



Offshore structures

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2 Structure-Environmental Force Interactions

2.1 SINGLE DEGREE OF FREEDOM STRUCTURES

2.2 FLUID-INDUCED STRUCTURAL FORCES

2.3 EARTHQUAKES, ICE IMPACT, AND WAVE
SLAMMING

2.4 STRUCTURAL MASS, DAMPING, AND RESTRAINT

2.1 SINGLE DEGREE OF FREEDOM STRUCTURES

single degree of freedom systems

单自由度系统

structural mass, stiffness, and the structural restraint forces

结构的质量 刚度 结构的恢复力

structural equations of motion

结构运动方程

static equilibrium position

静平衡位置

independent coordinates

独立坐标

damping forces

阻尼力

multi-degree of freedom

多自由度

differential equation

微分方程

***virtual* mass**

有效质量

mass center

质量中心

ship displacement

船排水量

angular acceleration

角加速度

mass moment of inertia

质量惯性矩

flexural stress

弯曲应力

2.2 FLUID-INDUCED STRUCTURAL FORCES

incident fluid velocity

入射流速度

none the less

仍然、还是

Classical Inviscid Fluid Flow

经典无粘性流体流

inertia coefficient

惯性系数

added mass coefficient

附加质量系数

Real Viscous Fluid Flow

实际粘性流体流

form drag

开关阻力

root-mean-square (<i>rms</i>)	均方根
frictional drag coefficient	摩擦阻力系数
Reynolds number,	雷诺数
absolute viscosity of the fluid	流体绝对粘度
lift coefficient	升力系数
periodic wakes or vortices	周期性尾流涡流
vortex-shedding	涡流
vortex-induced pressure forces	涡激压力
helical strakes	螺旋型箍条

Conservation of Linear Momentum and Flow Superposition

Conservation of Linear Momentum 线性动量守恒

proximity effects 邻近效应

elastic restraint of stiffness 弹性约束刚度

linear viscous structural damping
线性粘性结构阻尼

relative velocity 相对速度

Buoyancy and Gravity

fluid displaced

排开的流体

center of gravity

重心

are of no consequence

不重要

pore water pressure

孔隙水压力

shear strength

抗剪强度

restoring moment

恢复力矩

Metacenter

稳心

Winds and Currents

still water level

静水面

fastest mile of wind speed

最大英里风速

return periods of 50 years

50年重现期

sustained winds

持续风

projected area

投影面积

shielding effects

屏蔽效应

Wind tunnel

风洞

free vibration frequency

自由振动频率

current

tidal currents

潮流

rise and fall of tides

潮起潮落

power law

幂函数规律

velocity profile

速度分布图

wind-stress current

风压力流

2.3 EARTHQUAKES, ICE IMPACT, AND WAVE SLAMMING

focal depths	震源深度
upper bound	上限 最大值
absolute acceleration	绝对加速度
restoring forces	恢复力
excitation force	激励力
fault displacements	断层位移
compressive or rupture strength	抗压或断裂强度
Coneshaped leg	锥形腿
stress rupturing	应力破裂

specific gravity of sea ice

海冰的比重

freezing and thawing

冻融

capillary cavities

毛细孔洞

entrained water

附连水

mitigate their vulnerability

减轻弱点

Wave Slamming Forces

波浪的砰击力

water-tank

水池水槽

magnification factor

放大系数

2.4 STRUCTURAL MASS, DAMPING, AND RESTRAINT

bending stiffness

抗弯刚度 弯曲刚度

flexural stiffness

抗弯刚度 弯曲刚度

cantilevered beam

悬臂梁

outside diameter

外径

Cross brace

水平支撑

uniformly distributed

均匀分布

Euler buckling load

欧拉屈曲荷载

even-order

偶次

tangent to the catenary curve

与悬链曲线相切

end-to-end

首尾相连

horizontal projected lengths

水平投影长度

equivalent length

等效长度

subgrade reaction constant

地基反力常数

harmonic frequency

简谐频率

full-scale testing

足尺试验

metallic wire

钢丝

synthetic fiber

合成纤维

Sag

垂度

cross-sectional area

横截面面积

一. 钻井设备 (DRILLING EQUIPMENT):

Drawworks 钻井绞车

Rotary Table 转盘

Bushing 轴衬

Top Drive System (TDS) 顶驱

Swivel 旋转接头

Crown Block 天车

Traveling Block 游车

Hook 大钩

Derrick 井架

Pipe Spinning Wrench 钻杆气动扳手

Pipe handling Equipment 钻杆移动设备

Iron roughneck 铁钻工

Pipe Racking System 钻杆堆放系统

Drill String 钻柱

Drilling Sub 钻井短节

Fishing Tool 打捞工具

Power Tong 动力大钳

Air Winch (air tugger) 气动绞车

Crown-O-Matic (Crown Saver) 防碰天车

三. 井控设备 (WELL CONTROL EQUIPMENT):

Ram Type Preventor	闸板防喷器
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Annular Type Preventor	万能防喷器
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BOP Stack	防喷器组
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Gate Valve	闸阀
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Choke and Kill Manifold	阻流压井管汇
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Remotely Operated Panel	远程控制面板
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Choke Control Panel	阻流控制面板
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BOP Handling Equipment	防喷器搬运设备
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Diverter	转喷器
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平台场所

Bow 船首

Stern 船尾

Forward (FWD) or fore 船首的

Aft 船尾的

Port 左舷

Starboard (STBD) 右舷

Upper Deck 上部甲板

Main Deck 主甲板

Quarters (living quarters, accommodation area) 生活区

Drill Floor (Rig floor) 钻台

Bridge (Pilot house, Steerwheel house) 驾驶室

Control Room 控制室

Helideck 直升机甲板

Cementing Unit Room 固井泵房

Air Compressor Room 空气压缩机房

BOP Control Room BOP控制房

Radio Room 报务房

Engine Room 机房

Thruster Room 推进器房

Jacking House 升降室

Column 立柱

Sack Storage Area 散装材料储存区

Warehouse (Store) 材料库房

Paint Room (paint locker) 油漆房库

Leg 桩腿

Mud pit 泥浆池

Cellar Deck 圆井甲板

Riser Rack Area 隔水管排放区

Pipe Rack Area 钻杆排放区

Pipe Slide 滑道

Ramp 坡道

Spud Tank 桩脚箱

Pontoon 浮箱

Moonpool 月池/园井甲板

Pump Room 泵房

Shale Shaker House 振动筛房

Coffee Room 咖啡室

Rig Office 平台办公室

Mess (dining) Room 餐厅

Recreation Room 娱乐房

TV Room

Kitchen 厨房

附录. 常用缩写形式

BHA: bottom hole assembly 下部钻具组合

DP: drill pipe 钻杆

DC: drill collar 钻铤

HWDP: heavy weight drill pipe 加重钻杆

BOP: blowout preventer 防喷器

TD: total depth 总深

TVD: true vertical depth (定向井的)垂直深度

SCR: silicon controlled rectifier 可控硅

OD: outside diameter 外径

ID: inside diameter 内径

BBL: barrel 桶

LB: (拉丁语) Libra=pound (重量单位)

PSI: pound per square inch 磅/英寸²

GAL: gallon 加仑

POOH: pull out of hole 起钻

RIH: run in hole 下钻

WOW: wait on weather 等候天气

WOC: wait on cement 候凝

JU: Jackup 自升式 (钻井船)

SEMI: semi submersible 半潜式 (钻井船)

RPM: revolution per minute 转速/分钟

LPM: liter per minute 升/分钟

KN: knot 节 (海里/小时)

SWL: safe working load 安全工作负荷

API: American Petroleum Institute 美国石油协会

IADC: international association of drilling contractors 国际钻井承包商协会

MPI: magnetic particle inspection 磁粉探伤

Drilling 钻井

Carry out drilling operation in accordance with the drilling program.

按钻井程序进行钻井作业.

Prepared bell nipple. 准备“喇叭口”短节.

Make up 2 joints of drill pipe. 接两根钻杆.

Break out this connection. 卸开该接头.

Run hole opener to sea bed. 下扩眼器到海底

Mix gel fluid for drilling conductor hole. 为钻导管井眼配制高粘度泥浆.

Make up bottom hole assembly. 组合下部钻具

Check and reset crown-saver on every tour.

每个班都要检查并重新调整天车防碰装置.

Number stands on trip out and trip in. 起下钻时给立柱编号.

Pick up BHA and run to seafloor. 将下部钻具下到海底.

Pick up stands. 接立柱

Don't drill faster than 15 minutes for 1 stand. 钻进速度别超过15分钟1根立柱

Drop TOTCO. 投(陶特)测斜仪

Fish TOTCO with overshot. 用打捞筒捞起测斜仪

Resume drilling to T.D. 继续钻进到总深

Circulate 15 minutes. 循环15分钟

Run in hole. 下钻

Put out of hole. 起钻

Make an inventory of all ring gaskets. 开一个所有垫圈的清单

Use spinning tong. 使用气动扳手