms used in the petroleum industry, and (2) the determination of the technical terms frequently used by secretaries in the major departments of the petroleum industry that are considered important for formal shorthand instruction.

### Development of a Master List of Technical Terms Used in the Petroleum Industry

The necessary first step in attacking the problems of this study was that of obtaining a list of technical words and groups of words which would apply to the petroleum industry. This step was necessary to give the investigator direction in (1) the preparation of a questionnaire including the terms in the master list to be rated by secretaries in oil offices as to their frequency of use in major departments of the petroleum industry, and (2) the determination of the technical terms frequently used by secretaries in the major departments of the petroleum industry.

The procedures used to obtain the data of the problems of this chapter are described as they were used in the development of the problems.

Two methods of obtaining such a list of terms were considered: (1) the use of an analysis of the technical terms used in actual petroleum

communications, and (2) the use of an analysis of printed petroleum materials.

In considering the first method, the investigator made a personal canvass of the major oil companies in the city of Tulsa engaged in the exploration, production, manufacture, and distribution of oil and gas for the purpose of seeking their cooperation in making an analysis of their office communications. The executives in the companies canvassed believed that because of the complexity and the magnitude of the industry--the independent and inter-dependent organizations within a giant organization--and because of the diversity of the activities of the industry, such an analysis would be a formidable if not a prohibitive undertaking. More decisive in eliminating the exclusive use of an analysis of actual petroleum communications was the fact that most of the management indicated that because of the highly competitive nature of the industry they could not give the investigator access to their files, nor allow original communications to be taken from their offices, nor permit analyses and tabulations to be made on the premises without restrictions.

In the process of seeking this cooperation, the personal canvass revealed the following limitations of an analysis and the extent of the cooperation secured:

1. One major company agreed to duplicate a limited number of letters, the letters to be selected by department heads as representative of those used in the departments from which land descriptions, amounts, prices, dates, and names of persons, places, and things were to be blotted out before duplication.

2. One major company agreed to give the investigator permission to analyze and tabulate on the premises such representative letters as the

department heads chose for analyzation. The analyses were to be made under the supervision of a department head who would make invisible to the eye of the investigator the confidential information contained in the letters, or at the time a department head orally read the portions of the letters which revealed no confidential information.

3. One petroleum association agreed to permit analyses on the premises of such office communications as it chose for analyzation.

4. Two major companies agreed to give the investigator special departmental lists of technical petroleum terms containing elements of recording difficulty which had been prepared for secretaries in the major departments of the companies.

The exclusive use of an analysis of professional petroleum books and petroleum textbooks, petroleum glossaries, handbooks, and periodicals, and other printed petroleum materials was open to several objections. Those materials (1) are often behind the times, (2) may have been written on the basis of methods and equipment used in other localities or countries, (3) may have been written for the use of the specialist, the layman, or the man in the field or factory, (4) may have been written in the vocabulary of the author, and not expressive of the technical vocabulary in general usage, and (5) may have contained terminology that was colloquially used or arbitrarily selected and not that used in formal communications prepared by secretaries.

For the reasons described, it seemed to the investigator that the first method alone was not feasible and that the second method was not sufficient for the purpose of developing a master list of the technical terms used in the petroleum industry.

The purpose and the problems involved in this phase of the

investigation suggested the utilization of both methods. Therefore, it was decided to analyze the available office communications from the files of the two major oil companies and the one petroleum association that agreed to cooperate in the study and to analyze printed petroleum materials.

Sources of the Technical Terms Used in the Petroleum Industry

Technical petroleum terms from the analysis of the following office communications were included in the master list:

1. Actual business letters, approximately 40,000 running words.

2. Actual reports and resolutions, approximately 60,000 running words.

3. Departmental lists of technical petroleum terms prepared for secretaries in major departments of the petroleum industry, 1,200 terms.

Technical petroleum terms from the analysis of the following printed materials were included in the master list:

1. Seven general petroleum books were read completely. These were:

   Petroleum Production Engineering, by Lester Charles Uren. Third Edition. New York: McGraw-Hill Book Company, Inc., 1946.

   Physical Principles of Oil Production, by Morris Muskat. First Edition. New York: McGraw-Hill Book Company, Inc., 1949.

   Principles of Petroleum Geology, by E. N. Tiratsoo. New York: McGraw-Hill Book Company, Inc., 1952.

   Industrial Lubrication Practice, by Paul D. Hobson. New York: The Industrial Press, 1955.

   A Primer of Oil Well Drilling, American Association of Oil Well Drilling. Austin: Petroleum Extension Service, Texas Education Agency, The University of Texas, 1952.

A Primer of Pipe Line Construction, Pipe Line Contractors Association. Austin: Petroleum Extension Service, Texas Education Agency, The University of Texas, 1951.

This Fascinating Oil Business, by Max W. Ball, Indianapolis: The Bobbs-Merrill Company, 1940.

2. Six general petroleum books were examined. Only those chapters that were important for the purpose of this study were read. A list of these books appears in the bibliography.

3. Two petroleum glossaries. The terms which were included from these glossaries were those which were considered to be important to this study by the head of the production department, School of Petroleum Science, University of Tulsa, and the head of the manufacturing department of one of the major oil companies cooperating in this study. The two glossaries and the number of terms included in the tentative list of petroleum terms were:

Glossary of Terms Used in Petroleum Refining, American Petroleum Institute. Baltimore: The Lord Baltimore Press, 1953; 250 terms.

Petroleum Dictionary for Office, Field, and Factory, by Hollis P. Porter. Houston: The Gulf Publishing Company, 1948; 213 terms.

4. Two petroleum handbooks. The terms included from the Geological Stratigraphic Nomenclature handbook were those terms which were considered to be important for the purpose of this study by the head of the exploration department of a major oil company in Tulsa, Oklahoma. All of the terms which were included in a glossary at the end of each chapter of the Rotary Drilling Handbook were included in the master list. These handbooks were:

Geological Stratigraphic Nomenclature, Exploration Department, Gulf Oil Corporation, Tulsa, Oklahoma, 1953.

Rotary Drilling Handbook, By J. E. Brantly. Fifth Edition. New York and London: Palmer Publications, 1952.

5. Two volumes of mimeographed resolutions of the Independent Petroleum Association of America: Volume II, from January, 1942, through October, 1951, 1,250 pages; and Volume III, from January, 1952, through Midyear, 1955, 1,200 pages. These volumes are listed in the bibliography.

6. Three widely read petroleum periodicals:

The Oil and Gas Journal, published weekly: Volumes 56-68, October, 1953, through September, 1954, and Volumes 69-81, October, 1954, through November, 1955.

The Oil Daily, published weekly; January, 1954, through November, 1955.

The Independent Monthly: January, 1954, through November, 1955.

7. Five house organs for the years of 1954 and 1955. These were:

Unit Rig, The Unit Rig and Equipment Company, Tulsa, Oklahoma.

MECCO News, Midwestern Contractors, Inc., Tulsa, Oklahoma.

Mid-Continent News, Mid-Continent Supply Company, Tulsa, Oklahoma.

Sunray-Mid-Continent News, Sunray-Mid-Continent Oil Company, Tulsa, Oklahoma.

Gulf News, Gulf Oil Corporation, Tulsa, Oklahoma.

8. Oil news in The Tulsa World and The Tulsa Tribune for the years of 1954 and 1955.

## Procedures Used in the Analyses of Petroleum Communications and Printed Petroleum Materials

Only those words or groups of words which were considered technical petroleum terms according to the criteria established were selected for the development of the tentative list of petroleum terms. Those criteria were that the term should be exclusively used in a petroleum sense or

have a specialized meaning, form, or use within the petroleum industry.

A certain amount of individual judgement on the part of the investigator was necessary in deciding if the terms selected were technical according to the criteria established.

In the letters collected from the company that duplicated the communications, the department heads had underscored most of the words and groups of words which were considered to be the technical terms according to the criteria. While analyzing on the premises of the company that obscured confidential data as previously described, advice was sought from the department head supervising the analysis as to the technical meaning and usage of words and groups of words. This assistance and experience aided the investigator in the later analyses of printed petroleum materials.

The procedure used in analyzing general petroleum books, reports, periodical materials, oil news, and other printed materials was to read each paragraph, chapter, or section pertaining to any phase of the oil and gas industry that was important for this study and to record on a separate card every technical petroleum term that came within the investigator's interpretation of the criteria established, and to record the source of each term. Seven general petroleum books were read completely. Fortunately, one of the textbooks printed many of the technical terms in italics and defined those terms in the glossary.[1] The terms in the glossary were checked against the terms recorded from context, and any term that had been omitted was recorded on a card for inclusion in the master list.

The petroleum glossaries analyzed were too comprehensive to be

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[1]Chester R. Longwell, Adolph Knopf, and Richard F. Flint, Physical Geology (New York, 1948), 582 pp.

considered for entire inclusion in the master list of technical petroleum terms. In the forewords or prefaces the authors stated that the glossaries included colloquial, obsolete, and foreign terms; that they included many terms because of their general, rather than technical usage; and that they included many terms because of their idiomatic derivation, human interest, or nomenclature. The investigator had no criterion for determining which or how many of those terms would come within the framework of the criteria established for determining technical words. Consequently, only a minimum number of terms included in the master list was selected from glossaries, and only those used which were selected and verified as previously described.

The procedure used in selecting words and phrases from the departmental lists of terms prepared by department heads for secretaries in different departments of oil companies was to check the terms in those lists against the terms already recorded and to record on a card any term that had not been previously selected.

The cards on which the technical terms had been recorded were arranged in alphabetical order, and the master list was prepared from the cards. No attempt was made at the time the technical petroleum terms were collected to classify them into departmental categories; neither was an attempt made to classify them after the terms had been collected nor before the master list was prepared. To have classified the terms selected from petroleum communications at the time the analyses were made would not have been possible, for there were no indications from which departments the letters originated or to which departments the contents referred. For the same reasons, it would not have been possible to classify the terms selected from printed petroleum materials.

Therefore, it seemed apparent that the best arrangement for the master list of technical petroleum terms to be included in the questionnaire would be an alphabetical one. It also seemed apparent that the classification of terms could be made from data in the questionnaires which indicated the specific departments in which the respondents worked.

An analysis of the master list revealed that 5,885 technical words and groups of words had been obtained. Forty-two per cent of the terms were derived from actual business letters, resolutions, and reports and from special lists of technical terms prepared by department heads for secretaries; 52 per cent of the terms were derived from printed petroleum materials.

## Determination of the Technical Terms Frequently Used by Secretaries in the Major Departments of the Petroleum Industry

The second step in attacking the problems of this study was that of determining the importance of the technical terms in the master list to secretaries in major departments of the petroleum industry.

The technique to be used for determining the importance of the terms was a questionnaire which consisted of the master list. The procedures used were (1) to submit the questionnaires to secretaries in oil offices and (2) to have the secretaries rate the terms as to the frequency of use of each term in their office situations.

A questionnaire which provides for only "yes" or "no" answers to responses sought is open to the criticism that it does not permit an expression of degree of opinion held by the critic. The questions pertinent to this problem do not lend themselves to arbitrary answers of "yes" or "no," since frequency refers to a concept of how often the

respondent used the term. Such a question requires a qualified answer. Therefore, a rating scheme that would express any one of six degrees of opinion held by the respondents was selected as being the most practical for this problem.

In order to increase the effectiveness of the questionnaire and to minimize the adverse criticisms often made of the use of the questionnaire as an instrument for securing information, the procedures used were carefully planned before the questionnaires were submitted for evaluations. Steps were taken to insure that the questionnaires went to qualified secretaries for evaluation; that the problems posed in the questionnaire were within the activities of the respondents and applied to their situations; and that the territory to be sampled was limited to areas where oil and gas were predominating industries.

To be certain that the questionnaires went to qualified secretaries for rating, personal conferences were arranged with personnel managers in seven oil companies and with presidents of two professional women's organizations to seek their cooperation in selecting secretaries to rate the terms and to request the use of company time for the ratings. For the same purposes, a conference was arranged with the personnel manager of a major oil company in Ponca City. It was agreed that the secretaries were to be recommended on the basis of their positions in the various departments of the oil companies, on their specific duties, and on their years of experience in oil offices. Twenty-five secretaries were recommended by the women's organizations and 58 by the personnel managers who worked through department heads. These secretaries were interviewed by the investigator either in person or by telephone, or by the personnel managers. Of the secretaries recommended and interviewed, 15 from

the two women's organizations and 53 from the oil companies agreed to rate the questionnaires. It was believed by the investigator and by those who assisted in the selection that the secretaries represented a select group within their profession.

Genuine interest was manifested by those who were requested to make the recommendations, both in their willingness to cooperate and in the quality of the secretaries selected as well as by their numerous requests for copies of the results of the findings of this study. One company was promised twenty copies in return for its cooperation.

## The Questionnaire

The questionnaire was prepared for the purpose of securing the rating of the technical terms by secretaries in the major departments of oil companies.

The questionnaire consisted of the 5,885 technical terms in the master list, a letter to the secretary seeking her cooperation in the study and explaining the purposes of the study and the plan for accomplishing the purposes, and a page of directions to the secretary. The first portion of the page of directions consisted of a personal data section from which information could be obtained that pertained to the respondent's office position, department assignment, and years of experience. The second portion consisted of directions to the secretary. The secretary was instructed (1) to rate each term in the list as to the frequency of use in his office situation; to place the rating on the line at the left of each term; and to rate the term 5 if frequency of use was very high, 4 if high, 3 if average, 2 if low, 1 if very low, and 0 if never used; to record the short-cut form in the space to the right of the

term in case he had devised a short cut for recording frequently used terms in shorthand; and (3) to add other frequently used words or phrases in the space provided at the bottom of the page. A "Note" requested the respondent to make changes in spelling and/or wording of terms and phrases to comply with usage in his department.

Appendix A is the questionnaire which consists of the letter to the secretary, the directions to the secretary for rating the technical petroleum terms, and two pages of the technical petroleum terms used in the petroleum industry.

Before the questionnaire was duplicated for submission, the tentative form was rated by one office manager who also served as an executive secretary and by two secretaries in oil offices. The results of these ratings indicated that the arrangement and procedures were acceptable for practical use.

Sixty-eight questionnaires were submitted to eight oil companies engaged in exploration, production, manufacture, or distribution of oil and gas and to the designated secretaries in oil offices. Twenty-five responses were received within four weeks. Numerous long-distance calls were made and personal conferences were held within the following two weeks. For personal and business reasons, the personnel managers of two oil companies were not able to distribute sixteen of the questionnaires to secretaries in their companies. Six questionnaires were received after eight weeks had lapsed and were too late to be tabulated.

Forty-four responses were received and tabulated. There was a 73 per cent return on the 68 questionnaires originally distributed and a 96 per cent return on the questionnaires actually distributed. (The 96 per cent included the six questionnaires received too late for

tabulation.)

The departments in which the forty-four respondents worked, their secretarial positions in oil companies, and their years of experience in oil offices are shown in Table I.

TABLE I

DEPARTMENT CLASSIFICATION, POSITION, AND EXPERIENCE RECORD OF RESPONDENTS RATING THE QUESTIONNAIRES

| Department | Position | Years of Experience |
|---|---|---|
| Exploration | Secretary, Geology Division | 1 |
| Exploration | Secretary to Chief of Geology Department | 4 |
| Exploration | Secretary | 10 |
| Exploration | Secretary, Land Department | 26 |
| Exploration | Secretary to Land Manager | 12 |
| Exploration | Secretary, Land-Lease Department | 11 |
| Exploration | Secretary to General Counsel, Seismograph Corporation | 15 |
| Exploration | Legal Secretary, Land-Lease Department | 25 |
| Total . . . . . 8 | | |
| Production | Secretary to Division Manager | 7 |
| Production | Secretary, Gas-Gasoline Division | 9 |
| Production | Secretary, Petroleum Engineering Division | 4 |
| Production | Secretary to Division Clerk | 5 |
| Production | Secretary, Engineering Division | 13 |
| Production | Secretary | 5 |
| Production | Secretary, Gas-Gasoline Division | 15 |
| Production | Secretary | 37 |
| Production | Secretary to Chief of Joint Operations Division | 20 |

TABLE I (Continued)

| Department | Position | Years of Experience |
|---|---|---|
| Production | Secretary to Production Manager | 8 |
| Production | Secretary, Gas Utilization Department | 15 |
| Production | Secretary to Manager of Production Laboratory | 14 |
| Production | Secretary, Joint Operations Division | 3 |
| Production | Secretary to Chief Engineer | 6 |
| Production | Secretary to President, Independent Producing Company | 25 |
| Total . . . . . 15 | | |
| Manufacturing | Secretary, Marketing Department | 21 |
| Manufacturing | Secretary to Chief Chemist | 26 |
| Manufacturing | Secretary, Technical Service Division | 16 |
| Manufacturing | Secretary | 32 |
| Manufacturing | Secretary to Division Manager | 7 |
| Manufacturing | Executive Secretary | 5 |
| Manufacturing | Secretary | 8 |
| Total . . . . . 7 | | |
| Administrative | Secretary of company | 25 |
| Administrative | Executive Secretary to President | 28 |
| Administrative | Executive Secretary to Financial Vice President | 10 |
| Administrative | Executive Secretary to Comptroller | 4 |
| Administrative | Secretary to Director of Public Relations | 10 |
| Administrative | Executive Secretary to President | 8 |
| Total . . . . . 6 | | |
| Pipe Line | Secretary to Manager of Planning and Economics Department | 15 |
| Pipe Line | Executive Secretary to President | 8 |

TABLE I (Continued)

| Department | Position | Years of Experience |
|---|---|---|
| Pipe Line | Secretary to Chief Engineer | 9 |
| Total . . . . . 3 | | |
| Total 44 | | |

Procedures Used for Evaluating the Questionnaires

As previously indicated, the rating scheme adopted for scoring terms was to assign 5 points to a term if the frequency of use was very high in the respondent's office situation; 4 points, if high; 3 points, if average; 2 points, if low; 1 point, if very low; and 0 points, if never used. The use of the values 0, 1, 2, 3, 4, 5 for rating the terms was to indicate the degree of opinion held by the respondent as to how often he used the term. The number of points a respondent assigned to a term would indicate in the judgment of that respondent the frequency with which he used the term in his departmental office situation. Then, the average of the total points assigned to a term would indicate in the judgment of all of the respondents rating the term the average frequency with which they used the term in their departmental office situations.

To determine the department average of each term in the questionnaire, it was first necessary to prepare department ledgers based on those departments in which the respondents worked. A list of terms was included in an exploration department ledger, a list of the same terms was included in a production department ledger; and in the same manner ledgers were prepared for each of the six departments specified. Thus, all of the terms were included in each department ledger in order to

obtain the reactions of secretaries in different departments to the terms. Next, the individual ratings were totaled, and the totals of the ratings were averaged. The results were the department averages for each of the terms in each of the departments.

The significance of department rating averages is that they provide a comparison among various terms, and by the frequency of use in a particular department they indicate the worth of the term to the particular department in the judgment of the respondents in that particular department.

In order to indicate the relative importance of terms, the average of total ratings of all departments was determined for each term. The significance of total rating averages is that they indicate the worth of a term to the whole industry. Since the purpose of this study was to determine the technical terms frequently used by secretaries in the major departments of the petroleum industry, it was the belief of the investigator that the department rating averages better indicated the significance of a term to the secretary in a particular department. Both the total rating averages and the departmental rating averages of the terms were reported in the findings of this study.

For convenience in reporting the frequency of use of terms, those department rating averages which ranked from 4.00-4.40 inclusive were assigned a value of 1; those which ranged from 3.00-3.99 inclusive, a value of 2; and those which ranged from 2.30-2.99 inclusive, a value of 3. The averages of the total ratings of all departments were not assigned a value, but were reported by such averages.

## Determination of the Technical Terms Frequently Used by Secretaries in the Major Departments of the Petroleum Industry

Those department averages which were very high, high, and average were the criteria for determining the technical terms frequently used in the major departments of oil companies that were considered to be important to the secretary. There were 1,088 different technical terms that are important to the secretary and thus considered to be important for shorthand instruction.

On 121 terms, or 11 per cent, the average department rating was very high; on 457 terms, or 42 per cent, the average department rating was high; and on 510 terms, or 57 per cent, the average department rating was average.

The 1,088 terms were used 2,313 times in one or more departments. The 121 terms of very high frequency of use were used 158 times, or 7 per cent, in one or more departments; the 457 terms of high frequency of use were used 722 times, or 31 per cent, in one or more departments; and the 510 terms of average frequency of use were used 1,433 times, or 62 per cent, in one or more departments.

Table II shows the range of averages indicating the frequency of use, the number of total average ratings, and the number of department average ratings of the technical terms frequently used by secretaries in the major departments of the petroleum industry.

TABLE II

TOTAL AVERAGE RATINGS AND DEPARTMENT AVERAGE RATINGS OF THE TECHNICAL TERMS FREQUENTLY USED BY SECRETARIES IN THE MAJOR DEPARTMENTS OF THE PETROLEUM INDUSTRY

| Range of Averages | Number of Total Average Ratings | Number of Department Average Ratings |
|---|---|---|
| 4.00-4.40 | 1 | 121 |
| 3.00-3.99 | 33 | 457 |
| 2.30-2.99 | 117 | 510 |
| Total | 151 | 1,088 |

The 1,088 technical terms frequently used by secretaries in the major departments of the petroleum industry were used as the basis for classifying the sound combinations occurring in those terms and for the construction of shorthand outlines for those terms containing the sound combinations.

# CHAPTER III

## THE CONSTRUCTION OF SHORT-CUT FORMS AND SHORTHAND OUTLINES FOR THE TECHNICAL TERMS FREQUENTLY USED IN THE PETROLEUM INDUSTRY

Chapter II described the development of a master list of technical terms used in the petroleum industry and the determination from this master list a list of the technical terms frequently used by secretaries in the major departments of the petroleum industry.

The major problem of this chapter is twofold (1) that of devising short-cut forms for frequently recurring sound combinations in the technical petroleum terms frequently used in the major departments of the petroleum industry for which there is a need and (2) that of constructing shorthand outlines for the technical terms containing sound combinations for which the short-cut forms were devised.

### The Devising of Short-cut Forms for Sound Combinations in the Technical Petroleum Terms

Determination of the technical petroleum terms for which short-cut forms are to be devised was based on the principle that the more frequently a sound occurs in words and phrases and the more frequently a phrase is used in dictation, the more important it is to devise a brief outline for the term.[1]

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[1]Foote and Strong, p. iii.

The specific purpose of this problem, then, is to devise short-cut forms for those frequently used petroleum terms for which no short-cut forms have been devised or for which the established short-cut forms need to be shortened still farther. It is the belief of the investigator that the frequency of use of some of the petroleum terms which have established short-cut forms indicates that a shorter form could be used more advantageously in office situations. Therefore, those petroleum terms needing shortened forms were included and shortened.

In order to be of significance to shorthand writers and thus to shorthand instruction, the short cuts to be devised should be constructed in accordance with the phrasing and abbreviating principles of the shorthand system and the short cuts to be provided should be those constructed by the authors of the shorthand manuals which learners are studying.

Therefore, the principles used in constructing short-cut forms and abbreviations were (1) that the form contain enough of the sounds to be legible, (2) that the form be different from the form used for any other word, (3) that the short cut used in the first part of the phrase be written fully enough that the beginning rather than the end of the outline will give the clue, (4) that the form be written with as few strokes as possible, and (5) that the initial sound of each important word in a familiar term be written, such as American Petroleum Institute (API).[2]

The principles applied to constructing shorthand outlines for the technical petroleum terms including short cuts were that the terms contain (1) no arbitrary forms that might confuse the writer, (2) analogical

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[2]Louis A. Leslie and Charles E. Zoubek, Gregg Shorthand Manual Simplified (New York, 1949), 339 pp.

devices for high frequency syllables and words, (3) provision for analogical phrasing, such as intersecting and disjoining, and (4) one abbreviating principle that can be applied to any unfamiliar word.[2]

The author of the Expert Shorthand Speed Course states in the preface of his book that "The shorthand outlines are written in accordance with the Simplified revision of Gregg Shorthand."[3] An analysis of this book reveals that there are 200 short cuts representing frequently used words and phrases and that 63 per cent of those short cuts are based on the principles for constructing short cuts given in the Anniversary Shorthand Manual published in 1929. The other 37 per cent of short cuts were written in accordance with the principles of Simplified shorthand or devised by the author himself. This book was published in 1951, two years after Gregg Simplified shorthand was introduced into the public schools.

The editors of the Glossary of Terms Used in Petroleum Refining with shorthand outlines state in the preface that "The Gregg shorthand outlines in this book are printed with the permission of, and by special arrangement with, the Gregg Publishing Company."[4] An analysis of this

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[2]John Robert Gregg, Gregg Shorthand Dictionary (New York, 1937, p. iv.

[2]Clyde I. Blanchard and Charles E. Zoubek, Expert Shorthand Speed Course (New York, 1951), 498 pp.

[2]John Robert Gregg, Gregg Shorthand, Anniversary Edition (New York, 1929), 162 pp.

[2]Hazel A. Flood, Brass Tacks of Skill Building in Shorthand (New York, 1951), pp. 100-124.

[3]Blanchard, Expert Shorthand Speed Course, p. v.

[4]American Petroleum Institute, Glossary of Terms Used in Petroleum Refining, p. iv.

book reveals that there are 1,902 technical petroleum refining terms for which short-cut forms and shorthand outlines have been written; and that the author used a combination of Simplified and Anniversary short-cut forms and shorthand outlines. This book was published in 1953, four years after Simplified shorthand was introduced into the public schools.

Examples of short cuts presented in the above books which reveal inconsistencies in constructing short cuts by the system purported to be used are shown in the following table. The short cuts are listed in the first column. The system used by the author and the number of strokes, or movements, required to write the short cut by that system are indicated in the columns for the books. The fourth column indicates the number of strokes required to write the short cut by authoritative designations of the Simplified system.

TABLE III

COMPARISON OF SHORT CUTS USED IN THREE GREGG SHORTHAND BOOKS

| Short Cut | Glossary of Petroleum Refining Terms | Expert Shorthand Speed Course | Simplified Manual and Dictionary |
|---|---|---|---|
| ante-, anti- | Anniversary 1 stroke | Anniversary 1 stroke | Simplified 2 strokes |
| center- | Anniversary 2 strokes | Anniversary 2 strokes | Simplified 4 strokes |
| hydra-, hydro- | Anniversary 1 stroke | Anniversary 1 stroke | Simplified 4 strokes |
| regulate | Anniversary 1 stroke | Anniversary 2 strokes | Simplified 4 strokes |
| neutral | Anniversary 2 strokes | Anniversary 2 strokes | Simplified 5 strokes |
| number | Anniversary 2 strokes | Anniversary 2 strokes | Simplified 3 strokes |
| petroleum | Anniversary 2 strokes | | Simplified 7 strokes |

TABLE III (Continued)

| Short Cut | Glossary of Petroleum Refining Terms | Expert Shorthand Speed Course | Simplified Manual and Dictionary |
|---|---|---|---|
| naphtha | Anniversary<br>3 strokes | | Simplified<br>5 strokes |
| alcohol | Anniversary<br>3 strokes | | Simplified<br>6 strokes |
| distillation | Anniversary<br>3 strokes | | Simplified<br>7 strokes |
| pressure | Neither<br>2 strokes | | Simplified<br>5 strokes |
| pump | Neither<br>1 stroke | | Simplified<br>3 strokes |
| gasoline | Neither<br>2 strokes | | Simplified<br>6 strokes |

The investigator believes as the authors of the above Gregg shorthand books apparently do that the importance of the short cut does not lie in the system used, but it lies in the effectiveness of the form needed for brevity, legibility, and fluency in writing.

The purpose of devising short-cut forms for frequently recurring sound combinations is to save the secretary's time and effort in the recording and the transcribing of dictation.

The first step in attacking this problem was that of determining the basis for classifying terms for which short-cut forms were to be devised. Special vocabulary studies and Gregg shorthand books were investigated in order to determine what was the basis for the classification of the most-used terms for which shorthand outlines had been written. After the investigation, the investigator decided to apply the generally used principle of analogy; that is, (1) to classify syllables and words

by common sound elements at the beginning and at the end of words and phrases, (2) to establish a short-cut form for any one of the combinations in a sound classification, and (3) to construct outlines for all similar combinations in the sound classification in the same way.[5] In effect, this principle means that once a short-cut form has been devised for sound combinations occurring in syllables or words of any classification, any similar term containing that sound combination may be constructed in the same way. For example, once you have established the short-cut form for the prefix anti as a and the ending additives as a-det, you can then write the term anti-rust additives. Therefore, any word or group of words containing any one or more of those short cuts can be written in the same way, such as anti-foaming additives and anti-oxidant additives.

Determination of sound classifications in which terms were to be included was based on the principle for classifying words and phrases in Gregg shorthand textbooks--according to frequently recurring sounds in syllables and words occurring at the beginning and at the end of words and phrases. The list of technical petroleum terms was analyzed in order to determine how frequently the sounds occurred at the beginning and at the end of words and phrases.

Two major sound classifications were developed according (1) to frequently recurring syllable and word beginnings and (2) to frequently recurring syllable and word endings. Since one of the basic principles of constructing short-cut forms is that the first part of a phrase

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[5]John Robert Gregg, Gregg Shorthand Dictionary (New York, 1937), p. iv.

should be written fully enough that the beginning rather than the end of the outline will give the clue, syllables within words and words within phrases were not classified. However, enough of those parts were written into the phrase to make the outline distinctive.

In analyzing the techincal terms, those words and phrases which began with the same syllable or word were recorded in an individual sound group under the general classification for word beginnings. In the same manner, those terms which ended with the same syllable or word were recorded in individual sound groups under the classification for word endings. Some terms were included in both general classifications under the appropriate sound group. For example, gas oil; gas was included in the sound group of terms beginning with gas, and oil was included in the sound group of terms ending with oil.

The words and phrases in the sound groups were analyzed in order to determine (1) the terms for which no short-cut form existed, (2) the terms for which the established short cut needed to be shortened, and (3) the established short-cut forms which could be used in constructing shorthand outlines. Those sound groups consisting of three or more words and/or phrases and containing frequently recurring syllable and word beginnings and endings for which no short-cut form existed or for which established short-cut forms needed to be shortened were determined to be the sound combinations for which short-cut forms were devised. Shorthand outlines were constructed on the basis of the short cuts which were devised and those which were already established for all of the technical words and phrases in the two sound classifications.

The 1,088 technical petroleum terms which were rated very high, high, and average in frequency of use by secretaries in their office situations

were determined to be those technical petroleum terms that are important to secretaries in the petroleum industry. These were the technical petroleum terms for which short-cut forms were devised for the frequently recurring sound combinations in the terms and for which shorthand outlines were constructed for the terms including the short-cut forms.

Of the 1,088 technical petroleum terms frequently used by secretaries in the major departments of the petroleum industry, 121 terms were considered very high in frequency of use by secretaries in their office situations. In the judgment of the forty-four secretaries who rated the terms, these terms were considered to be the technical petroleum terms of greatest importance in the various departments of the petroleum industry.

It is believed by the investigator that she can safely say that these terms should be considered the terms of greatest importance in training students for stenographic work in the petroleum industry.

There were 457 technical petroleum terms which received a high rating. It is the judgment of the forty-four secretaries rating the terms that these terms are the ones which are high in frequency of use in their office situations. The investigator believes that it can be assumed that these terms are also important in training stenographers for the petroleum industry.

Five hundred ten of the technical petroleum terms were rated average in frequency of use in office situations. It is the judgment of the forty-four secretaries rating the terms that these terms are used with only average frequency of use in their office situations. Then, the frequency of use of these terms indicates that they are not the important ones to be included in shorthand instruction for training stenographers

for the petroleum industry.

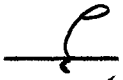
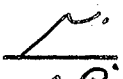
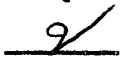
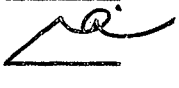
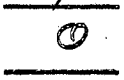
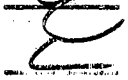
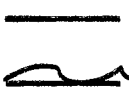
The technical petroleum terms frequently used by secretaries in the major departments of the petroleum industry are reported in Table VI, Chapter IV, in such a manner that the instructor may teach only the 121 terms of very high frequency if he so desires. Those terms are designated by the figure 1 in the department columns in which the figure appears. On the other hand, if the instructor wishes to teach all or any of the 457 technical petroleum terms of high frequency designated by the figure 2 in the department columns in which the figure 2 appears or the 510 terms of average frequency designated by the figure 3 in the department columns in which the figure 3 appears, he may do so. Short-cut forms were devised for the sound combinations frequently recurring in the 1,088 technical terms and shorthand outlines were constructed for the technical terms including short cuts.

In the 1,088 technical petroleum terms, there were 60 different recurring syllable and word beginnings for which short-cut forms were provided. There were 289 technical words and phrases containing these frequently recurring syllable and word beginnings for which shorthand outlines were written.

Table IV shows the syllable and word beginnings and the short-cut forms provided for syllable and word beginnings. The shorthand outlines for petroleum terms including those short cuts are shown in Table VI, Chapter IV.

TABLE IV

THE FREQUENTLY RECURRING SYLLABLE AND WORD BEGINNINGS IN THE TECHNICAL PETROLEUM TERMS WITH SHORT-CUT FORMS

| Term | Short-cut | Term | Short-cut | Term | Short-cut |
|---|---|---|---|---|---|
| absolute |  | distil- |  | plug |  |
| absorption |  | drilling |  | poly- |  |
| acid |  | dry-hole |  | pressure |  |
| alcohol |  | fraction- |  | primary |  |
| alkali |  | gas |  | produce |  |
| alkylate |  | geol- |  | propyl- |  |
| analy- |  | hydra-, hydro- |  | pump |  |
| anti- |  | initial |  | pure |  |
| asphalt |  | iso- |  | reflux |  |
| bottom-hole |  | lube- |  | royalty |  |
| carbon |  | mineral |  | salt |  |
| cataly- |  | naphtha |  | saturate |  |
| centi- |  | natural |  | secondary |  |
| centri- |  | neutral |  | seismo- |  |
| chlor- |  | nitr- |  | sulf- |  |
| coke |  | oil |  | tetra- |  |
| cracked |  | open-flow |  | therm- |  |
| crude |  | oxide- |  | unit |  |
| cycle |  | paraffin |  | vacuum |  |
| diesel |  | petrol- |  | viscosity |  |

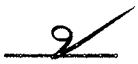
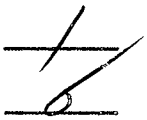
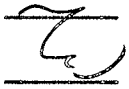
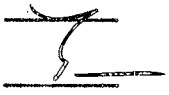
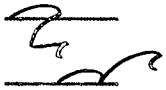
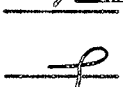
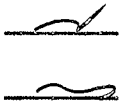
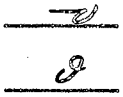
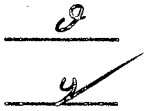
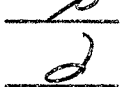
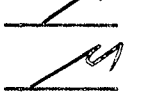
Total Different Terms....60 Total Different Short-cuts....60

There were 39 different frequently recurring syllable and word endings for which short-cut forms were provided. Table V shows the syllable and word endings and the short-cut forms provided for those endings.

There were 218 words and phrases including those frequently recurring syllable and word endings for which shorthand outlines were written. Table VI, Chapter IV, shows the shorthand outlines for the petroleum terms including those short cuts.

TABLE V

THE FREQUENTLY RECURRING SYLLABLE AND WORD ENDINGS IN THE TECHNICAL PETROLEUM TERMS WITH SHORT-CUT FORMS

| Term | Short-cut | Term | Short-cut | Term | Short-cut |
|---|---|---|---|---|---|
| acid |  | fuel |  | plant |  |
| acreage |  | gas |  | point |  |
| additives |  | gasoline |  | pressure |  |
| agent |  | gravity |  | production |  |
| agreement |  | hydrocarbons |  | pump |  |
| alcohol |  | index |  | ratio |  |
| analysis |  | lubrication |  | still |  |
| compounds |  | meter |  | stock |  |
| condenser |  | naphtha |  | system |  |
| content |  | number |  | test |  |
| crude |  | oil |  | tower |  |
| distillate |  | oxide |  | valve |  |
| distillation |  | petroleum |  | viscosity |  |

Total Terms . . . . . 39 Total Short Cuts . . . . 39

## Summary

A master list of technical terms used in the petroleum industry was developed from technical petroleum terms selected from actual petroleum office communications and printed petroleum materials. The master list was included in a questionnaire which was submitted to secretaries in major departments of the petroleum industry for rating. The terms which were rated very high, high, and average in frequency of use in the forty-four respondents' office situations were determined to be those terms that are considered important to the secretary in major departments of the petroleum industry. Those terms of average frequency of use or above were used as a basis for devising short-cut forms for frequently occurring sound combinations and for constructing shorthand outlines for technical terms including short cuts. The findings of these problems are presented in Chapter IV.

# CHAPTER IV

## THE FINDINGS

The major purpose of this study was to obtain a list of the technical terms frequently used by secretaries in the major departments of the petroleum industry with Gregg shorthand outlines which could be used in formal shorthand instruction. The present chapter reports the findings of this basic purpose of the study.

The first part of this investigation was to develop a list of technical terms used in the petroleum industry for the purpose of securing through a rating procedure by secretaries in oil offices the degree to which they used the terms in their office situations and thereby indicate the important terms to secretaries in major departments of the petroleum industry. The second part of this investigation was to develop short-cut forms for the frequently recurring sound combinations in the important technical terms for use in the construction of shorthand outlines for those terms. The findings of the specific problems of this investigation are perfected in one final report in Table VI.

Table VI shows the 1,088 technical terms frequently used by secretaries in the major departments of the petroleum industry, the average of total ratings, the degree of use of the terms in specific departments, and the shorthand outlines including short cuts for those terms.

For convenience in reading the table and in indicating columnar headings for departments and ratings for terms, certain designations

have been developed.

The columnar heading ATR in Table VI indicates the average of total ratings of terms.

Columnar designations for department abbreviations and the number of respondents rating the terms for each of the departments are as follows:

P, Production Department (15 respondents)

E, Exploration Department (8 respondents)

M, Manufacturing Department (7 respondents)

R, Research and Development Department (5 respondents)

A, Administrative Departments (6 respondents)

PL, Pipe Line Department (3 respondents)

The average department ratings of terms are designated by the numerals 1, 2, and 3. The following designations indicate the frequency with which terms are used in the different departments:

1, for very high department ratings of 4.00-4.40 inclusive

2, for high department ratings of 3.00-3.99 inclusive

3, for average department ratings of 2.30-2.99 inclusive

Shorthand outlines for the terms are shown in Table VI. These outlines include the 289 technical words and groups of words including the short-cut forms provided for frequently recurring syllable and word beginnings and the 218 words and groups of words including the short-cut forms for frequently recurring syllable and word endings. The other outlines shown were also written in accordance with principles of Gregg shorthand and were included for the convenience of anyone who might be interested in such outlines.

# TABLE VI

## THE TECHNICAL TERMS FREQUENTLY USED IN THE MAJOR DEPARTMENTS OF THE PETROLEUM INDUSTRY AND SHORTHAND OUTLINES

LEGEND:

Columnar Headings:

ATR--Average of Total Ratings
P--Production Department
E--Exploration Department
M--Manufacturing Department
R--Research and Development Department
A--Administrative Department
PL--Pipe Line Department

Number of Respondents:

44 respondents
15 respondents
8 respondents
7 respondents
5 respondents
6 respondents
3 respondents

Department Ratings:

1 Very High--average department rating total of 4.00-4.40; 121 terms
2 High--average department rating total of 3.00-3.99; 457 terms
3 Average--average department rating total of 2.30-2.99; 510 terms

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| abandon (abnd) | 3.8 | 1 | 1 | 2 | 3 | 2 | 2 | |
| abandonment | 3.2 | 2 | 2 | 3 | 3 | 2 | 3 | |
| abrasion | 1.4 | | | | | 3 | 3 | |
| absolute pressure | 1.4 | 3 | | 2 | | | | |
| absolute temperature | 1.3 | | | 2 | | | | |
| absolute viscosity | 1.3 | | | 3 | | | | |
| absorb | 2.8 | 2 | | 1 | 1 | | 3 | |
| absorption | 2.7 | 3 | | 1 | 1 | | 3 | |
| absorption column | 1.0 | | | 3 | 3 | | | |
| absorption gasoline | 1.0 | | | 3 | 3 | | | |
| absorption oil | 1.2 | | | 2 | | | | |
| absorption plant | 1.3 | | | 2 | | | | |
| absorption system | 0.9 | | | 3 | | | | |
| absorption tower | 1.1 | | | 3 | | | | |

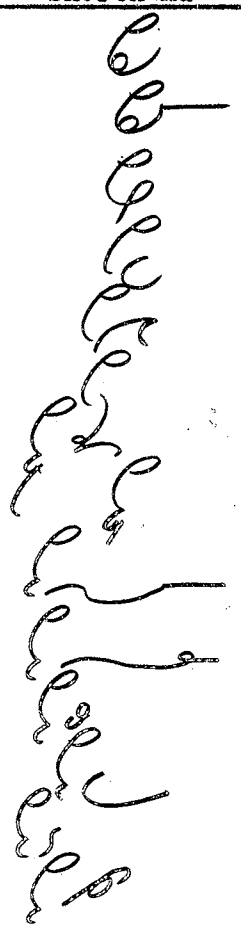


TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| abstract of title | 1.9 | 1 | | | | 3 | | |
| accelerate | 2.2 | 3 | | 3 | 3 | 3 | | |
| accelerator | 1.2 | | | | 3 | | | |
| accumulate | 3.6 | 2 | 1 | 2 | 2 | 2 | 2 | |
| accumulation | 3.6 | 2 | 2 | 2 | 2 | 2 | 2 | |
| accumulator | 1.6 | 3 | | 2 | | | | |
| acetates | 0.7 | | | | 3 | | | |
| acetic acid | 0.8 | | | | 3 | | | |
| acetone | 0.9 | | | | 2 | | | |
| acid | 3.0 | 2 | 3 | 1 | 1 | | | |
| acid corrosion | 1.6 | | | 2 | | | | |
| acid (free) | 1.6 | | | 2 | 3 | | | |
| acid-heat test | 1.0 | | | 3 | | | | |
| acidity | 2.0 | 3 | | 2 | 2 | | | |
| acidization | 2.0 | 3 | 3 | 3 | | | | |
| acidizing | 2.3 | 2 | 2 | | | | | |
| acid number | 0.8 | | | | 3 | | | |
| acid recovery plant | 0.8 | | | | 3 | | | |
| acid sludge | 0.7 | | | 3 | 3 | | | |
| acid treatment | 2.0 | 3 | 3 | 3 | 3 | | | |
| acreage (acrg) | 2.8 | 2 | 1 | | | 3 | | |
| acreage contribution | 2.1 | 3 | 1 | | | 3 | | |
| acre foot | 1.7 | 3 | 2 | | | | | |
| activated clay | 0.7 | | | | 3 | | | |
| actual daily average | 2.3 | 2 | 3 | 3 | | | | |

TABLE VI (Continued)

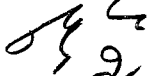
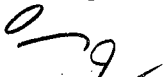
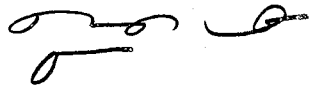
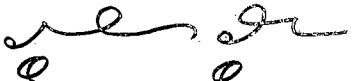
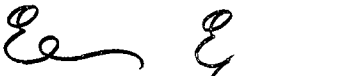
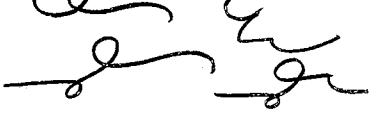
| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| actual drilling | 1.7 | 3 | 2 | | | | |  |
| additive compounds | 1.7 | | | 3 | 3 | | |  |
| adsorption | 1.6 | | | 2 | 3 | | |  |
| affiant | 1.0 | | 3 | | | | |  |
| affidavit | 2.2 | 3 | 2 | 3 | 3 | 2 | |  |
| affidavit of non-development | 1.4 | | 1 | | | | |  |
| affidavit of non-production | 1.2 | | 2 | | | | |  |
| aggregate | 2.1 | 3 | 3 | | 3 | 3 | |  |
| agitate | 1.6 | | | 3 | 2 | | |  |
| agitation | 1.6 | | | 3 | 3 | | |  |
| agitator | 1.7 | | | 2 | 2 | | |  |
| agonic line | 0.3 | | | | | | 1 |  |
| agreement | 3.9 | 1 | 1 | 1 | 3 | 1 | |  |
| air compressor | 1.4 | | | 2 | | | |  |
| air condenser | 1.3 | | | 2 | | | |  |
| alcohol | 1.5 | | | 3 | 1 | | |  |
| alcohol, absolute | 0.8 | | | 3 | | | |  |
| alcohol, butyl | 0.8 | | | 3 | 2 | | |  |
| alcohol, ethyl (ethanol) | 1.0 | | | 3 | 2 | | |  |
| alcohol, isopropyl (isopropanol) | 1.2 | | | 3 | 2 | | |  |
| alcohol, methyl (methanol) | 0.9 | | | 3 | 2 | | |  |
| algae | 1.1 | | | 3 | 3 | | |  |
| alkali | 1.0 | | | | 2 | | |  |
| alkaline | 1.2 | | | 3 | 2 | | |  |
| alkalinity | 1.2 | | | 3 | 2 | | |  |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| alky-feed stock | 0.8 | | | 3 | 3 | | | |
| alkylate | 1.2 | | | 2 | 2 | | | |
| alkylate bottoms | 0.8 | | | 3 | 3 | | | |
| alkylation | 1.3 | | | 1 | 2 | | | |
| alkylation unit | 1.2 | | | 1 | 2 | | | |
| allocated | 2.6 | 2 | 2 | 3 | 3 | | 3 | |
| allocation factor | 1.5 | | | | | 2 | | |
| allotment | 2.1 | | 2 | 3 | | 2 | | |
| allowable | 3.3 | 2 | 1 | 2 | 3 | 3 | 2 | |
| alloy | 1.5 | | | 2 | | | | |
| alteration | 1.6 | | | 3 | | | | |
| altitude | 1.5 | | | 3 | 3 | | | |
| aluminum | 1.4 | | | 3 | 3 | | | |
| American melting point (Amp) | 0.7 | | | | 3 | | | |
| amine | 1.0 | | | 3 | 2 | | | |
| ammonia | 1.4 | | | 2 | 2 | | | |
| ammonia nitrate | 1.1 | | | 3 | 3 | | | |
| amortization | 1.8 | | 3 | 3 | | 3 | | |
| analysis | 3.5 | 2 | 3 | | 2 | | 2 | |
| analytical | 2.3 | 3 | | 2 | 1 | | | |
| analytically | 2.0 | 3 | | 2 | 1 | | | |
| analyzer | 1.3 | | | 2 | | | | |
| Anhydrite (Anhy) | 1.5 | | 3 | | 3 | | | |
| Anhydrous | 1.6 | | 3 | 3 | 2 | | | |
| anhydrous ammonia | 1.0 | | | 3 | 2 | | | |

TABLE VI (Continued)

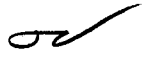
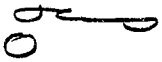
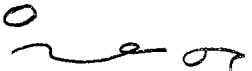
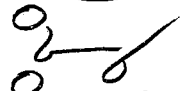
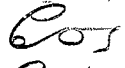
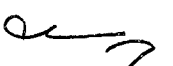
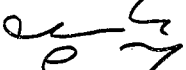
| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| aniline | 0.8 | | | 3 | 3 | | |  |
| aniline point | 0.8 | | | 3 | 3 | | |  |
| annual delay rental | 1.3 | | 1 | | | 3 | |  |
| anode | 1.0 | | | 3 | 3 | | |  |
| anomalous | 1.0 | | 3 | | 3 | | |  |
| anomaly | 1.2 | | 3 | | 3 | | |  |
| anticlinal | 1.1 | | 2 | | | | |  |
| anticlinal axis | 0.8 | | 3 | | | | |  |
| anticline | 1.3 | | 2 | | 3 | | |  |
| anti-foaming additives | 0.8 | | | 3 | 3 | | |  |
| anti-knock agents | 1.2 | | | 2 | 3 | | |  |
| anti-knock gasoline | 1.3 | | | 2 | 3 | | |  |
| anti-oxidant additives | 0.8 | | | 3 | 2 | | |  |
| anti-rust additives | 1.1 | | | 2 | 2 | | |  |
| API gravity | 2.8 | 2 | 3 | 1 | 2 | | 2 |  |
| apparatus | 2.3 | 3 | | 2 | 1 | | |  |
| appraisal | 2.0 | 3 | 3 | 3 | | | |  |
| appurtenances | 1.6 | | 3 | 3 | | | |  |
| appurtenant | 1.2 | | 3 | 3 | | | |  |
| area | 3.9 | 1 | 2 | 2 | 3 | 1 | 2 |  |
| aromatic | 1.3 | | | 2 | 2 | | |  |
| aromatic compounds | 1.0 | | | 2 | 3 | | |  |
| aromatic hydrocarbons | 0.9 | | | 3 | 3 | | |  |
| asbestos | 1.0 | | | | 3 | | |  |
| ash | 1.1 | | | 2 | 3 | | |  |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| ash content | 1.0 | | | 3 | 2 | | | |
| alphalt (asph) | 1.5 | | | 3 | 2 | | | |
| asphaltic | 0.6 | | | 3 | 3 | | | |
| asphaltenes | 0.6 | | | | 3 | | | |
| assignee | 2.3 | 3 | 2 | | | 2 | | |
| assignment | 3.2 | 2 | 1 | 3 | | 1 | | |
| assignor | 2.1 | 3 | 1 | | | 2 | | |
| ASTM distillation | 1.4 | | | 1 | 2 | | | |
| atmosphere | 2.2 | 3 | | 2 | 2 | | | |
| atmospheric pressure | 2.2 | 3 | | 2 | 2 | | | |
| attest | 2.3 | 3 | 2 | | | | | |
| attestation | 1.5 | 3 | 3 | | | | | |
| attorney-in-fact | 1.6 | | 3 | 2 | | | 3 | |
| average life | 1.7 | 3 | | 3 | | | | |
| aviation gasoline | 1.4 | | | 1 | 2 | | | |
| B | | | | | | | | |
| back pressure | 1.3 | | | 3 | | | | |
| barium | 0.7 | | | | 2 | | | |
| barometer | 1.1 | | | 3 | 3 | | | |
| barometric pressure | 1.3 | | | 3 | 3 | | | |
| barrel | 3.7 | 1 | 3 | 1 | 2 | 2 | 2 | |
| basal conglomerate | 0.9 | | 3 | | | | | |
| base (B/) | 2.8 | 3 | 3 | 2 | 2 | 3 | | |
| base abstract | 1.1 | | 3 | | | | | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| basic sediment and water (BS&W) | 1.3 | | | 3 | 3 | | 2 | |
| batch | 1.6 | | | 2 | 2 | | 1 | |
| batch agitator | 0.6 | | | | 3 | | | |
| batch distillation | 0.6 | | | | 2 | | | |
| battery | 1.7 | 3 | | 3 | 3 | | | |
| bauxite | 0.9 | | | 3 | 3 | | | |
| beaker | 0.7 | | | | 2 | | | |
| Baume gravity | 0.6 | | | | 3 | | | |
| bedrock | 1.1 | | | | 3 | | | |
| benzene | 1.0 | | | 3 | | | | |
| bitumens | 0.6 | | | | 3 | | | |
| bituminous | 0.9 | | | | 3 | | | |
| blend | 2.2 | | | 1 | 2 | | 2 | |
| blended fuel | 1.3 | | | 1 | 3 | | | |
| blending | 1.5 | | | 2 | 2 | | 2 | |
| block (blk) | 1.6 | | 2 | | | | | |
| blueprints | 1.8 | | 3 | 3 | 2 | | | |
| body | 1.7 | 3 | | 3 | 3 | | | |
| boiling | 1.4 | | | 2 | 2 | | | |
| boiling point | 1.6 | | | 2 | 2 | | | |
| boiling range | 1.1 | | | 3 | 2 | | | |
| bomb | 0.9 | | | | 3 | | | |
| bond | 1.2 | | 3 | | | | | |
| bonus | 1.5 | | 2 | | | 3 | | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| booster station | 1.1 | | | | | | 3 | |
| booster pump | 1.0 | | | | | | 3 | |
| bottom hole agreement | 1.7 | 3 | 3 | | | | | |
| bottom hole choke (BHC) | 1.2 | | 3 | | | | | |
| bottom hole commitment | 1.2 | | 3 | | | | | |
| bottom hole contract | 1.3 | | 3 | | | | | |
| bottom hole contribution | 1.3 | | 3 | | | 3 | | |
| bottom hole pressure (BHP) | 2.0 | 2 | 2 | | | | | |
| bottom hole shut in pressure (BHSIP) | 1.3 | 3 | 3 | | | | | |
| bottoms (btms) | 2.0 | | | 1 | 2 | | | |
| bottom settlings | 1.1 | | | 3 | 3 | | | |
| break | 2.1 | | 3 | 2 | 3 | | 3 | |
| breakage | 1.4 | | | 3 | | | | |
| bright stocks | 1.3 | | | 2 | 2 | | | |
| bromine | 0.8 | | | 3 | 3 | | | |
| bromine number | 0.7 | | | 3 | 3 | | | |
| bromine test | 0.7 | | | 3 | 3 | | | |
| Btu (British thermal unit) | 1.7 | | | 2 | 1 | | | |
| bubble tower | 0.6 | | | 3 | | | | |
| bubble tray | 0.7 | | | 2 | | | | |
| bulk plant | 1.1 | | | | 3 | 3 | | |
| burner distillate | 1.0 | | | 2 | 3 | | | |
| burning oil | 1.2 | | | 3 | 3 | | | |
| butadiene | 0.6 | | | | 3 | | | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| butane | 2.1 | 3 | | 1 | 2 | | 3 | |
| butanes plus fraction | 0.8 | | | 3 | | | | |
| butene | 0.9 | | | 3 | 3 | | | |
| butyl | 0.8 | | | 3 | 2 | | | |
| butylene | 0.8 | | | 3 | 2 | | | |
| by-pass | 1.6 | | | 3 | 2 | | | |
| by-product | 2.0 | | | 2 | 2 | | 3 | |
| C | | | | | | | | |
| cable | 1.6 | 3 | | | | | | |
| cable tools (CT) | 1.5 | 3 | 3 | | | | | |
| calcium | 1.1 | | | | 2 | | | |
| calcium hydroxide | 0.7 | | | | 3 | | | |
| caliber | 1.1 | | | 3 | | | | |
| calibrate | 1.4 | | | 2 | 3 | | | |
| calibrated | 1.3 | | | 2 | 3 | | | |
| calibration | 1.4 | | | 2 | 3 | | | |
| Cambrian (Camb) | 0.7 | | 3 | | | | | |
| capacity | 3.6 | 2 | 2 | 2 | 1 | 3 | 1 | |
| carbide | 1.1 | | | 3 | 3 | | | |
| carbon | 1.9 | | | 2 | 2 | | | |
| carbonaceous | 0.9 | | | | 2 | | | |
| carbonates | 1.1 | | | 3 | 2 | | | |
| carbon black | 1.1 | | | 3 | 3 | | | |
| carbon dioxide | 1.4 | | | 3 | 2 | | | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| carbonization | 0.8 | | | | 3 | | | |
| carbon ratio | 0.8 | | | 3 | | | | |
| carbon residue | 1.2 | | | 2 | 2 | | | |
| carbon tetrachloride | 1.2 | | | 3 | 3 | | | |
| casing (csg) | 1.9 | 2 | 2 | 3 | | | | |
| casinghead | 2.4 | 3 | 3 | 2 | 3 | | | |
| casinghead gas | 2.6 | 3 | 2 | 2 | | 3 | | |
| casing point | 1.2 | 3 | | | | | | |
| casing pressure (CP) | 1.2 | 3 | 3 | | | | | |
| casing pressure shut in(CPSI) | 1.1 | 3 | 3 | | | | | |
| catalysis | 0.7 | | | | 2 | | | |
| catalyst | 1.7 | | | 1 | 1 | | | |
| catalytic agent | 1.0 | | | 3 | 3 | | | |
| catalytic cracker | 1.6 | | | 1 | 2 | | | |
| catalytic dehydrogenation | 0.8 | | | 3 | 3 | | | |
| catalytic desulfurization | 0.8 | | | 3 | 3 | | | |
| cat cracking | 1.5 | | | 1 | 3 | | | |
| cathodic protection | 0.9 | | | | | | 2 | |
| caustic soda | 0.7 | | | 3 | 3 | | | |
| cementing (cmtg) | 1.5 | 3 | 3 | | | | | |
| centigrade | 1.2 | | | | 2 | | | |
| centimeter | 0.6 | | | | 3 | | | |
| centipoise | 0.7 | | | | 3 | | | |
| centrifugal | 1.5 | | | 2 | | | 3 | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| centrifugal pump | 1.5 | | | 2 | 3 | | | |
| centrifuges | 1.0 | | | 3 | 3 | | | |
| certificate of title | 1.6 | | 2 | | | 2 | | |
| cetane | 0.7 | | | 2 | 3 | | | |
| cetane number | 0.8 | | | 2 | 3 | | | |
| chain of title | 0.7 | | 3 | | | | | |
| channeling | 1.1 | | | 3 | | | | |
| charging stock | 1.1 | | | 2 | 2 | | | |
| checkerboard (chkbd) | 0.9 | | 3 | | | | | |
| chert | 1.1 | | 3 | | | | | |
| cherty limestone | 1.1 | | 3 | | | | | |
| chemical action | 1.2 | | | 3 | 2 | | | |
| chemical reaction | 1.3 | | | 3 | 2 | | | |
| chloride | 1.2 | | | 3 | 2 | | | |
| chlorination | 0.9 | | | 3 | | | | |
| chlorine | 1.2 | | | 3 | 3 | | | |
| choke (chk) | 1.3 | 3 | 3 | | | | | |
| circulate (circ) | 2.6 | 3 | 2 | 2 | | | | |
| circulating oil | 1.6 | | | 3 | 3 | | | |
| circulating pump | 1.6 | | | 3 | 3 | | | |
| clay | 1.7 | | | 3 | 2 | | | |
| cleaned out (CO) | 1.5 | | 3 | 3 | | | | |
| cloud point | 0.7 | | | | 3 | | | |
| coating and wrapping | 0.6 | | | | | | 3 | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| coincide | 1.7 | | 3 | 3 | 3 | | |  |
| coke | 1.4 | | | 2 | 2 | | |  |
| coke drum | 0.8 | | | 3 | | | |  |
| coking | 1.3 | | | 2 | 3 | | |  |
| coking still | 0.9 | | | 3 | | | |  |
| coking unit | 1.1 | | | 2 | | | |  |
| cold test | 0.8 | | | 3 | 3 | | |  |
| collateral | 1.2 | | 3 | | | 3 | |  |
| colorimeter | 0.6 | | | | 3 | | |  |
| combustible | 1.3 | | | 3 | 2 | | |  |
| combustion | 1.4 | | | 2 | 2 | | |  |
| complete a well | 1.8 | 3 | 2 | | | | |  |
| completion (comp) | 3.3 | 2 | 1 | 2 | 2 | 3 | 3 |  |
| commence drilling | 1.8 | 3 | 2 | | | | |  |
| commence drilling operations | 1.8 | 3 | 2 | | | | |  |
| competent | 2.0 | | 3 | 3 | 3 | 3 | |  |
| composition | 1.7 | | | 3 | 1 | | |  |
| compression | 1.6 | | | 2 | 3 | | |  |
| compressor oils | 0.8 | | | 3 | | | |  |
| concentration | 1.9 | | | 2 | 2 | | |  |
| condensate (cond) | 2.3 | 3 | | 2 | 2 | | |  |
| conductivity | 1.2 | | | | 3 | | |  |
| confirm | 3.1 | 3 | 2 | 2 | 3 | 2 | 2 |  |
| conformity | 1.6 | 3 | | | | | |  |

TABLE VI (Continued)

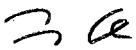
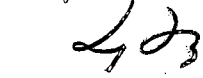
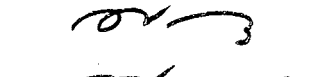
| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| Conglomerate (Cong) | 1.5 | | 3 | | | | |  |
| conservation | 2.0 | | 3 | | | | 3 |  |
| consistency | 2.2 | | | 2 | 2 | 3 | |  |
| consolidation | 1.9 | 3 | 3 | 3 | | 3 | |  |
| contamination | 1.9 | | | 2 | 1 | | 3 |  |
| contour | 1.7 | | 2 | | 3 | | |  |
| contour map | 1.6 | 3 | 2 | | | | |  |
| contract depth (CD) | 1.3 | 3 | 2 | | | | |  |
| contracting parties | 1.5 | | 1 | | | | |  |
| conversion | 2.0 | 3 | | 2 | 2 | | |  |
| conversion factors | 1.3 | | | 3 | 2 | | |  |
| cooling system | 1.3 | | | 3 | 3 | | |  |
| cooling tower | 1.1 | | | 2 | 3 | | |  |
| coordinate | 2.3 | 3 | 3 | 3 | 2 | | 3 |  |
| core (cr) | 2.2 | 2 | 2 | | 3 | | |  |
| core analysis | 2.2 | 2 | 2 | | 3 | | |  |
| core barrel | 1.3 | 3 | | | | | |  |
| core drill | 1.4 | 3 | 3 | | | | | |
| coring (crg) | 1.8 | 3 | 2 | | | | |  |
| correlation | 2.1 | | 2 | 3 | 3 | | |  |
| corrosion | 2.3 | 3 | | 2 | 2 | | 3 |  |
| cracked distillate | 1.1 | | | 3 | 3 | | |  |
| cracked gases | 0.8 | | | 3 | 3 | | |  |
| cracked gasoline | 1.1 | | | 2 | 2 | | |  |

TABLE VI (Continued)

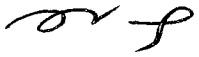
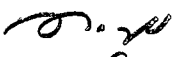
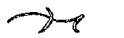
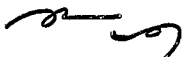
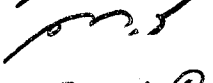
| Term | ART | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| cracked naphtha | 0.9 | | | 3 | | | |  |
| cracking | 1.2 | | | 2 | 2 | | |  |
| cracking plant | 1.1 | | | 2 | | | |  |
| cracking stock | 1.1 | | | 2 | 3 | | |  |
| Cretaceous | 0.7 | | 3 | | | | |  |
| cross section | 2.2 | | 3 | 2 | 3 | | |  |
| crude distillation | 1.1 | | | 2 | | | |  |
| crude oil | 2.5 | 3 | 2 | 1 | 2 | 2 | 1 |  |
| crude still | 1.1 | | | 2 | | | |  |
| crystalline (Xln) | 0.9 | | | | 3 | | |  |
| crystallize | 1.2 | | | 3 | 3 | | |  |
| cumulative recovery | 1.5 | 3 | 3 | | | | |  |
| cycle | 1.8 | | | 2 | 1 | | |  |
| cycle gas oil | 1.2 | | | 2 | 3 | | |  |
| cycle stock | 1.1 | | | 2 | | | |  |
| D | | | | | | | | |
| deactivator | 0.8 | | | 3 | | | |  |
| deasphalting | 0.8 | | | 3 | | | |  |
| debutanizer | 1.1 | | | 2 | 3 | | |  |
| decline curves | 1.0 | 3 | | | | | |  |
| decoking | 1.1 | | | 2 | | | |  |
| decolorizing | 1.1 | | | 3 | | | |  |
| decomposition | 1.2 | | | 3 | 2 | | |  |
| deep hole | 1.3 | 3 | 3 | | | | |  |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| deep test | 1.4 | 3 | 2 | | | | | |
| de-ethanizer | 0.9 | | | 3 | | | | |
| dehydrate | 1.2 | | | 3 | 3 | | | |
| dehydrogenation | 0.8 | | | 3 | 3 | | | |
| demulsify | 0.8 | | | | 3 | | | |
| density | 2.3 | 3 | | 3 | 1 | | | |
| depleted | 2.5 | 2 | 2 | | 3 | 3 | | |
| depletion | 2.6 | 2 | 2 | | 3 | 3 | | |
| depletion allowance | 2.3 | 3 | 3 | | | 2 | | |
| depreciation | 1.5 | | 3 | | | 3 | | |
| depropanizer | 1.0 | | | 2 | 3 | | | |
| desulfurization | 1.0 | | | 2 | 3 | | | |
| detergency | 1.0 | | | 3 | 3 | | | |
| develop | 3.3 | 2 | 2 | 2 | 3 | 2 | | |
| devise | 2.1 | | 2 | 3 | | 3 | 3 | |
| Devonian (Dev) | 1.0 | | 3 | | | | | |
| dewax | 0.9 | | | 2 | 3 | | | |
| diagonal offset | 1.6 | 3 | 3 | | | | | |
| diameter | 1.7 | 3 | | 3 | 3 | | 3 | |
| diesel fuel | 2.0 | | | 1 | 2 | | 3 | |
| diesel oil | 1.9 | | | 1 | 3 | | | |
| diesel engine | 1.5 | | | 2 | 3 | | 3 | |
| differential | 1.6 | | | 3 | 3 | | | |
| diffusion | 1.3 | | | | 3 | | | |

TABLE VI (Continued)

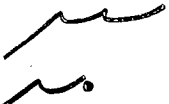
| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| diluent | 0.8 | | | 3 | 3 | | |  |
| dilution | 1.0 | | | 3 | 3 | | |  |
| dip | 1.5 | | 2 | | | | |  |
| directional well | 1.0 | | 3 | | | | |  |
| direct offset | 2.2 | 2 | 2 | | | | |  |
| discoloration | 0.6 | | | 3 | | | |  |
| discovery well | 1.9 | 3 | 2 | | | | |  |
| dismantled | 1.5 | | | 3 | | | |  |
| dispersion | 1.1 | | | | 3 | | |  |
| displacement (displ) | 1.5 | 3 | 3 | | 3 | | |  |
| distillate (dist) | 3.0 | 3 | 3 | 1 | 1 | 3 | 3 |  |
| distillate fuel oil | 2.2 | 2 | | 2 | 3 | | |  |
| distillation | 2.1 | | | 1 | 1 | | |  |
| distillation loss | 1.4 | | | 2 | 3 | | |  |
| division order | 1.5 | | 2 | | | | |  |
| doctor solution | 0.8 | | | 3 | 3 | | |  |
| doctor test | 1.1 | | | 2 | 3 | | |  |
| doctor treatment | 0.8 | | | 3 | 3 | | |  |
| Dolomite (Dolo) | 1.3 | | 3 | | | | |  |
| dome | 1.3 | | 2 | | | | |  |
| downdip | 0.8 | | 3 | | | | |  |
| drilled out (DO) | 0.9 | 3 | 3 | | | | |  |
| driller | 1.3 | 3 | 3 | | | | |  |
| drilling (drlg) | 2.0 | 3 | 2 | | | | |  |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| drilling in | 1.1 | | 3 | | | | | |
| drilling mud | 1.4 | 3 | 3 | | | | | |
| drilling the plug (DP) | 0.9 | | 3 | | | | | |
| drilling to set surface pipe | 1.2 | | 3 | | | | | |
| drilling under pressure | 1.2 | | 3 | | | | | |
| drill pipe (DP) | 1.6 | 3 | 2 | | | | | |
| drill plug (D/P) | 1.1 | | 3 | | | | | |
| drill stem test (DST) | 1.9 | 3 | 2 | | | | | |
| dry and abandoned (D&A) | 1.8 | 3 | 1 | | | 3 | | |
| dry hole | 2.3 | 3 | 1 | | | 3 | | |
| dry-hole agreement | 1.7 | | 2 | | | 3 | | |
| dry-hole commitment | 1.7 | | 2 | | | 2 | | |
| dry-hole contribution | 1.7 | | 1 | | | 3 | | |
| dry-hole money | 1.5 | | 2 | | | | | |
| dual completion | 1.3 | | 3 | | | | | |
| dual producer | 0.9 | | 3 | | | | | |
| due diligence | 0.8 | | 2 | | | | | |
| E | | | | | | | | |
| easement | 1.5 | | 3 | | | | | |
| effluent | 1.1 | | | 2 | | | | |
| egress | 1.2 | | 3 | | | | | |
| electric log (EL) | 2.1 | 3 | 1 | | | | | |
| electromagnetic | 0.5 | | | | 3 | | | |
| elevation (ELEV) | 2.3 | 3 | 2 | 3 | 3 | | | |

TABLE VI (Continued)

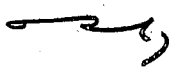
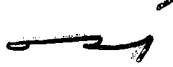
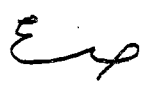
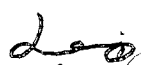
| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| emulsification | 0.8 | | | 3 | 3 | | |  |
| emulsion | 1.3 | | | 3 | 3 | | |  |
| end point | 1.1 | | | 3 | 3 | | |  |
| equilibrium | 0.8 | | | | 3 | | |  |
| equitable | 1.8 | 3 | 3 | | | 3 | |  |
| erosion | 1.7 | | 3 | 2 | | | |  |
| ethane (eth) | 1.0 | | | | 3 | | |  |
| ethyl | 1.7 | | | 2 | 2 | | |  |
| ethylene | 0.8 | | | 3 | 3 | | |  |
| ethylene glycol | 0.7 | | | 3 | 3 | | |  |
| evaluate | 3.3 | 2 | 2 | 2 | 2 | 2 | |  |
| evaporation | 1.6 | | | 2 | 3 | | 3 |  |
| exchanger | 1.2 | | | 2 | 3 | | |  |
| expiration | 2.6 | 3 | 3 | 3 | 3 | 2 | |  |
| exploitation | 1.3 | | 3 | | | | |  |
| exploration (explora) | 2.5 | 2 | 1 | | | 3 | |  |
| exploratory well | 1.6 | 3 | 2 | | | | |  |
| explosive | 1.3 | | | 3 | 2 | | |  |
| extension | 2.7 | 3 | 3 | 3 | 2 | 2 | |  |
| external corrosion | 1.1 | | | 3 | | | |  |
| extraction | 1.5 | | | 2 | 3 | | |  |
| F | | | | | | | | |
| factor | 2.9 | 2 | 3 | 2 | 1 | 3 | |  |
| Fahrenheit | 2.0 | 3 | | 2 | 1 | | |  |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| farmout | 1.3 | 3 | 1 | | | | | |
| farmout agreement | 2.0 | 3 | 2 | | | 3 | | |
| fault | 1.8 | 3 | 2 | | | | | |
| fee simple title | 1.0 | | 3 | | | | | |
| field (fld) | 2.0 | 2 | 2 | | | 3 | | |
| filtration | 1.4 | | | 3 | 3 | | | |
| fishing (fsg) | 1.1 | | 3 | | | | | |
| fittings | 1.5 | 3 | | 3 | | | 3 | |
| flammable | 0.9 | | | 2 | | | | |
| flash | 1.1 | | | 2 | 3 | | | |
| flash point | 1.1 | | 2 | 3 | | | | |
| flash tower | 0.7 | | | 3 | | | | |
| floating roof | 0.8 | | | 3 | | | | |
| flooding | 1.8 | 3 | 3 | | | | | |
| flowing well | 1.4 | 3 | 3 | | | | | |
| flue gas | 0.6 | | | 3 | | | | |
| fluid | 2.7 | 2 | 3 | 2 | 2 | | | |
| fluorescence (fluor) | 0.9 | | | | 3 | | | |
| foamite | 0.8 | | | 2 | | | | |
| formulas | 2.3 | 3 | | 1 | 1 | | | |
| fractional | 2.1 | 3 | 2 | 3 | 3 | | | |
| fractional distillation | 0.8 | | | 3 | 3 | | | |
| fractionated | 1.2 | | | 3 | 3 | | | |
| fractionating column | 1.0 | | | 2 | | | | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| fractionating tower | 1.1 | | | 2 | 3 | | | |
| fractionation | 1.3 | | | 2 | 3 | | | |
| fractionator | 0.9 | | | 2 | | | | |
| fractures (fract) | 1.3 | 3 | | | | | | |
| friction | 1.2 | | | 3 | 3 | | | |
| G | | | | | | | | |
| gain | 1.7 | | 3 | 3 | 3 | 3 | | |
| gallonage | 1.3 | | | | | 3 | | |
| gamma radiation | 0.7 | | | | 3 | | | |
| gas | 3.6 | 2 | 2 | 1 | 2 | 2 | 2 | |
| gas-cut mud (GCM) | 1.2 | | 2 | | | | | |
| gaseous | 1.8 | | | 3 | 3 | | | |
| gas injection | 1.4 | 3 | | 3 | | | | |
| gas and oil (G&O) | 2.0 | 3 | | 2 | 3 | | | |
| gas-oil ratio (GOR) | 2.2 | 3 | 3 | 2 | 3 | | | |
| gasoline end point | 1.1 | | | 2 | | | | |
| gasoline hydrocarbons | 0.9 | | | 3 | | | | |
| gas recovery plant (GRP) | 1.1 | | | 3 | | | | |
| gas turbine | 0.7 | | | 3 | | | | |
| gathering lines | 1.9 | 3 | | | | 3 | 3 | |
| gauge (gge) | 2.5 | 3 | | 2 | 3 | 3 | 3 | |
| gauger | 0.9 | | | | | | 3 | |
| generator | 1.1 | | | 2 | 3 | | 3 | |
| geological | 2.5 | 3 | 1 | | 3 | 2 | | |

TABLE VI (Continued)

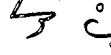
| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| geologist | 2.6 | 3 | 1 | | 3 | 3 | |  |
| geology | 2.3 | 3 | 1 | | 3 | 3 | |  |
| geophysical | 1.8 | | 2 | | 2 | 3 | |  |
| geophysical prospecting | 1.2 | | 3 | | 3 | | |  |
| geophysics | 1.4 | | 3 | | 3 | | |  |
| gravity (grav) | 3.3 | 2 | 2 | 1 | 1 | | 2 |  |
| gravity meter | 1.4 | | | | 3 | | |  |
| gravity test | 2.1 | 3 | | 2 | | | |  |
| gross production | 2.2 | 2 | 3 | | | 2 | |  |
| H | | | | | | | | |
| hazard | 1.7 | | 3 | 3 | 3 | | |  |
| heat exchanger | 1.1 | | | 2 | 3 | | |  |
| heavy alkylate | 0.9 | | | 3 | 3 | | |  |
| heavy-duty oils | 1.4 | | | 3 | 3 | | |  |
| heavy ends | 0.9 | | | 3 | | | |  |
| hexane | 0.7 | | | 3 | | | |  |
| homestead | 0.7 | | 3 | | | | |  |
| homogeneous | 0.7 | | | | 3 | | |  |
| horizon | 2.0 | 3 | 2 | | | 3 | |  |
| horsepower (HP) | 1.8 | 3 | | 3 | 3 | | 1 |  |
| humidify | 0.9 | | | 3 | | | |  |
| Hydrafrac | 1.4 | 3 | 3 | | | | |  |
| hydraulic | 1.3 | | | 3 | | | |  |
| hydrocarbon | 1.8 | | | 2 | 2 | | |  |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| hydrochloric acid | 1.0 | | | 2 | | | | |
| hydrogen | 1.2 | | | 2 | | | | |
| hydrogenation | 1.1 | | | 3 | 2 | | | |
| hydrogen chloride | 0.8 | | | | 3 | | | |
| hydrogen sulfide | 1.1 | | | 2 | 3 | | | |
| I | | | | | | | | |
| ignition | 1.1 | | | 3 | | | | |
| impurities | 1.3 | | | 3 | 3 | | | |
| indemnify | 1.4 | | 3 | | | 3 | | |
| independent | 2.2 | | 2 | | | 2 | 3 | |
| independent producers | 1.7 | | 3 | | | | 3 | |
| indications (indic) | 2.3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| induction period | 0.8 | | | 3 | 3 | | | |
| inflammable | 1.4 | | | 2 | 3 | | | |
| inflection | 0.9 | | | | 3 | | | |
| ingress | 1.2 | | 3 | | | | | |
| inhibitor | 1.3 | | | 2 | 3 | | | |
| inhibitor, corrosion | 1.4 | | | 2 | 3 | | | |
| initial boiling point (IBP) | 1.3 | | | 2 | 3 | | | |
| initial potential flowed (IPF) | 0.9 | | 3 | | | | | |
| initial production (P) | 2.3 | 2 | 2 | | | | | |
| injection | 2.2 | 2 | 3 | 3 | 3 | | | |
| inorganic | 1.0 | | | | 3 | | | |
| inorganic compound | 0.8 | | | | 3 | | | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| input well | 1.4 | 3 | 3 | | | | | |
| insoluble | 1.3 | | | 3 | 3 | | | |
| internal combustion | 1.1 | | | 3 | 3 | | 3 | |
| isobutane | 1.3 | | | 1 | 3 | | | |
| isobutene | 0.8 | | | 3 | | | | |
| isobutylene | 0.9 | | | 3 | 3 | | | |
| isomerization | 0.7 | | | 3 | | | | |
| isopach | 0.8 | 3 | | | | | | |
| isopentane | 0.9 | | | 3 | | | | |
| isopropyl | 0.8 | | | 3 | 3 | | | |
| J | | | | | | | | |
| joint | 2.2 | 3 | 3 | 3 | | 3 | 3 | |
| joint tenants | 1.4 | | 2 | | | 3 | | |
| judgment | 2.1 | | 3 | 3 | | 2 | | |
| K | | | | | | | | |
| kelly bushing (KB) | 1.0 | | 3 | | | | | |
| kerosene | 1.4 | | | 1 | 3 | | | |
| L | | | | | | | | |
| laboratory | 2.8 | 3 | | 1 | 1 | | 3 | |
| laboratory analysis | 2.5 | 3 | | 1 | 1 | | 3 | |
| landman | 1.2 | | 2 | | | | | |
| land owner | 1.5 | | 2 | | | | | |
| lead | 1.3 | | | 2 | 2 | | | |
| leakage | 1.2 | | | 2 | | | | |
| lean oil | 0.7 | | | 3 | | | | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| lease (lse) | 3.3 | 1 | 1 | | | 1 | 3 |  |
| leased premises | 1.3 | | 3 | | | 3 | |  |
| lease, let, and demise | 0.8 | | 3 | | | | |  |
| leasehold | 1.7 | | 1 | | | 3 | |  |
| leaseholder | 1.5 | | 2 | | | | |  |
| lessee | 2.1 | 3 | 1 | | | 2 | |  |
| lessor | 2.2 | 3 | 1 | | | 2 | |  |
| level | 1.9 | 3 | | 3 | 3 | | |  |
| lien | 1.5 | | 3 | | | 3 | |  |
| light distillate | 1.3 | | | 1 | | | |  |
| light ends | 1.1 | | | 2 | 3 | | |  |
| light gasoline | 1.0 | | | 2 | | | |  |
| limestone | 1.4 | | 3 | | | | |  |
| limey shale | 1.1 | | 3 | | | | |  |
| liquefied petroleum gas (LPG) | 1.6 | | | 2 | | | 3 |  |
| liquidate | 1.1 | | | | | 3 | |  |
| liquid level | 0.9 | | | 2 | | | |  |
| loading dock | 0.9 | | | 3 | | | 3 |  |
| loading rack | 1.3 | | | 3 | | | 2 |  |
| load oil (lo) | 1.2 | | 3 | | | | |  |
| locate (loc) | 3.2 | 2 | 2 | 3 | | 1 | |  |
| location (loc) | 3.5 | 2 | 1 | 2 | | 1 | 3 |  |
| log | 2.1 | 3 | 2 | | | | |  |
| lost circulation | 1.2 | | 3 | | | | |  |

TABLE VI (Continued)

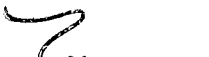
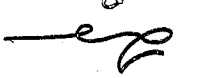
| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| low pressure | 2.2 | 3 | | 1 | | | 2 |  |
| lube-oil blending | 1.1 | | | 2 | 3 | | |  |
| lube-oil plant | 1.1 | | | 2 | 3 | | |  |
| lube stock | 1.3 | | | 2 | 3 | | |  |
| lubricant | 2.0 | | | 1 | 2 | 3 | 3 |  |
| lubricating oil | 1.5 | | | 1 | 3 | 3 | |  |
| lubrication | 1.8 | | | 2 | 2 | | |  |
| M | | | | | | | | |
| magnitude | 1.1 | | | 3 | 3 | | |  |
| manifold | 1.0 | | | 3 | | | |  |
| mapping | 1.4 | | 3 | | | | 3 |  |
| maximum gravity | 1.2 | | | 2 | | | |  |
| melting point | 1.2 | | | 2 | 3 | | |  |
| melting point test | 0.9 | | | 2 | | | |  |
| mercaptan | 0.8 | | | 2 | | | |  |
| mercury | 0.8 | | | 3 | 3 | | |  |
| methane (meth)- | 0.7 | | | | 3 | | |  |
| methyl | 0.6 | | | | 3 | | |  |
| microscope | 0.9 | | | | 2 | | |  |
| milligram | 1.0 | | | 3 | 3 | | |  |
| milliliter | 0.9 | | | 3 | 3 | | |  |
| mineral | 2.2 | 3 | 2 | | 3 | 3 | |  |
| mineral deed | 1.3 | | 2 | | | 3 | |  |
| mineral grant | 1.0 | | 2 | | | 3 | |  |

TABLE VI (Continued)

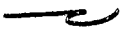
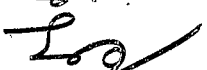
| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| mineral oils | 1.2 | | | 3 | 3 | | |  |
| mineral right | 1.3 | | 3 | | | 3 | |  |
| minimum gravity | 1.3 | | | 3 | 3 | | |  |
| Mississippian | 1.2 | | 3 | | | | |  |
| mixture | 2.0 | 3 | | 1 | 2 | | 3 |  |
| moisture content | 1.4 | | | 2 | 3 | | |  |
| molecular weight | 1.2 | | | 2 | 2 | | |  |
| molecules | 1.0 | | | 3 | 3 | | |  |
| mol per cent | 1.2 | | | 3 | 3 | | |  |
| Monel | 0.9 | | | 2 | | | |  |
| mortgage | 1.3 | | 2 | | | 2 | |  |
| mortgagee | 1.2 | | 3 | | | 2 | |  |
| mortgagor | 1.2 | | 3 | | | 2 | |  |
| moving in (MI) | 1.0 | | 3 | | | | |  |
| mud analysis | 1.6 | 3 | 3 | | | | |  |
| N | | | | | | | | |
| naphtha | 1.5 | | | 2 | 1 | | |  |
| naphthalene | 0.9 | | | 3 | 3 | | |  |
| naphthene | 0.7 | | | 3 | 3 | | |  |
| naphthene-base oil | 0.6 | | | 3 | | | |  |
| naphthenic | 0.8 | | | 3 | 2 | | |  |
| naphthenic acid | 0.7 | | | 3 | | | |  |
| naphthenic hydrocarbons | 0.7 | | | 2 | | | |  |
| naphthenic oils | 0.9 | | | 2 | | | |  |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| natural flow | 1.3 | | 3 | | 3 | | | |
| natural gas | 2.1 | 3 | 3 | 3 | 3 | | | |
| natural gas liquids | 1.3 | 3 | | | 3 | | | |
| natural gasoline | 2.1 | 3 | | 3 | 2 | | | |
| n-butane | 1.0 | | | 2 | 3 | | | |
| negative | 1.8 | | | 2 | 3 | | | |
| neoprene | 0.7 | | | 3 | 3 | | | |
| net allowable | 1.8 | 3 | | | | | | |
| net production | 2.2 | 2 | 3 | | | | | |
| net profit | 2.0 | 3 | 3 | | | | | |
| net water production | 1.1 | 3 | | | | | | |
| neutralization number | 1.1 | | | 2 | 2 | | | |
| neutral oils | 0.8 | | | 3 | 2 | | | |
| neutralize | 1.3 | | | 3 | 2 | | | |
| nitrate | 0.9 | | | 3 | 3 | | | |
| nitrogen | 1.1 | | | 3 | 2 | | | |
| non-development | 1.3 | | 3 | | | | 3 | |
| nosing | 0.7 | | 3 | | | | | |
| notary public | 1.5 | | 3 | | 3 | | | |
| nozzle | 0.9 | | | 2 | | | | |
| O | | | | | | | | |
| octane | 1.6 | | 2 | | 2 | | | |
| octane index | 0.8 | | 3 | | | | | |
| octane number | 0.6 | | | | 3 | | | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| odor | 2.2 | 3 | 2 | 3 | 2 | | | |
| odor test | 1.4 | | 3 | 3 | 3 | | | |
| offset | 2.5 | 2 | | 1 | | 3 | | |
| offset well | 2.3 | 2 | | 1 | | 3 | | |
| oil and gas cut mud (O&GCM) | 1.4 | 3 | 2 | | | | | |
| oil and gas (O&G) | 2.1 | 3 | 3 | 2 | 3 | | | |
| oil and gas lease | 2.2 | 3 | 1 | | | 2 | | |
| oil-cut mud | 1.2 | | 2 | | | | | |
| oil field | 1.8 | | 2 | | | | 3 | |
| oil payment | 1.3 | | 2 | | | | | |
| oil rights | 1.3 | | 2 | | | | | |
| oil sand (O sd) | 1.3 | | 2 | | | | | |
| oil stain | 1.2 | | 3 | | | | | |
| oil well | 2.7 | 2 | 2 | | 3 | 3 | 3 | |
| oil zone | 1.5 | 3 | 3 | | | | | |
| old well work over (OWWO) | 1.7 | 2 | | | | | | |
| olefin | 0.8 | | | 3 | 3 | | | |
| on stream | 1.5 | | | 3 | 3 | | 2 | |
| on structure | 1.1 | | 3 | | | | | |
| onstream time | 1.1 | | | 3 | | | | |
| opaque | 0.8 | | | | 2 | | | |
| open flow (OF) | 1.5 | 3 | 3 | | | | | |
| open flow potential | 1.3 | 3 | 3 | | | | | |
| open flow test | 1.5 | 3 | 3 | | | | | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| open hole (OH) | 1.3 | | 3 | | | | | |
| opening (opg) | 1.5 | 3 | | 3 | | | | |
| operating agreement | 2.7 | 2 | 2 | | | 2 | | |
| operating efficiency | 1.8 | | | 3 | 3 | | 3 | |
| operating pressure | 1.2 | | | 2 | | | | |
| operator | 3.5 | 2 | 2 | 1 | 3 | 2 | 2 | |
| option | 2.4 | | 2 | 3 | | 2 | 3 | |
| Ordovician | 0.9 | | 3 | | | | | |
| organic | 1.4 | | | 3 | 2 | | | |
| orifice | 1.2 | | | 3 | | | | |
| outcrop | 0.9 | | 3 | | | | | |
| outlet temperature | 0.8 | | | 2 | | | | |
| outlet valve | 1.0 | | | 2 | | | | |
| output | 1.3 | | | 3 | | | | |
| outside diameter (OD) | 1.2 | 3 | 3 | 3 | 3 | | | |
| overhaul | 1.2 | | | 3 | | | 3 | |
| overhead | 2.1 | | | 1 | 3 | | | |
| overhead products | 0.8 | | | 2 | | | | |
| override (OR) | 1.5 | | 3 | | | 3 | | |
| overriding royalty (ORR) | 1.7 | 3 | 2 | | | 3 | | |
| oxidation | 1.1 | | | 2 | 2 | | | |
| oxidation inhibitor | 0.9 | | | 3 | 3 | | | |
| oxide | 0.8 | | | 3 | 3 | | | |
| oxidize | 0.9 | | | 3 | 3 | | | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| oxygen (oxy) | 1.3 | | | 2 | 2 | | | |
| ozalid prints | 1.5 | | | | 3 | | 3 | |
| P | | | | | | | | |
| packer (pkr) | 0.9 | 3 | | 3 | | | | |
| paraffin | 1.5 | | | 2 | 2 | | | |
| paraffin-base crude | 1.3 | | | 3 | 3 | | | |
| paraffin-base oils | 1.3 | | | 3 | 3 | | | |
| paraffin oil | 1.0 | | | 3 | 3 | | | |
| paraffin wax | 1.0 | | | 3 | 3 | | | |
| participate | 2.9 | 3 | 2 | 2 | 3 | 2 | 3 | |
| particle | 1.5 | | | 3 | 2 | | | |
| patent | 1.6 | | | | 2 | | | |
| pay horizon | 1.2 | | 2 | | | | | |
| pay sand | 1.5 | 3 | 2 | | | | | |
| pay zone | 1.6 | 3 | 2 | | | | | |
| penetration | 1.9 | | | 2 | 2 | | | |
| Pennsylvanian (Penn) | 1.3 | | 3 | | | | | |
| pentane | 1.3 | | | 2 | 2 | | | |
| pentane and lighter | 0.9 | | | 3 | 2 | | | |
| perforate (perf) | 2.0 | 3 | 2 | | 3 | | | |
| perforation | 2.0 | 3 | 3 | 3 | | | | |
| performance number | 0.8 | | | 2 | | | | |
| permeability | 2.3 | 2 | 3 | | 3 | | | |
| permeable | 2.1 | 2 | 3 | | 3 | | | |

TABLE VI (Continued)

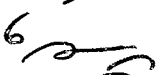
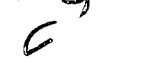
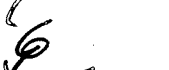
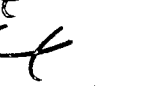
| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| Permian | 1.1 | | 3 | | | | |  |
| petrochemical | 1.1 | | | 3 | 3 | | |  |
| petrolatum | 1.1 | | | 2 | 3 | | |  |
| petrolatum stock | 0.7 | | | 3 | 3 | | |  |
| petrolatum wax | 0.8 | | | 3 | | | |  |
| petroleum | 3.4 | 3 | 3 | 1 | 2 | 1 | 3 |  |
| petroleum coke | 0.8 | | | 3 | | | |  |
| petroleum distillates | 1.2 | | | 2 | | | |  |
| petroleum naphtha | 0.8 | | | 3 | | | |  |
| phenol | 0.7 | | | 3 | 3 | | |  |
| phenolic | 0.8 | | | 3 | 3 | | |  |
| phosphate | 1.1 | | | 3 | 3 | | |  |
| phosphoric acid | 0.8 | | | 3 | 3 | | |  |
| phosphorous | 1.1 | | | 3 | 3 | | |  |
| photograph | 1.4 | | | 3 | 3 | | |  |
| photostat | 2.5 | 3 | | 3 | 2 | 3 | |  |
| pipe | 2.8 | 2 | 3 | 2 | | 3 | 1 |  |
| pipe line (PL) | 3.2 | 3 | 3 | 2 | 2 | 1 | 1 |  |
| pipe line connection | 2.3 | 3 | 3 | 2 | | 3 | 1 |  |
| platformer | 1.1 | | | 3 | | | |  |
| plug and abandon (P&A) | 2.2 | 2 | 2 | | | 3 | |  |
| plugged back (PB) | 1.8 | 3 | 2 | | | 3 | |  |
| plugging record | 0.9 | | 2 | | | | |  |
| pneumatic | 0.9 | | | 3 | | | |  |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| Podbielniak analysis ("Pod") | 0.8 | | | 3 | | | | |
| pollution | 2.2 | 3 | | 3 | 3 | | 2 | |
| polymer | 1.3 | | | 1 | 3 | | | |
| polymer gasoline | 1.1 | | | 2 | 3 | | | |
| polymerization | 1.5 | | | 1 | 2 | | 3 | |
| polymerize | 1.1 | | | 2 | 3 | | | |
| pool | 2.4 | 3 | 2 | | | | 1 | |
| pooling | 1.2 | | 3 | | | | | |
| pooling agreement | 1.4 | | 3 | | | 3 | | |
| porosity (por) | 2.0 | 2 | 3 | | 3 | | | |
| porosity log | 1.0 | | | 3 | | | | |
| porous | 1.5 | 3 | | | 3 | | | |
| positive test | 0.9 | | | 2 | | | | |
| potassium | 0.7 | | | 3 | | | | |
| potential (pot) | 3.0 | 2 | 3 | 2 | 2 | 2 | | |
| potential production | 1.9 | 3 | 3 | 3 | | 3 | | |
| pour point | 1.2 | | | 1 | 3 | | | |
| pour test | 0.9 | | | 2 | 3 | | | |
| pre-Cambrian (pre-Cam) | 0.8 | | 3 | | | | | |
| precipitate | 1.3 | | | 2 | 3 | | | |
| precipitation number | 0.7 | | | 3 | 3 | | | |
| precipitation test | 0.8 | | | 3 | | | | |
| precision | 1.2 | | | 3 | | | | |
| preheater | 0.7 | | | 3 | | | | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| pre-ignition | 0.7 | | | 2 | | | | |
| premium gasoline | 1.5 | | | 1 | 3 | | | |
| pressure | 3.2 | 3 | 3 | 1 | 1 | 3 | 2 | |
| pressure build-up | 1.8 | | | 2 | 3 | | 3 | |
| pressure control | 1.8 | 3 | | 2 | | | | |
| pressure distillate | 0.9 | | | 3 | | | | |
| pressure drop | 1.2 | | | 2 | | | | |
| pressure stills | 0.6 | | | 2 | | | | |
| primary production | 1.4 | | 3 | | | | | |
| primary recovery | 1.5 | | 3 | | | | | |
| primary reserve | 1.3 | | 3 | | | | | |
| primary term | 1.1 | | 3 | | | | | |
| producer | 3.0 | 2 | 2 | | 3 | 1 | 3 | |
| producing horizon | 2.1 | 2 | 2 | | | | | |
| producing level | 1.7 | | 3 | | | 3 | | |
| producing royalty | 1.4 | | 2 | | | 3 | | |
| production | 4.1 | 1 | 1 | 1 | 2 | 2 | 1 | |
| production curves | 1.6 | 3 | | | | | | |
| productivity | 2.0 | 3 | | 3 | 3 | | | |
| profile | 1.1 | | | | 3 | | | |
| propane | 2.0 | | | 1 | 2 | | 2 | |
| proposed test | 2.3 | 3 | 3 | 2 | 3 | 3 | | |
| propylene | 0.9 | | | 2 | 3 | | | |
| propylene polymer | 0.6 | | | 3 | 3 | | | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| propylene tetramer | 0.6 | | | 3 | | | | |
| proration | 2.3 | 3 | 2 | | | 3 | 2 | |
| prospecting | 1.1 | | 3 | | | | | |
| prospective area | 1.4 | | 3 | | | | | |
| protection acreage | 0.8 | | 3 | | | | | |
| protective coating | 1.2 | | | 3 | 3 | | 2 | |
| proven or semi-proven area | 1.0 | | 3 | | | | | |
| psia | 1.2 | | | 3 | | | | |
| psig | 1.5 | 3 | | 2 | 3 | | | |
| pulling casing (plg csg) | 1.2 | | 3 | | | | | |
| pumper | 1.4 | 3 | | | | | 2 | |
| pump house | 1.0 | | | 3 | | | 3 | |
| pumping station | 1.2 | | | | | | 2 | |
| pumping unit | 1.2 | | | | | | 2 | |
| purchasing department | 2.2 | 3 | | 1 | 2 | | 2 | |
| pure | 2.0 | | | 1 | 2 | 3 | | |
| purification | 1.1 | | | 3 | | | | |
| purified | 1.2 | | | 3 | 3 | | | |
| purify | 1.2 | | | 3 | 3 | | | |
| Q | | | | | | | | |
| qualitative test | 1.3 | | | 3 | 3 | | | |
| quantitative test | 1.1 | | | 3 | 3 | | | |
| quota | 1.7 | | | 3 | | 2 | | |
| quotation | 1.7 | | | 3 | | 3 | | |

TABLE VI (Continued)

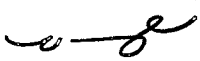
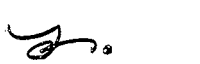
| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| R | | | | | | | | |
| rack | 0.8 | | | 3 | | | 2 |  |
| radioactivity | 0.8 | | | | 3 | | |  |
| range (R) | 2.7 | 2 | 2 | | 2 | 3 | |  |
| ratify | 1.5 | | 3 | | | | |  |
| ratification | 1.5 | | 3 | 3 | | | |  |
| rated capacity | 1.2 | | | 3 | | | |  |
| rating | 1.9 | | 3 | 2 | | | |  |
| raw crude | 1.0 | | | 3 | | | |  |
| raw material | 1.2 | | | 2 | 3 | | |  |
| reaction | 2.1 | | | 2 | 2 | | |  |
| reactor | 1.1 | | | 2 | 3 | | |  |
| reassign | 1.8 | | 3 | | | 3 | 3 |  |
| reboiler | 0.8 | | | 2 | | | |  |
| reciprocating pump | 0.9 | | | 3 | | | |  |
| reclaimed oils | 1.1 | | | 3 | 3 | | |  |
| recompletion | 1.3 | 3 | | | | | |  |
| reconditioning | 1.8 | 3 | | 3 | | | | |
| record | 3.2 | 2 | 2 | 2 | 2 | 1 | |  |
| recovered oil | 2.0 | | 3 | 3 | 3 | | 3 |  |
| recovery | 3.3 | 2 | 2 | 1 | 3 | 3 | 2 |  |
| recycle ratio | 0.8 | | | 3 | | | |  |
| recycling | 1.5 | | | 2 | 3 | | |  |
| recycling plant | 1.5 | | | 3 | | | |  |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| reduce | 2.4 | 3 | 3 | 2 | 3 | | 3 | |
| reduced crude | 1.1 | | | 2 | 3 | | | |
| reduction | 2.1 | 3 | | 3 | 3 | | 3 | |
| reference | 2.7 | 3 | 3 | 2 | 2 | 3 | 2 | |
| refine | 1.8 | | | 2 | 3 | 3 | 3 | |
| refined oils | 1.9 | | | 1 | 3 | 3 | 3 | |
| refiner | 1.9 | | | 1 | 3 | 3 | | |
| refinery | 2.7 | | | 1 | 2 | 2 | 1 | |
| refining | 2.6 | | | 1 | 2 | 2 | 3 | |
| refining agent | 1.3 | | | 3 | | | 3 | |
| reflection | 1.1 | | | | 3 | | | |
| reflux | 0.9 | | | 2 | | | | |
| reflux condenser | 1.3 | | | 2 | 3 | | | |
| reflux drum | 0.7 | | | 2 | | | | |
| reflux exchanger | 0.7 | | | 2 | | | | |
| reflux line | 0.6 | | | 2 | | | | |
| reforming | 1.3 | | | 2 | 3 | | | |
| refraction | 0.9 | | | | 3 | | | |
| regenerated catalyst | 0.8 | | | 2 | | | | |
| regeneration | 0.8 | | | 3 | 3 | | | |
| regenerator | 0.9 | | | 2 | | | | |
| region | 1.6 | 3 | 3 | 3 | | 3 | | |
| regulator | 1.6 | | | 2 | 3 | | | |
| Reid vapor pressure (Rvp) | 1.3 | | | 1 | 3 | | 3 | |

TABLE VI (Continued)

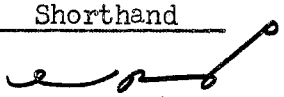
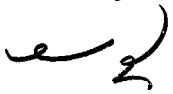
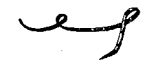
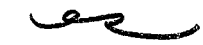
| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| relative humidity | 1.2 | | | 3 | | | |  |
| relative viscosity | 1.1 | | | 3 | | | 3 |  |
| release | 2.8 | 3 | 2 | 2 | 2 | 3 | 2 |  |
| relief | 1.6 | | | 2 | | 3 | |  |
| renewable | 1.6 | | 3 | | | 3 | |  |
| renewal | 2.7 | 3 | 2 | 2 | | 2 | 2 |  |
| rental payment | 1.8 | | 2 | | | 2 | |  |
| rerun oil | 1.0 | | | 2 | | | |  |
| rerun tower | 0.8 | | | 3 | 3 | | |  |
| rerun unit | 0.8 | | | 3 | | | |  |
| reserve | 2.8 | 2 | 2 | | 3 | 2 | 2 |  |
| reservoir | 1.7 | 3 | 3 | | | | |  |
| residual | 1.9 | | | 2 | 2 | | |  |
| residual fuel oil | 1.5 | | | 3 | 3 | | |  |
| residual oil | 1.7 | | | 2 | 3 | | 3 |  |
| residual products | 1.3 | | | 3 | | | |  |
| residue | 1.9 | 3 | | 2 | 2 | | |  |
| residuum | 0.9 | | | 2 | | | |  |
| resistance | 1.6 | | | 3 | 3 | | |  |
| resistivity | 1.0 | | | | 3 | | |  |
| retroactive | 1.6 | | | 3 | | 3 | |  |
| right of way | 2.1 | 3 | 3 | 3 | | 3 | 3 |  |
| road oil | 1.0 | | | 2 | | | |  |
| royalty | 2.0 | 3 | 3 | | 3 | | |  |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| royalty interest | 1.9 | 3 | 3 | | 3 | 3 | | |
| royalty owner | 1.8 | 3 | 3 | | | 3 | | |
| running (rng) | 1.8 | 3 | 3 | 3 | 3 | | 2 | |
| running high | 1.1 | | 2 | | | | | |
| running pipe (rng csg) | 1.1 | 3 | 2 | | | | | |
| running rods and tubing | 1.0 | 3 | 3 | | | | | |
| runs | 2.6 | 3 | 3 | 2 | 2 | 3 | 2 | |
| rust | 1.0 | | | 2 | | | | |
| S | | | | | | | | |
| salt water (SW) | 2.3 | 3 | 2 | | | | | |
| salt water disposal (SWD) | 2.3 | 2 | 2 | | | | | |
| salt water input wells | 1.5 | 3 | | | | | | |
| sample | 3.0 | 2 | 3 | 1 | 1 | | 3 | |
| Sandfrac | 2.1 | 3 | 3 | 3 | 3 | | | |
| saponification | 0.6 | | | | 3 | | | |
| saponification number | 0.6 | | | | 3 | | | |
| saturated (sat) | 1.9 | 3 | | 2 | 3 | | | |
| saturated hydrocarbons | 1.0 | | | 3 | | | | |
| saturation (sat) | 1.8 | 3 | | 3 | 3 | | | |
| Saybolt Furol viscosity | 0.8 | | | 2 | | | | |
| Saybolt Universal viscosity | 0.7 | | | 3 | 3 | | | |
| scale wax | 0.7 | | | 3 | | | | |
| Schlumberger log | 1.6 | 3 | 3 | | | | | |
| scout | 1.0 | | 3 | | | | | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| scrubbing | 0.8 | | | 3 | | | | |
| seamless pipe | 1.0 | | | 3 | | | 2 | |
| secondary production | 1.7 | | 3 | | | | | |
| secondary recovery | 2.1 | 3 | 3 | | | 3 | | |
| Section (Sec.) | 2.5 | 2 | 2 | | | 3 | 3 | |
| sediment | 1.8 | | | 2 | 2 | | | |
| sedimentation | 1.3 | | | 3 | 2 | | | |
| segregation | 1.3 | | | 3 | | | | |
| seismic | 1.5 | | 2 | | 3 | | | |
| seismic prospecting | 1.0 | | 3 | | 3 | | | |
| seismograph | 1.6 | | 2 | | 3 | | | |
| seismograph shooting | 1.0 | | 3 | | 3 | | | |
| seismograph survey | 1.2 | | 3 | | 3 | | | |
| seismograph record | 1.0 | | 3 | | 3 | | | |
| separator | 1.7 | 3 | | 2 | | | | |
| series | 2.4 | 3 | | 2 | 3 | 3 | | |
| set casing | 1.4 | 3 | 3 | | | | | |
| setting pipe | 1.5 | 3 | | | | | 3 | |
| settling tank | 1.0 | | | 3 | | | | |
| shale (sh) | 1.9 | 3 | 3 | | 3 | | | |
| shaly sand (shly sd) | 1.2 | 3 | 3 | | | | | |
| shallow hole | 1.2 | | 3 | | | | | |
| shallow rights | 1.1 | | 3 | | | | | |
| shallow well | 1.4 | | 3 | | | | | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| shooting | 1.5 | | 3 | | 3 | | | |
| shot | 1.4 | | 3 | | | | | |
| show | 2.0 | 3 | 3 | | | | | |
| show of oil (SO) | 1.8 | 3 | 2 | | | | | |
| shut down (SD) | 2.0 | | 3 | 1 | | | | |
| shut in casing pressure (SICP) | 1.2 | 3 | 3 | | | | | |
| shut in gas | 1.2 | 3 | 3 | | | | | |
| shut in pressure (SIP) | 1.5 | 3 | 3 | | | | | |
| silica | 0.9 | | | 3 | 3 | | | |
| silicate | 0.9 | | | 3 | 3 | | | |
| silicone | 0.6 | | | 3 | | | | |
| slack wax | 0.6 | | | 3 | | | | |
| slop oil | 0.7 | | | 2 | | | | |
| slurry | 0.9 | | | 3 | 3 | | | |
| soluble oils | 1.1 | | | 2 | 3 | | | |
| solvents | 1.5 | | | 2 | 3 | | | |
| solvent naphtha | 1.1 | | | 2 | 3 | | | |
| solvent-refined oils | 1.0 | | | 3 | 3 | | | |
| sour crude | 1.2 | | | 3 | | | 2 | |
| sour gas | 1.0 | | | 3 | | | | |
| spacing | 1.8 | 3 | 3 | | | 3 | | |
| spacing order | 1.4 | 3 | 3 | | | | | |
| specification | 2.9 | 3 | 3 | 1 | 2 | 2 | 2 | |
| specific gravity | 2.2 | 3 | | 1 | 2 | | | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| specimen | 1.5 | | | 2 | | | | |
| spent catalyst | 1.0 | | | 2 | 3 | | | |
| spot a well | 1.0 | | 3 | | | | | |
| spread | 1.3 | | 3 | | | | 3 | |
| spudded (spud) | 1.3 | 3 | 3 | | | | | |
| stability | 2.1 | | | 1 | 2 | | | |
| stabilize | 1.9 | | | 2 | 3 | 3 | | |
| stabilizer | 1.8 | | | 1 | 3 | | | |
| stain and odor | 1.3 | 3 | 3 | | | | | |
| staked location | 1.3 | 3 | 3 | | | | | |
| standardization | 1.9 | 3 | | 3 | | | | |
| steam condenser | 0.8 | | | 3 | | | | |
| steam distillation | 0.8 | | | 3 | | | | |
| step-out well | 0.7 | | 3 | | | | | |
| still | 1.4 | | | 2 | 3 | | | |
| stock | 1.9 | | | 2 | 2 | 3 | | |
| storage | 2.2 | 3 | | 1 | 3 | | 3 | |
| storage losses | 1.5 | | | 3 | | 3 | 2 | |
| straight-run distillation | 1.1 | | | 2 | 3 | | | |
| straight-run gasoline | 1.3 | | | 1 | 3 | | | |
| strap a tank | 0.6 | | | | | | 3 | |
| strata | 1.0 | | 3 | | | | | |
| stress | 1.3 | | | 3 | 3 | | | |
| stripper tower | 0.8 | | | 2 | | | | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| stripping | 0.8 | | | 3 | | | | |
| structural | 2.1 | 3 | 3 | 2 | | | | |
| structure | 2.3 | 3 | 2 | 2 | 3 | | | |
| sublease | 1.2 | | 3 | | | 3 | | |
| sublessee | 1.0 | | 3 | | | 3 | | |
| subordinate | 1.3 | | | | | 3 | | |
| subsequent | 2.1 | 3 | 3 | | 3 | 2 | | |
| subsurface | 1.3 | | 2 | | | | | |
| subsurface map | 1.0 | | 3 | | | | | |
| sulfate | 1.0 | | | 2 | 3 | | | |
| sulfide | 1.0 | | | 2 | 3 | | | |
| sulfonates | 0.6 | | | | 3 | | | |
| sulphur determination (sul) | 0.8 | | | 3 | 3 | | | |
| sulphuric acid | 1.1 | | | 2 | 2 | | | |
| surface geology | 1.3 | | 2 | | | | | |
| surface pipe | 1.5 | 3 | 3 | | | | | |
| survey (Sur) | 3.2 | 3 | 2 | 2 | 2 | 1 | 3 | |
| surveying | 2.4 | 3 | 3 | 3 | 3 | 3 | 3 | |
| susceptibility | 1.5 | | | 2 | 3 | 3 | | |
| suspension | 1.4 | | | | 3 | | | |
| swabbing (swb) | 1.3 | | 3 | | | | | |
| sweet crude | 1.3 | | | 2 | | | 3 | |
| synthetic | 1.0 | | | 2 | | | | |
| synthetic catalyst | 1.0 | | | 2 | 3 | | | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| T | | | | | | | | |
| tank | 3.5 | 3 | | 1 | 3 | 3 | 1 | |
| tankage | 2.1 | 3 | | 1 | | | 1 | |
| tank battery | 1.5 | 3 | | | | | 2 | |
| tank bottoms | 1.8 | | | 1 | | | 2 | |
| tank car | 2.0 | | | 1 | 3 | | 3 | |
| tank farms | 1.2 | | | 2 | | | 3 | |
| tank gauge | 1.3 | 3 | | 3 | | | | |
| tank outage | 0.8 | | | 2 | | | | |
| temperature drop | 1.1 | | | 2 | | | | |
| temperature range | 1.4 | | | 2 | 3 | | | |
| tenants in common | 0.8 | | 3 | | | | | |
| tensile strength | 0.9 | | | 3 | 2 | | | |
| tertiary | 0.9 | | | | 3 | | | |
| tetraethyl | 1.1 | | | 2 | 3 | | | |
| tetraethyllead | 1.2 | | | 1 | 3 | | | |
| texture | 1.0 | | | 3 | | | | |
| thermal | 1.2 | | | 2 | 3 | | | |
| thermal cracking | 0.7 | | | 2 | | | | |
| thermal units | 0.8 | | | 2 | | | | |
| thermo-catalytic cracking | 0.6 | | | 3 | | | | |
| thermocouple | 0.6 | | | 2 | | | | |
| thermometer | 1.2 | | | 2 | 3 | | | |
| thief | 0.6 | | | | | | 3 | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| tight formation | 1.2 | | 3 | | | | | |
| tight hole | 1.1 | 3 | | | | | | |
| toluene | 1.0 | | | 2 | 3 | | | |
| torque | 0.8 | | | | 3 | | | |
| torsion | 0.6 | | | | 3 | | | |
| total depth (TD) | 2.4 | 2 | 2 | | | | | |
| tower bottoms | 0.9 | | | 2 | 3 | | | |
| tower still | 0.8 | | | 2 | | | | |
| township (twp) | 3.1 | 1 | 1 | | 3 | 2 | 3 | |
| tract (tr) | 2.4 | 3 | 2 | | | 3 | | |
| transformer | 1.2 | | | 2 | | | | |
| transmission | 1.5 | | | 2 | 3 | | | |
| trap | 1.4 | | 3 | 3 | | | | |
| trays | 0.7 | | | 2 | | | | |
| treating plant | 1.3 | | | 2 | | | | |
| trend | 2.1 | | 3 | 3 | | 2 | | |
| tubing (tbg) | 1.9 | 2 | | 3 | | | | |
| tubing pressure (TP) | 1.3 | 3 | | | | | | |
| turbine | 0.9 | | | 2 | | | | |
| turnaround | 0.9 | | | 2 | | | | |
| U | | | | | | | | |
| ultimate recovery | 2.1 | 3 | 2 | 3 | | | | |
| underlying | 1.7 | | 3 | | | 3 | | |
| undeveloped acreage | 1.6 | 3 | 3 | | | 3 | | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| undivided interest | 1.9 | | 2 | | | 2 | | |
| unit | 3.6 | 2 | 2 | 1 | 2 | 2 | 2 | |
| unitization | 2.5 | 2 | 2 | | | 2 | | |
| unitize | 2.3 | 3 | 2 | 3 | | | | |
| unit operation | 2.5 | 3 | 3 | 2 | | 3 | | |
| unit operator | 2.1 | 3 | 3 | | | | | |
| unsaturates | 0.7 | | | 3 | | | | |
| updip | 0.8 | | 3 | | 3 | | | |
| uranium | 0.7 | | | | 3 | | | |
| V | | | | | | | | |
| vacuum | 1.6 | | | 2 | 2 | | | |
| vacuum pump | 1.1 | | | 2 | | | | |
| vacuum still | 0.6 | | | 3 | | | | |
| vanadium | 0.6 | | | 3 | 3 | | | |
| vaporization | 1.2 | | | 3 | 3 | | | |
| vapor line | 0.9 | | | 3 | | | | |
| vapor lock | 1.1 | | | 2 | | | | |
| velocity | 2.0 | 3 | | 3 | 2 | | | |
| velocity tests | 1.1 | | | | 2 | | | |
| ventilation | 0.8 | | | 2 | | | | |
| verification | 1.8 | | | 2 | | 3 | | |
| vibration | 1.1 | | | 3 | 2 | | | |
| virgin stock | 0.7 | | | 2 | | | | |
| visbreaking | 0.8 | | | 2 | 3 | | | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| viscosimeter | 0.9 | | | 3 | 3 | | | |
| viscometer | 0.7 | | | | 3 | | | |
| viscosity | 2.1 | 3 | | 1 | 1 | | | |
| viscosity index | 1.3 | | | 2 | 3 | | | |
| viscous | 1.1 | | | 3 | 3 | | | |
| viscous oil | 0.9 | | | | 3 | | | |
| volatile | 1.4 | | | 2 | 2 | | | |
| volatile liquids | 1.0 | | | 2 | | | | |
| volatility test | 0.9 | | | 2 | | | | |
| W | | | | | | | | |
| warranty deed | 1.4 | | 3 | | | 2 | | |
| warranty of title | 1.3 | | 3 | | | 2 | | |
| waste | 1.8 | | | 2 | 3 | | | |
| waste disposal | 1.6 | | | 2 | 3 | | | |
| waste gas | 1.3 | | | 3 | | | | |
| water analysis | 1.4 | 3 | | 3 | 3 | | | |
| water and BS (basic sediment) | 1.3 | | | 3 | 3 | | 2 | |
| water disposal | 1.5 | | | 2 | | | | |
| waterflooding | 1.9 | 3 | 3 | | | | | |
| wax distillation | 0.7 | | | 3 | 3 | | | |
| weld | 1.1 | | | 2 | 3 | | | |
| well log | 1.6 | 3 | 2 | | | | | |
| wildcat (WC) | 2.1 | 2 | 2 | | | | | |
| wildcat discovery | 1.9 | 3 | 2 | | | | | |

TABLE VI (Continued)

| Term | ATR | P | E | M | R | A | PL | Shorthand |
|---|---|---|---|---|---|---|---|---|
| working interest (WI) | 1.9 | 3 | 2 | | | 2 | | |
| working pressure (WP) | 0.9 | 3 | | | 3 | | | |
| work over (WO) | 1.7 | 2 | | | | | | |
| X | | | | | | | | |
| X-ray | 0.8 | | | | 2 | | | |
| Xylene | 0.6 | | | | 3 | | | |
| Y | | | | | | | | |
| Yield | 2.2 | 3 | 3 | 2 | 2 | | | |
| Z | | | | | | | | |
| zero pour | 0.7 | | | 3 | 3 | | | |
| zone | 2.2 | 2 | 2 | | | | | |

Total Different Terms 1,088 Total Evaluations 1,088

# CHAPTER V

## SUMMARY OF PURPOSE, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS OF THE INVESTIGATION

The three-fold purpose of this study was (1) to determine the technical words and groups of words that are frequently used by secretaries in the major departments of the petroleum industry, (2) to develop short-cut forms for syllables, words, or other sound combinations frequently occurring in those technical terms, and (3) to write shorthand outlines for those terms including frequently recurring sound combinations.

### Findings

1. From a list of 5,885 technical terms used in the petroleum industry, 1,088 were rated by secretaries in petroleum offices as the technical terms most frequently used in the major departments of the petroleum industry.

2. Of the 1,088 frequently used technical terms, 121 were rated very high in frequency of use in office situations; 457 were rated high; and 510 were rated average.

3. In these 1,088 technical terms, there were 60 frequently recurring syllable and word beginnings for which short-cut forms were provided.

4. There were 289 technical terms including these 60 frequently recurring syllable and word beginnings for which shorthand outlines were written.

5. In these 1,088 technical terms, there were 39 frequently recurring syllable and word endings for which short-cut forms were provided.

6. There were 218 technical terms containing these 39 frequently recurring syllable and word endings for which shorthand outlines were written.

## Conclusions

1. There is a vocabulary frequently used by secretaries in the major departments of the petroleum industry that is important to shorthand instruction. Of the 5,885 technical terms that were used in the petroleum industry, 1,088 were used by secretaries in major departments with very high, high, and average frequency in their office situations. The 121 terms of very high frequency and the 457 terms of high frequency may be considered to be the terms that are important to an understanding of the terminology used in the petroleum industry and to recording dictation quickly and to transcribing it rapidly and accurately. These 1,088 technical petroleum terms are the terms that should be included in varying degrees in the shorthand courses in which we purport to be training our students for work in the petroleum industry.

2. There are elements of recording difficulty in the technical terms frequently used by secretaries in the major departments of the petroleum industry. In the 1,088 technical terms, there were 99 frequently recurring syllable and word beginnings and endings for which no short-cut forms existed or for which the existing forms needed to be shortened. The need for such short-cut forms for constructing new words and groups of words which are constantly being brought into use is apparent. For learners preparing to work in the petroleum industry it

is important that they know how to construct a brief outline for the terms that occur often in dictation.

3. There are 99 frequently recurring syllable and word beginnings and syllable and word endings which are included in the shorthand outlines written for the technical petroleum terms frequently used by secretaries in the major departments of the petroleum industry. It is important that shorthand students know the short cuts for those syllables and words that are included in the petroleum terms that occur in dictation in the classroom and in the petroleum offices. These are the short-cut forms that should be taught as they are needed.

## Recommendation

It is recommended that specialized preparation be given to the student in the school in an oil-producing community in order that he will be ready for a specific job in the petroleum industry. Training on the job should not be left to the employer. Technical terms that are frequently used by secretaries in the major departments of the petroleum industry and shorthand outlines for those terms are recommended for developing in varying degrees specialized shorthand which will prepare students for stenographic work in the petroleum industry.

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# APPENDIX

# APPENDIX A

December 16, 1955

Dear Secretary:

At the present time I am making a study of the terminology used in the petroleum industry that is important to the secretary. The purposes of the study are (1) to derive a list of technical terms or phrases frequently used in the major departments of oil companies and (2) to construct shorthand syllabic-pattern forms for sound combinations occurring in these words.

To achieve the first purpose, I need your help in rating the terms in the questionnaire as to frequency of use. The first step in developing this list was accomplished through an analysis of correspondence, reports, publications, etc., of oil companies and petroleum associations. In order to secure a measure of the importance of these terms and phrases, you are requested to give a rating of the frequency of use of these terms in the department in the industry in which you are working.

The second purpose of the study is to classify words by sound combinations and to construct syllabic-pattern forms for these combinations. You are requested to record the shortcut which you may have devised for recording certain frequently used terms.

Your cooperation in this study will be greatly appreciated. You can make a worth-while contribution to the study, and it is hoped, to your profession by filling out the questionnaire and returning it in the enclosed self-addressed envelope at your earliest convenience.

Cordially yours,

Leone Orner

Leone Orner, Head
Secretarial Administration Department
The University of Tulsa

# A STUDY OF THE TERMINOLOGY USED IN THE PETROLEUM INDUSTRY

Name_____; Date_____

Employed by_____ Company

Employed in_____ Department

Position_____; Years of experience_____

---

Directions:

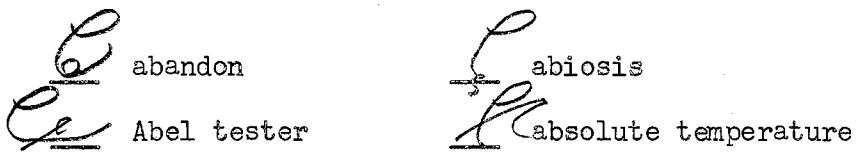
1. Rate each term in the following list as to frequency of use in your office situation. Place the rating on the line at the left of each term. Rate the term

   5 if frequency of use is very high
   4 if high
   3 if average
   2 if low
   1 if very low
   0 if never used

2. In case you have devised a shortcut for recording frequently used terms in shorthand, record the shortcut in the space to the right of the term.

3. Add other frequently used words or phrases in the space provided at the bottom of the page.

Illustration

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Note: Please change the spelling and/or wording of terms or phrases to comply with usage in your department.

# TECHNICAL WORDS AND PHRASES USED IN THE PETROLEUM INDUSTRY

___abandon
___abandonment
___Abel tester
___abiosis
___abiotic
___ablation
___abrasion
___abscissa
___absolute alcohol
___absolute atmosphere
___absolute pressure
___absolute temperature
___absolute viscosity
___absolute vacuum
___absolute zero
___absorb
___absorption
___absorption column
___absorption gasoline
___absorption plant
___absorption oil
___absorption system
___absorption tower
___abstract of title
___abyssal
___accelerate
___accelerator
___accessory minerals
___accretion
___accumulate
___accumulation
___accumulator
___accumulator still
___acenaphtylene
___acetaldehyde
___acetates
___acetic
___acetic anhydride
___acetone
___acetylene
___acetylene burner
___acetylene gas
___acetylene torch
___acicular
___acid
___acid concentrator
___acid corrosion
___acid (free)
___acid-heat test
___acidity
___acidization
___acidizing
___acid jet gun
___acidless tallow oil
___acid number
___acid oil ratio
___acid-recovery plant
___acid sludge
___acid treatment
___aclinic
___acreage
___acreage contribution
___acre foot
___acrylic acid
___activated clay
___actual daily average
___actual drilling
___actuator
___acuifer
___acyclic
___adamantine
___adamic earth
___additive compounds
___ader wax
___adhesion
___adhesiveness
___adiabatic expansion
___adiabatic line
___adiabatic process
___admixture
___adsorption

____adze handle
____Aeolian
____aerial geology
____aerify
____aerogene gas
____aerolite
____aerometer
____aerosphere
____aerosol
____affiant
____affidavit
____affidavit of non-development
____affidavit of non production
____affinity
____affluent
____after-shock
____after shot
____agate
____agglomerate
____aggradation
____aggregate
____aging test
____agitate
____agitation
____agitator
____agonic line
____agreement
____air-blown asphalt
____air chamber
____air compressor
____air condenser
____air drill
____air ejector
____air hoist
____air injection system
____air lift
____airometer
____air, primary
____air, secondary
____air sweetening
____albertite
____albite
____albolene
____alchemy
____alcohol
____alcohol, absolute
____alcohol, butyl
____alcohol, ethyl
____alcohol, isopropyl
____alcohol, methyl
____alcohol M-xylene
____aldehydes
____algae
____alidade
____aliphatic alcohol
____aliphatic diolefins
____aliphatic hydrocarbons
____alkadiene
____alkali
____alkali liquor
____alkali test
____alkalimeter
____alkaline
____alkaline carbides
____alkaline wash
____alkalinity
____alkaloid
____alky-feed stock
____alkylaromatic
____alkyl radical
____alkylate
____alkylate bottoms
____alkylate polymer
____alkylation
____alkylation unit
____alkylbenzene
____alkylene
____alkyl-sulfur compounds
____allanite
____allocated
____allocation factor
____allochromatic
____allotee
____allothigenic

# APPENDIX B

## DISTRIBUTION OF THE TECHNICAL PETROLEUM TERMS BY AVERAGES OF TOTAL RATINGS

| Averages | Number of Terms |
|---|---|
| 4.50-4.00 | 0 |
| 4.00-4.49 | 1 |
| 3.50-3.99 | 13 |
| 3.00-3.49 | 22 |
| 2.50-2.99 | 37 |
| 2.00-2.49 | 132 |
| 1.50-1.99 | 210 |
| 1.00-1.49 | 524 |
| 0.75-0.99 | 492 |
| 0.50-0.74 | 743 |
| 0.25-0.49 | 1,156 |
| 0.00-0.24 | 2,545 |
| Total | 5,885 |

# VITA

Leone Lenora Orner

Candidate for the Degree of

Doctor of Education

Thesis: THE BASIC TECHNICAL TERMINOLOGY OF THE PETROLEUM INDUSTRY

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THESIS TITLE: The Basic Technical Terminology of the Petroleum Industry

AUTHOR: Leone Lenora Orner

THESIS ADVISER: Dr. M. R. Chauncey

The content and form have been checked and approved by the author and thesis adviser. Changes or corrections in the thesis are not made by the Graduate School office or by any committee. The copies are sent to the bindery just as they are approved by the author and faculty adviser.

TYPIST: Raymond Denny