

露天采矿专业英语

A Specialized English Textbook on

Surface Mining

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Sept. 1993

露天采矿专业英语

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一九九三年九月

内 容 简 介

本书主要取材于美国露天采矿专业书籍。内容包括露天采矿工艺环节。露天采矿设备。开采方法选择及露天矿设计等。系为露天采矿的学生编写的教材。也可供从事露天采矿业的工程技术人员参考。书后附有总词汇表。主要列出专业词汇近600个。还附有英语单词的构成法供读者参考。每单元均有课文注释。大部分附有练习题及参考答案。

致读者

亲爱的读者朋友，欢迎您阅读这本《露天采矿专业英语》！

本书主要是为学习露天采矿工程的学生而编写的专业英语教材。也可供从事与该专业有关的工程技术人员参考。书中内容选自美国近年来出版的专业书刊与教材。考虑到与教学过程的衔接以及学生刚刚转入专业课的学习，选材时贯彻由浅入深的原则。根据露天采矿专业课的主干内容，按照采矿工艺环节、生产工艺系统的选择及采矿设计基本原理这一主线，选编了有关章节与段落，同时适量收入部分图、表，以供学生撰写专业论文时参考。

本教材教学时数为60~80学时，课内外学时比为1:1~1:1.5。各单元结构大体为：1. 课文与词汇；2. 课文注释；3. 练习与阅读理解题。书后附有部分练习的参考答案。为培养学习的主动性，课文均未给出参考译文。教师可根据情况安排学生自己动手将课文译成汉语，并穿插介绍科技英语汉译的基本知识。

近年来，大学生的英语水平越来越高，因而对专业外语的学习要求也在提高。怎样学好专业英语自然也是大家所关心的一个问题。专业英语属科技英语，有与基础英语不同的特点，主要表现在科技词汇词形较长，大部分词义较易掌握；语法范围较窄，被动语态句应用广泛；普遍使用动词非谓语形式和形容词短语作后置定语；长句较多。

须进行综合分析才能正的理解；修辞手法较少。时态运用有限。因此，在具备了一定程度的基础英语知识后。专业英语的学习主要是掌握一定数量的专业词汇和其语法修辞特点。露天采矿的专业词汇量约九百至一千个，只要每天学习并掌握二至三个，仅需一年半左右的时间。所以，关键是持之以恒，锲而不舍。

愿各位读者尽快掌握这门对外交流的工具，使您站在学科的前沿，为繁荣我国的露天采矿业做出更大贡献！

本书经张幼蒂教授审阅，张达贤教授以及露九〇班部分同学也为本教材的编写工作提供了建议和帮助。在此一并致谢。

欢迎用后提出宝贵意见。

中国矿业大学采矿系

姬长生

1993年9月

Foreword

Hello, Everyone! You are welcome to read the English textbook for the specialty of Surface Mining Engineering, the field which you are or will be engaged in.

Learning specialized English on surface Mining is quite an easy work since you have understood essential English quite well. It is such an easy work that you can only learn some special words and phrases in your field, because the basic structures, sentence patterns and grammar have been understood quite well as well.

"How to learn English well" is an old question which is frequently asked by an English learner. The answer is in your hands, everything is dependent on yourself. The following words may help you a lot if you read them a few times.

"Come to an English book everyday. Put the volume by your bedside, if you like. A short time spent on these papers before you turn off the lights each night is better than an irregular hour now and then. If you can find the time to learn only two or three words a day -- we will still promise you that at the end of thirty days you will have found a new interest. Give us fifteen minutes a day, and we will guarantee, at the end of a month, when you have turned over the last page of this

book, that your words and your reading and your conversation and your life will all have a new deeper meaning for you.

For words can make you great."

The key factor to be successful in English learning is to know more words. The only way to know more words is by reading. It is often said that wide reading is the best alternative course of action but it is necessary

to make some kind of selection: read what you can understand without having to look up words in a dictionary (but not what you can understand at a glance);

read what interest you ; read what you have time for (magazines and newspapers rather than novels unless

you can read the whole novel in a week or so); read the English written today, not 200 years ago; read as much as you can and try to remember the way it was written rather than individual words that puzzled you.

Learning Surface Mining English is not a hard work as essential English is. Only several hundreds of special words and expressions can make you an "English expert " in

in your field. Try not to work very hard, "Just give us fifteen minutes, learn only two or three words a day", after one year or so, you will make great progress in special English learning.

Learning Surface Mining English can make you communicate with your foreign colleagues very well and can also make you possible to stand in the front of your field.

Do not hesitate to do your best to study because a
glorious future is before you!

Changsheng Ji

Sep. 1993

CONTENTS

	Page
To Readers(致读者)	
Foreword(前言)	3
Unit 1. Unit Operations (作业环节)-----	1
Unit 2. Fragmentation Practices (1):	
Introduction(破碎, 简介) -----	8
Unit 3. Fragmentation Practices (2):	
Percussion Drilling (破碎, 冲击式穿孔)-----	16
Unit 4. Fragmentation Practices (3):	
Rotary Drilling, Vertical and Horizontal Drilling (破碎, 回转式穿孔. 垂直穿孔与水 平穿孔) -----	27
Unit 5. Fragmentation Practices (4):	
Blasting, System Components (1) (破碎, 爆破, 爆破器材(1)) -----	36
Unit 6. Fragmentation Practices (5):	
System Components (2) (破碎, 爆破器 材(2)) -----	45
Unit 7. Surface Mining Equipment (1):	
(露天采矿设备(1)) -----	56
Unit 8. Surface Mining Equipment (2)	
(露天采矿设备(2)) -----	66

Unit 9. Operating Considerations (1):	
Correction Factors (设备作业参数 (1):	
修正系数) -----	78
Unit 10. Operating Considerations (2):	
Cycle Time (设备作业参数 (2): 周期时间)---	92
Unit 11. Selection of stripping Methods	
(开采方法的选择)-----	103
Unit 12. Stripping Methods (1): Shovel-	
Truck and Shovel-Train Stripping	
(开采方法(1); 单斗-卡车与单斗-铁道)--	115
Unit 13. Stripping Methods (2): Rippers and scrapers,	
BWE, Draglines (开采方法 (2): 松土器铲运机。轮	
斗。拉铲) -----	126
Unit 14. Stripping Methods (3): Miscellaneous,	
Auxiliary Equipment. (开采方法(3); 联合开采。辅	
助设备) -----	138
Unit 15. Stripping Methods (4): Advance Stripping	
etc. (开采方法(4); 超前剥离等)--	149
Unit 16. Pit Planning and Layout (采场规划与设	
计) -----	160
Unit 17. Design of Open Pits (露天矿设计) -----	173
Vocabulary (总词汇表) -----	189
Appendix 1. Abbreviations (附录 1. 缩略词表)--	221

Appendix 2. English- Chinese Transliteration	
(附录 2. 英汉译音表)-----	223
Appendix 3. Word-formation (附录 3. 英语单词	
的构成) -----	225
Key to Exercises (练习答案) -----	267
References -----	268

Unit 1. Unit Operations

1. Surface mining consists of a sequence of seven operations. A discussion of these unit operations follows. This section will also mention the types of equipment that can be employed.

2. Preparing the surface includes the removal of all vegetative cover in preparation for other mining operations. While this operation is not always necessary, ⁽¹⁾ it may be necessary to clear the land of trees or other obstructions. Sometimes, this operation may produce commercial quality timber or may be required for relocation purposes. ⁽²⁾

3. It is not easy to define what is topsoil though regulations in several states and federal statutes require that topsoil be removed and stored for later use.

Topsoil is generally understood to be the soft layers of soil over which the current vegetation has established its roots. Since this material is soft, elevating scrapers, bulldozers, or front-end loaders are used for its removal. According to the Permanent Regulatory Program under the Surface Mining Control and Reclamation Act of 1977 ⁽³⁾ (Title 30, Chapter VII, Subchapter A):

4. Soil horizons are contrasting layers of soil lying one below the other, parallel or nearly parallel to the land surface. Soil horizons are differentiated on the basis of field characteristics and laboratory data.

The three major soil horizons are:

- (1) A horizon. The uppermost layer in the soil profile often called the surface soil. It is the part of the soil in which organic matter is most abundant, and where leaching of soluble or suspended particles is the greatest.
- (2) B horizon. The layer immediately beneath the A horizon and often called the subsoil. This middle layer commonly contains more clay, iron, or aluminum than the A or C horizons.
- (3) C horizon. The deepest layer of the soil profile. It consists of loose material or weathered rock that is relatively unaffected by biologic activity.

5. To allow easier handling by stripping equipment later, the unit operations of drilling and blasting to fracture rock masses may or may not be required. Where the ground cover is hard, it is usually drilled and blasted. Soft strata may often be directly excavated. Some strata can also be sufficiently prepared through use of ripper-bulldozers.

6. Overburden removal is the most important aspect of the mining system. The equipment and methods used to remove overburden must be carefully chosen to provide the required production at the minimum cost. The stability of the highwall and the spoil is an important consideration in pit design. The equipment used varies from fleets of mobile equipment such as end-loaders to giant draglines, shovels, and bucket-wheel excavators. A factor that has become important is the ability to segregate the soil into stratigraphic

layers at desired locations for reclamation and environmental control purposes.

7. Coal loading is usually done by a loading shovel. Other methods include use of end-loaders, hydraulic excavators, or fine graders. Coal transport is typically by bottom dump trucks.

8. Reclamation includes backfilling, regrading, surface stabilization, revegetation and restoration operations.

9. Backfilling is achieved through use of virtually any of the equipment used in overburden handling. However, approaches to segregation of material, specific burial, and layering and compacting can be distinguished as distinct backfilling steps.

10. Regrading is typically achieved by wheeled or tracked dozers. The amount of regrading depends upon the care with which backfill is done, and on the degree of topsoil restoration and grading, which is either desired or practicable,

11. Considerations of surface stabilization include provision for water quality maintenance, compaction and layering, and sealing the spoil layers. It also encompasses amendments and therapeutic actions which revitalize the surface or prepare it for revegetation, such as mulching, fertilizing, liming, stabilizing, disking, harrowing, etc. One phase is usually the spreading of topsoil on the regraded soil. Scrapers are often used to reclaim soil from the stockpile, transport it, and spread it on the spoil. End-loaders may be used with bottom-dump trucks wh

which spread the topsoil "on the run." Seeding is actually the final stage of rehabilitation.

12. Revegetation and restoration takes place over a longer time period. The growth of plants and establishment of cover is an involved process. Careful attention over several growing seasons may be required. Of course, this step is not necessary where alternative land use, such as a shopping center or a school, is envisioned.

New words and expressions

a sequence of 连续。一连串

unit operations 作业环节

preparing the surface 地面准备

vegetative cover 植被

obstruction /əb'strʌkʃən/ n. 障碍物

commercial. /kə'mɜ:ʃəl/ a. 商品化的。以获利为目的的

timber n. 木材。木料

topsoil 表土层

statute /'stætju:t/ n. 法令。法规。成文律

elevating scraper 升降式铲运机

front-end loader 前装机

subchapter n. 节

horizon /hə'reɪzn/ n. 层。层位

contrasting layer 对比层

leach /li:tʃ/ vt. vi. 滤去。滤掉
 soluble particles 可溶颗粒
 suspended particles 悬浮颗粒
 subsoil 次表土层
 weathered rock 风化岩石
 rock masses 岩体
 ripper-bulldozer 带松土器的推土机
 overburden removal 剥离物移运
 highwall 边帮。顶帮
 spoil 排土场
 end-loader 端式装载机
 segregate /'segrigeit/ vt. i. (使)分离。(使)隔开
 stratigraphic /strætɪ'græfɪk/ a. 地层学的
 fine grader 分级装载机
 bottom dump truck 底卸式卡车
 backfilling 回填
 regrading 重新平整
 restoration /restə'reɪʃən/ n. 恢复。修复
 virtually /'vɜ:tjuəli/ ad. 实质上。实际上。事实上
 burial /'beriəl/ n. 埋葬。埋藏
 distinct /dɪs'tɪŋkt/ a. 独特的。性质截然不同的
 provision /prə'vɪʒən/ n. 预备。防备。措施
 encompass /ɪn'kʌmpəs/ vt. 包含。包括

amendment n. 改良土壤的物质
 therapeutic(al) /θerə'pju:tik(ə)l/ a. 治疗(学)的
 revitalize /ri:'vaɪtəlaɪz/ vt. 使新生。使恢复元气
 mulching /'mʌltʃɪŋ/ 用覆盖物覆盖地面
 liming . 用石灰处理
 disking 耙平。耙地
 harrowing /'hærouɪŋ/ 耙(地)
 on the run. 1. 跑着 2. 逃跑 3. 在运转中。在操作中
 envision /ɪn'vɪʒən/ vt. 想象。预想。展望

课文注释:

- (1) While this operation is not always necessary,
 尽管该项作业并非总是必不可少。-----
- (2) this operation may be required for relocation purposes: 有时为了恢复土地(复垦)就可能需要进行这项作业(地面准备或掘去植被层)。
- (3) the permanent Regulatory Program under the Surface Mining control and Reclamation Act of 1977:(美国)
 1977年露天开采管理与土地复垦法案中的永久性限定纲要。

Exercises:

I. Answer the following question in English:

What are the seven unit operations and what kinds of equipment can be used in each operation?

II. Choose the best answers to the following questions: