石油英语系列教材

石油测井实用英语

潘茂刚　主编

PRACTICAL ENGLISH FOR PETROLEUM LOGGING

中国石油大学出版社

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中国石油行业在步入新世纪，加入WTO，不断深化经营体制改革的新形势下，将面临新的机遇和挑战。为适应我国石油领域对外交流与合作的迫切需要，提高石油科技工作者和有关涉外人员的专业英语水平与实用能力，积极参与国际石油市场竞争，不断提高国际石油项目的工程服务质量和经营管理水平，胜利油田组织编著了石油英语系列教材。该系列英语教材包括石油地质、地球物理勘探、钻井、测井、采油、安全环保等专业。各专业英语教材的编著自成体系，独立成书。《石油测井实用英语》(*PRACTICAL ENGLISH FOR PETROLEUM LOGGING*)是该英语系列教材之一。

《石油测井实用英语》按照石油测井专业知识结构并兼顾英文难易程度进行编排，全书共分五个部分：

第一部分为精读部分，内容主要为测井专业基础知识和基本的测井招投标程序，每篇文章都配有生词、短语注释和阅读理解、判断对错或英汉翻译等形式不同、旨在加深课文理解的练习题，课后附有参考译文。

第二部分为泛读部分，内容主要为国际合作应用基础知识，包括合同起草和谈判技巧、商业信函写作方法、国际进出口基础知识、国际仲裁方法、QHSE和标准合同范例等，每篇文章都配有生词、短语注释和参考译文。

第三部分为测井实用口语对话和常用口语句型，涵盖了日常生活、测井施工作业、资料解释和合同谈判等各个方面，并附有参

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考译文。

第四部分为附录，为方便读者，特收录了在英语学习和日常工作中常用的“不规则动词表”、“度量衡转换表”、“地质年代与地层时序表”、“地质时代符号表”和“API 重度与相对密度对照表”。

第五部分按照字母顺序汇总了全书列出的所有生词、专业词汇和常用短语，便于读者对词汇的快速查找和学习记忆。

所有引用资料经过精简、改编后，力争以较小的篇幅涵盖尽可能多的知识点和测井专业词汇，并使全书从整体上体现连续性、系统性、可读性和实用性。

该书可作为石油测井专业从事野外作业施工人员、对外招投标及合作人员的英语培训教材或英语自学者的英语自学用书。

在中国石化集团胜利石油管理局教育培训处的部署下，全书由胜利石油管理局测井公司组织编写，由石油大学地球资源与信息工程学院汪功礼老师审校，并在编写过程中得到胜利石油管理局有关处室和测井公司领导的大力支持和协助，在此表示衷心的感谢。对该书引用资料涉及的所有原文作者表示感谢。

由于编著者水平有限，加之时间仓促，其中错误或不当之处在所难免，敬请读者批评指正。

编著者

2004 年 7 月 8 日

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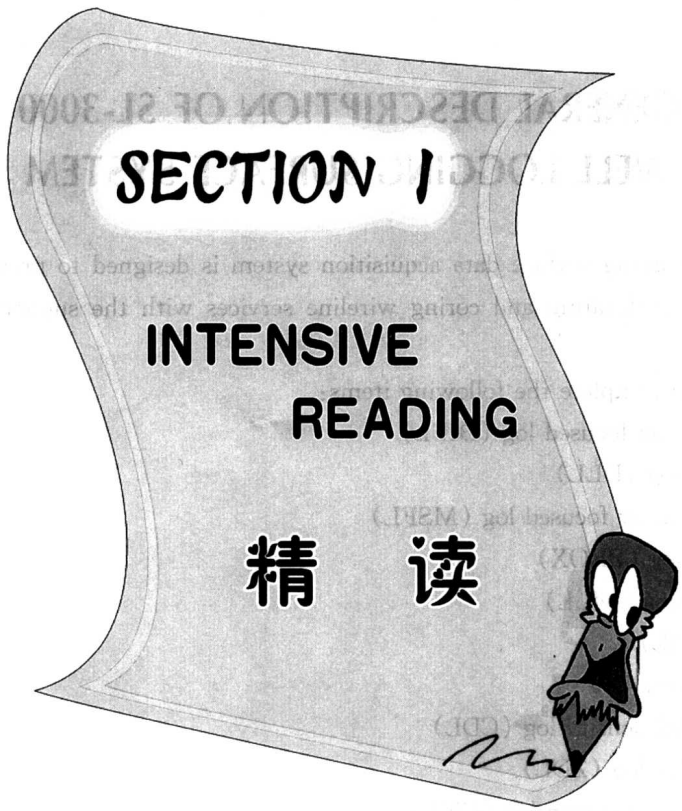

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Lesson 1

GENERAL DESCRIPTION OF SL-3000 WELL LOGGING SURFACE SYSTEM

SL-3000 well logging surface data acquisition system is designed to provide open hole and cased hole logging, perforating and coring wireline services with the support of corresponding downhole tools.

This system can complete the following items:

(1) Dual induction focused log (DIFL)
(2) Dual laterolog (DLL)
(3) Microspherically focused log (MSFL)
(4) Proximity log (PROX)
(5) Microlaterolog (MLL)
(6) Minilog (ML)
(7) Electrode array log
(8) Compensated density log (CDL)
(9) Litho-density log (ZDL)
(10) Compensated neutron log (CNL)
(11) Spectrolog (SL)
(12) Natural gamma ray log (GRL)
(13) Compensated acoustic log (AC)
(14) Cement bond log and variable density log (CBL, VDL)
(15) Acoustic wavetrain log (WAVE)
(16) Borehole televiewer (BHTV)
(17) Caliper log (CAL)
(18) 4-arm diplog (DIP4)
(19) Hexagonal diplog (DIP6)
(20) Well formation tester (WFT)
(21) Casing collar log (CCL)
(22) Multiparameter log
(23) Dielectric log (DIEL)

(24) Carbon/oxygen log (C/O)

(25) Deviation and azimuth log (DEV)

This system consists of two major sections: hardware and software. The system hardware consists of a host, CD driver, 4 mm tape driver, two plotters, oscilloscope panel, bus, power control panel, line control panel, acquisition panel, etc..

Firstly, let me introduce the key hardware briefly.

Oscilloscope Panel: This system adopts SS-7804 oscilloscope, manufactured by IWATSU Corporation.

Please refer to Instruction Manual "Oscilloscope SS-7804/02" for the specifications and operation.

Bus: SL-3000 well logging surface system connects the host with each logging function module by means of bus. The communication card, inserted in the host, controls the bus. The bus, 32-conductor cable, connects with aviation sockets. Its main specifications are as follows:

Bus Mode: parallel bus

Data Bit Number: 8 bits

Information Transmission Mode: mailbox and shaking-hand signal

Max. Communication Rate: 400 KB/s

Error Correcting Code: key word transmitted by positive and negative code, odd check.

Power Control Panel: This panel supplies power for downhole tools and motors.

Its specifications:

Service Voltage: 0～700 V (adjustable)

Max. Current: ≤3 A

Line Control Panel: This panel is used to reassign connection of cable conductors, tune switch of the downhole tool, open and close arms and so on, if necessary.

Acquisition Panel: The acquisition panel contains following signal processing modules:

(1) M02 module for processing Manchester code signal

(2) M07 module for processing AMI code signal

(3) M04 module for processing analog signal

(4) M05 module for processing acoustic signal

(5) M06 module for processing pulse count signal

(6) M0A pulse height analyzing and processing module (for spectrolog)

(7) M0B module for production log

Under the control of the host, the above-mentioned intelligent modules can accomplish automatically the processing of all kinds of logging signals as well as the forming of control signals, and meanwhile, convert logging information from downhole tools into digital signals and send them to the host.

Electrode Array Logging Panel: This panel can accomplish the power supply and measurements of electrode array. Under the control of the host, the panel performs automatically the calibrating and logging, and sends data to the host via communication bus.

Perforating and Coring Panel: The panel is the control panel of perforating, engineering cutting and sidewall coring. Under the control of the host, it can finish detecting zero, turning core switch, and firing, detect and process collar and natural gamma ray signal. The explosion jobs such as perforating, coring and so on, are very dangerous jobs. Consequently, in the panel many safeguard measures are set up to ensure the safe performance.

Hoistman's Panel: The panel provides total weight, differential weight, and depth pulse corrected for SL-3000 well logging system.

Depth Panel: The panel processes depth, weight and magnetic positioning signals from the hoist panel input and displays depth and speed in digital form. Meanwhile, the panel delivers depth pulse of 10/m, 20/m, 40/m, 80/m, 160/m, 320/m, or 0.1 s～2 s isochronal pulse which is synchronization signal of the system sampling. The panel can send depth, speed, weight and magnetic positioning signals to the host and correct depth at any time.

Secondly, the SL-3000 well logging System Software

SL-3000 well logging surface system is a new logging system manufactured by our company in 1997. It has been widely taken into operation in Shengli Well Logging Company, which greatly improves our well logging technology and produces enormous economical and social benefit. Its system software utilizes the object-oriented programming and the up-to-date graphics window interface technology, and achieves comprehensive Chinese and English compatible operating platform, which is easy to operate and maintain. The characteristics are as follows:

- The integrated system environment that has powerful function
- The object-oriented programming technology that increases the software reliability
- The uniform user interface that is easy to study and operate
- The modular construction making it easy to be upgraded and extended

Operating System: SL-3000 well logging surface system software is developed on the base of DOS operating system, utilizing our company's up-to-date XGW Window system platform. The software integrates powerful logging system software, using adequately the C++ programming method, event-driven programming technology and combination of top-down with bottom-up module. It can be run on all kinds of PC, also in DOS environment of Win95.

DOS VER 6.22 or the higher is recommended and following drivers should be appended in a CONFIG.SYS file:

- SCSI driver
- MO driver
- HIMEM.SYS
- EMM386.EXE and 64M extended memory is better.

AUTOEXEC.BAT contains following files:

- SMARTDRV.EXE
- MOUSE.EXE
- DOSKEY.EXE DOS

Besides DOS operating system installed in the host, MS windows 3.1 or Win95, has to be installed. If necessary, a tape driver must be installed and run in the windows environment.

Logging Software System: SL-3000 logging system software integrates all kinds of logging items, and contains site processing function and all kinds of auxiliary functions. The main functions and characteristics are as follows:

- Conventional logging items which contain diplog, litho-density log, variable density log, spectrolog and so on
- Combination logging of multitask tools
- Perforating and coring
- Well formation testing
- Site data processing, the field data format supporting "LA" and "LIS" format
- Abundant auxiliary functions, containing system information maintaining, printing, and data files management of calibrating and logging
- On-line help system

New Words

sidewall *n*. 井壁
perforate *v*. 射孔
hexagonal *adj*. 六角形的
deviation *n*. 井斜
azimuth *n*. 方位
convert *v*. 使转换
compatible *adj*. 兼容的,一致的
odd *adj*. 奇数的, 单数的,余的
bus *n*. 总线
intelligent *adj*. 智能化的
utilize *vt*. 利用
platform *n*. 平台
abundant *adj*. 大量的
auxiliary *adj*. 辅助的
insert *vt*. 插入; *n*. 插入物
isochronal *adj*. 等时线的
synchronization *n*. 同步

Phrases and Expressions

proximity log 邻近测井
spectrolog 能谱测井
microspherically focused log 微球聚焦测井
litho-density log 岩性密度测井
aviation socket 航空插座
differential weight 微分张力
hoistman's panel 绞车面板
object-oriented 面向对象的
event driven 事件驱动
oscilloscope 示波器
modular construction 模块结构

Exercises

Ⅰ. *Comprehension*.

1. What is the exact meaning of the word "**bus**" in this text?

A. One kind of vehicle.

B. The main electrocircuit connected to many branch electrocircuits.

C. A special house.

D. A kind of tool for communication among people.

2. Which logging service are we not sure the SL-3000 surface system can provide?

A. Litho-density log. B. Resistivity imaging log.

C. Acoustic wavetrain log. D. Spectrolog.

3. The main function of the electrode array logging panel is to _____.

A. control the perforating

B. provide total weight, differential weight, and depth pulse corrected

C. accomplish the power supply and measurements of electrode array

D. reassign connection of cable conductors, tune switch of the downhole tools, open and close arms

4. The following sentences are about the signal processing modules. Which one is not right according to the text?

A. M06 module for processing pulse count signal.

B. M04 module for processing analog signal.

C. M07 module for processing AMI code signal.

D. M05 module for production log.

5. Which is not the characteristic of the SL-3000 surface system software?

A. The integrated system environment that has powerful function.

B. The object-oriented programming technology that increases the software reliability.

C. The uniform user interface that is easy to study and operate.

D. The modular construction making it difficult to be upgraded and extended.

Ⅱ. *Translate the following sentences into Chinese.*

1. SL-3000 surface data acquisition system is designed to provide open hole and cased hole logging, perforating and coring wireline services combined with corresponding downhole tools.

2. Error Correcting Code: key word transmitted by positive and negative code, odd check.

3. Under the control of the host, the above-mentioned intelligent modules can accomplish automatically the processing of all kinds of logging signals as well as the forming of control signals, and meanwhile, convert logging information from downhole tools into digital signals and send them to the host.

4. Its system software utilizes the object-oriented programming and the up-to-date graphics window interface technology.

5. The software iotegrates powerful logging system software, using adequately the C++ programming method, event-driven programming technology and combination of top-down with bottom-up module.

参考译文

SL-3000 型测井地面系统简述

SL-3000 型地面数据采集系统与相关井下仪器配套，能提供裸眼井和套管井测井、射孔和取心等各项电缆服务。

该系统能完成下列测井项目：

(1) 双感应聚焦测井；
(2) 双侧向测井；
(3) 微球型聚焦测井；
(4) 邻近(侧向)测井；
(5) 微侧向测井；
(6) 微电极测井；
(7) 电极系测井；
(8) 补偿密度测井；
(9) 岩性密度测井；
(10) 补偿中子测井；
(11) 自然伽马能谱测井；
(12) 自然伽马测井；
(13) 补偿声波测井；
(14) 水泥胶结及变密度测井；
(15) 全波列测井；
(16) 井下声波电视测井；
(17) 井径测井；
(18) 四臂地层倾角测井；
(19) 六臂地层倾角测井；
(20) 地层测试；
(21) 磁定位测量；
(22) 多参数测井；
(23) 介电测井；
(24) 碳氧比测井；
(25) 井斜和方位测井。

本系统主要由硬件和软件两部分组成。其中系统硬件包括：主机、光驱、4 毫米磁带机、两个绘图仪、示波器、总线、电源控制面板、接线控制面板和采集面板等。

首先，简要介绍系统主要硬件。

示波器面板：本系统采用 IWATSU 公司生产的 SS-7804 示波器。有关具体操作和技术指标请参阅“SS-7804/02 示波器”说明书。

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