

<<石油工程专业英语教程>>

图书基本信息

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前言

本教程为石油工程专业英语教材，全书内容分为三大部分：第一部分为石油工程专业英语基础，内容涵盖了油气组成及其性质、石油地质、石油勘探原理、钻井与完井工程、采油工程；第二部分为现代石油工程应用技术专题，内容涵盖了定向钻井技术、复杂结构井应用基础、分支井技术、MWD/LWD和地质导向技术应用、人工举升技术、地层出砂与防砂原理、常用增产措施原理、控水采油技术原理、油藏模拟；第三部分为泛读材料，涉及专项应用技术和石油工程新兴前沿技术，内容涵盖钻井液技术、固井水泥浆技术、试井技术、欠平衡与控制压力钻井技术、膨胀管技术、套管钻井技术、智能完井技术、连续油管及其应用、系列EOR技术。

英译汉翻译练习精选了课文中较少系统涉及的相关石油工程常识基础，附录为英文释义基础专业术语。

相比于已有教材，本教程系统性较好、专业技术涵盖面广，在注重石油工程专业基本知识的基础上，突出了工程应用技术，广泛涉猎了当今石油工程前沿技术，旨在通过本教程的学习强化相关石油工程英文科技文献的阅读能力，奠定轻松应用英文网络资源、从容应对国际学术交流和石油工程国际合作的专业英语基础，进而具备一定的英文科技写作能力。

本教程可作为相关专业本科和研究生石油工程专业英语阅读教材，也可供油田现场石油工程专业技术人员培训、学习时参考。

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内容概要

本书在内容选题和编排上较好地结合了石油工程专业英语的教学要求和技术发展，在注重石油工程专业基础知识的基础上，突出了工程应用技术，广泛涉猎了当今石油工程前沿技术。

书中的翻译练习精选了课文里较少系统涉及的相关石油工程常识基础，附录中给出了英文释义的基础专业术语。

通过本教程的学习，能强化石油工程专业人员的英文科技文献阅读能力。

本书可供相关专业本科、研究生进行石油工程专业英语阅读学习，也可供油田现场石油工程技术人员培训、学习时参考。

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The unique issues associated with ERD wells largely stem from the high inclination of the well that is required to reach the objective departures. Tangent "sail" angles in some ERD wells have been 80度 or higher. "Average" angles from surface to TD have been 70度 or higher. Some ERD wells have in fact been drilled as extremely long horizontal wells where the bulk of the well has been drilled horizontally (defined as an inclination of 88度 or more). At such high inclinations, the transport of cuttings from the well is more difficult than in vertical wells. As a result, higher flow rates, tighter control of drilling-fluid rheology, and the use of non-conventional mechanical means to assist hole cleaning must be used. Such mechanical means might include high drillstring rotation (off-bottom) or the use of special, bladed drill pipe to stir cuttings beds mechanically. High rotary speeds and backreaming help clean the hole but can increase drilling shock and cause fatigue or backoff of motor housings. Therefore, such practices should be viewed as secondary hole-cleaning methods and used only if primary hole cleaning is inadequate. A common method of removing cuttings beds is the use of low-viscosity sweeps that scour the cuttings off the low side of the hole; high-viscosity sweeps are then made that carry the dislodged cuttings to the surface. The fundamental driver of hole cleaning, however, is flow rate, and high flow rates are strongly recommended throughout high-inclination sections if ERD allows. For this reason, the rig's pump and piping capacities with regard to flow rate, pressure, and the drillstring design are critical. Other implications of high inclination include the greater likelihood of mechanical wellbore instability and hence the need for careful mud-weight planning. Since more formation is exposed for longer periods, chemical stability also becomes more critical. Aside from hydraulics and formation stability, another potential ERD constraint is the ability to sustain drilling torque and run tubular in the well. Both of these processes are impacted by optimizing the well trajectory and field control of variations from this directional plan. Additionally, the trajectory should be designed to minimize the induced torque during drilling and to maximize the available weight while casing is run. Satisfaction of these objectives varies depending on the TVD and departure of the target and the frictional behaviors of the various hole sections and the location of those sections. One observation from several studies, however, is that multiple build rates should be used to initiate inclination into the well gradually. Increasing the build rates in several steps minimizes near-surface dog-legs and the associated torque and drag. The final tangent angle and shape of the trajectory through the reservoir can be determined on the basis of several considerations. If the well design is close to the limit of wireline intervention capabilities (65度 to 70度), it may be best to keep the KOP high and limit the inclination so that wireline operations are feasible. If the well angle is more severe and the inclination will already exceed wireline operating limits, it may be appropriate to slightly deepen the KOP to increase formation stability and allow a more gradual build section. In such cases, although a higher final inclination angle will result, the higher inclination may in fact be optimal since it inhibits buckling of the drillstring and coiled tubing, which could be critical controlling factors in severe ERD wells.

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