THE English for the Oil Industry
PETROLEUM
PROGRAMME

石油英语教程

(英) P. L. 桑德勒

BBC (English)

石油工业出版社

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学 曾彦一 等译注 张永一 校

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本书译自 国广播公司 (BBC) 出版的《The Petroleum Programme》一书。书中涉及面颇广,除石油之外,还谈及炼油、化工、环境与资源保护等。原书配有三盒磁带,现我们也一并复制发行。磁带内容包括课文和现场对话。课文语音为纯伦敦音;现场对话则选用了苏格兰、爱尔兰等语音,以及英美俚语。

读者对象是一能源工业界各大专院校学生和工程技术人员; 对外劳务出口人员;广大英语受好者。

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(英) P.L.桑德勒

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编译者前言

石油界一直盼望着有一本比较完善的结合石油专业的英语教科书,特别是那种既结合专业又能学习英语口语的书。随着改革开放政策的深入贯彻,石油工业开展了越来越广泛的国际合作和交流,这种要求就更加迫切了。石油院校的教师们曾经为此作过很多努力,可惜都没有获得满意的成果。

我有幸于 1986~1987 年间受派到英国进修英语教学, 一直留心于此事,终于找到了这本《The Petroleum Programme》。我觉得这本书可以基本满足上述要求。

《The Petroleum Programme》从内容上包括了石油工业的各个方面:钻井、地质、开发、储运、炼制、环保等,从英语技能上包括了听说读写的全面训练,而且以口语(听说)能力为重点。全书的 Listening Comprehension(包括练习)均配有磁带。本书由英国广播公司(BBC)于 1980年出版,1984年再版。本书原作者 P.L.Sandler 在世界很多地方从事过英语教学,在编写"专用英语(English for Special Purposes)"教材方面有丰富的经验。除本书外,他还编著过《Medically Speaking》(《医学英语会话》),与人合著《Learn English for Science》和《Study English for Science》等。

参加本书译著的有: 西安石油学院刘冲茂 (17~20 单元)、江汉石油学院马学杰 (13~16 单元)、大庆石油学院 张僧祥 (1~4 单元)、江汉石油学院陈胜 (5~8 单元)、西南石油学院曾彦一 (9~12 单元)。全部注译稿由曾彦一校

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改, 张永一审阅。

本书译注过程中,曾得到英国专家 Dr.A.H.Urhquart 的帮助,本书的出版得到了孙为群同志和石油工业出版社的大力支持,特在此向他们表示深切的谢意。

曾彦一 1991年3月

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Unit 1 The Rig

Section A **READING COMPREHENSION**

Read the following passage

If there are any words or expressions that you don't understand, look under Special Words and Expressions.

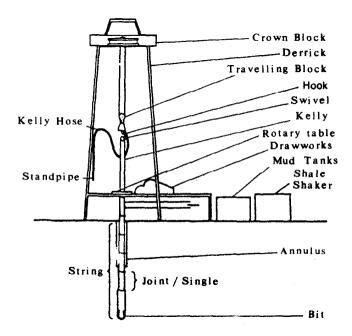
The diagrams will also help you.

Oil is contained in rocks under the ground and in rocks under the sea. *To find it¹, oilmen have to drill boreholes. The equipment for drilling these holes is the drilling rig. Most rigs work on the rotary system. A bit rotates at the end of a pipe. As the bit rotates, it cuts and crushes the rock at the bottom of the hole. The cuttings are carried to the surface by a special fluid. This fluid is called 'mud'. Mud is a mixture of clay, water and chemicals.

Look at the diagram of the rotary rig. Notice the string. This * is made up of 2joints' or 'singles'. Each joint or single is a hollow section of pipe, * 30ft. Long³. The string is made up of a number of these singles⁴, all joined together. The bit is

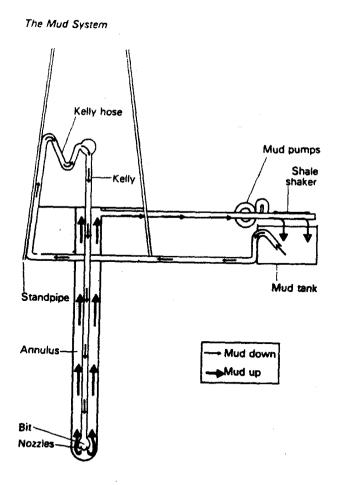
connected to the bottom of the string. At the top of the string there is a special pipe called the 'kelly'. The kelly isn't round, but *hexagonal*. It * fits into 5 a hexagonal hole in the rotary table. The rotary table turns the kelly, the kelly turns the string, and the string turns the rotary bit.

Rotary Drilling Rig

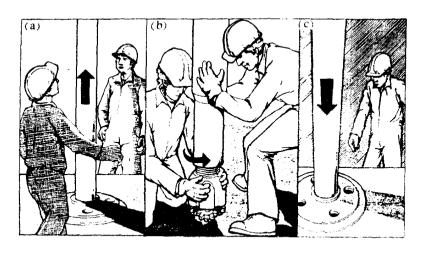


Mud is not only used for carrying the cuttings up to the surface. It is also used * for keeping the bit cool⁶. The mud is pumped down through the string. It comes back up again through the annulus. The mud engineer or 'mud man' * is in charge of the mud *. For example 8, he tells the floormen how to mix the mud at the mud tanks.

*It is often necessary to pull the string out of the hole⁹. There are different reasons for this. Perhaps, for example, the drill bit is dull. If the bit is dull, it must be changed. To do this, the driller and the floormen must trip the pipe. They must pull the string out(a), change the bit(b), and then run the string back into the hole(c). Tripping the pipe is also



called 'making a round trip'. Round trips are expensive. Oilmen make them only if they must.



Special Words and Expressions

boreholes In the petroleum industry, the words 'borehole', 'hole', 'well' and 'oil well' usually mean the same thing.

rotary turning like a wheel.

rotates turns around and around like a wheel.

crushes breaks up into small pieces, using great power.

cuttings the pieces of rock drilled by the bit.

fluid anything that flows. Liquids, gases and melted substances are all fluids.

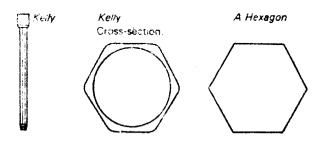
clay an earthy material, plastic when it is wet. The most common clay in drilling fluid is bentonite. Bentonite

consists of calcium (Ca), magnesium (Mg) and aluminium (Al).

is made up of consists of. Bentonite is made up of Ca. Mg

hollow having an empty space on the inside. Drill pipe is hollow, so that mud can pass through it.

heyagonal having six angles and six sides.



floormen workers on a rig. Floormen are also called 'roughnecks'. A mud man or driller can tell a floorman what to do.

dull not sharp; worn out; gone. If the bit is gone, it must be changed.

driller the person in charge of the drilling.

Comprehension

Answer the following questions. The information can be *either* in the reading passage and diagrams *or* in Special Words and Expressions.

- a. What is the driller's job? (He is...)
- b. How long is a single? How long is a joint? (They are

both...)

- c. As the bit rotates, what two things does it do?
- d. In the petroleum industry, what is mud?
- e. What is the string made up of?
- f. what is the name of the space between the drill pipe and the sides of the borehole?(The space is called...)
- g. Who mixes the mud? Where is the mud mixed?
- h. Oilmen make round trips only if they must. Why? (Because...)
- i. What is bentonite? What does it consist of?
- j. Why is the drill pipe hollow? . (So that...)

Now choose from these words and expressions to complete the paragraph below: cuttings, fluid, shale shaker, rotary, mud tanks, annulus, crushes.

The... bit cuts and... the rock at the bottom of the hole. Drilling... carries the...from the bottom of the hole, up the... to the surface. The cuttings are separated from the mud at the..., and the clean mud then returns to the...

Section B

LISTENING COMPREHENSION I

1. Listen to the conversation between Bob and George.

BOB: *Hey1, George! Over here!

GEORGE: *Yeah?2

BOB: *We'll have to trip the pipe³.

GEORGE: What?

BOB: I said we'll have to trip the pipe.

GEORGE: What's wrong, Bob?

BOB: I'm not sure. We'll have to bring it up and find out.

GEORGE: *Any ideas?4

BOB: I think * the bit's gone⁵.

GEORGE: The bit?

BOB: *Aye⁶, the bit.

GEORGE: It was changed last shift, Bob.

BOB: I know, but I think it's gone. Let's bring up the string and find out.

(The crew trip the pipe out of the hole)

BOB: *Well⁷, look at that.

GEORGE: You were right. It is worn out. We'll have to change it.

BOB: *Thanks for telling me8.

- 2. Now see if you understood the tape. Answer the following questions. If you have difficulty, listen to the tape again.
- a. Who is in charge, Bob or George? Who's the driller? Who's the roughneck? What gives you the answers to these questions?
- b. Bob uses another word for 'yes'. What word does he use?
- c. Any ideas? is a short way of saying Have you got any ideas? Now make complete sentences for these short expressions: Any cigarettes?, Any problems?, Any answers?, Any tools for the job?

- d. What does Bob want to find out? (He wants to find out if...)
- e. Offshore, in the North Sea, drilling crews usually work 12-hour shifts. Onshore, they usually work 8-hour shifts. Do you work 12-hour or 8-hour shifts?

Section C

STRUCTURE PRACTICE

- 1. See if you remember these sentences from the tape.
- 'We'll have to trip the pipe.'
- 'We'll have to bring it up and find out.'
- 'We'll have to change it.'

Those sentences all mean that it will be necessary to do something.

Example: It will be necessary for us to trip the pipe. (We'll...)

•We'll have to trip the pipe.

Now say the following.

- a. It will be necessary for us to check the mud tanks. (We'll ...)
- b. It will be necessary for us to run the pipe back in. (We'll ...)
- c. It will be necessary for me to ask the driller for permission to do that. (I'll...)
- d. It will be necessary for you to come to work on time.

 (You'll ...)
- e. It will be necessary for him to work two shifts tomorrow. (He'll ...)

2. To explain the function of something, we can use for followed by a verb with-ing (the gerund).

The equipment for drilling these holes is the drilling rig.

Mud is not only used for carrying the cuttings up to the surface

Study this example:

Mud is also used... the bit cool. (keep)

• Mud is also used *for keeping* the bit cool.

Now complete the following in the same way.

- a. The fluid...the bit is called mud. (cool)
- b. The drawworks are used... the drill pipe. (raise and lower)
- c. The bit is used... the rock at the bottom of the hole. (cut and crush)
- d. The equipment...boreholes is the rig. (drill)
- e. The drill pipe is hollow. This is... the drilling fluid. (carry)
 - 3. Passive Voice

The cuttings (carry) to the surface by a special fluid.

- The cuttings are carried to the surface by a special fluid. This fluid (call) mud.
- This fluid is called 'mud'.

In these sentences, put the verbs in brackets into the same passive form.

- a. The string... a number of joints or singles. (make up of)
- b. If the bit is worn out it... (change)
- c. Round trips... only if they are necessary. (make)
- d. The drilling fluid... by the mud engineer. (control)
- e. Cuttings... to the surface in the drilling fluid. (carry)

4. Tenses and Questions: Present Simple

What does a roughneck do? He / work / rig floor

•He works on the rig floor.

Answer the questions below in the same way.

- a. What do the drawworks do? They / raise and lower / pipe
- b. Where does a floorman mix the mud? He / mix it / mud tanks
- c. When is the bit changed? When / driller / think it is worn out
- d. What is a fluid? A fluid / anything / that / flow
- e. At what temperature does water boil? Water/boil/
 - 5. Now look at this example:

Ask what the driller does. (What / driller / do) (in charge of drilling operation)

• What does the driller do?

He's in charge of the drilling operation.

In the same way, make questions and answers for these.

- a. Ask where the floormen work. (Where / floormen / work) (rig floor)
- b. Ask what the mud does. (What/mud/do) (keep bit cool)
- c. Ask how the mud reaches the bit. (How/mud/reach/bit) (pass through hollow string)
- d. Ask what bentonite consists of. (What / bentonite / consist of) (calcium, magnesium and aluminium)

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