

# CONTENTS

Preface.....	v
Lesson 1: Introduction to Rotary Drilling.....	1
Background.....	3
Rotary Drilling.....	3
Petroleum Geology.....	5
Geological Structures.....	7
Application of Geological Concepts.....	9
Petroleum Reservoirs.....	12
Questions.....	17
Lesson 2: Rotary Drilling Rigs.....	25
Introduction.....	27
Derrick, Mast, and Substructure.....	29
Power and Power Transmission.....	31
Drawworks.....	32
Blocks and Drilling Line.....	33
Rotary, Kelly, and Swivel.....	34
Circulating System.....	34
Blowout Preventers.....	35
Auxiliaries.....	36
Rig Design Considerations.....	37
Questions.....	55
Lesson 3: Mud Circulation Equipment.....	63
Introduction.....	65
Mud Pits.....	66
Mud Mixers and Agitators.....	68
Mud Pit Instruments.....	71
Mud Storage and Handling.....	74
Mud Cleaning Equipment.....	75
Duplex Mud Pumps.....	82
Triplex Mud Pumps.....	85
Questions.....	89
Lesson 4: The Drill Stem.....	97
Introduction and Early History.....	99
Drill Pipe.....	99
Tool Joints.....	110
Drill Collars.....	114
Drill Stem Auxiliaries.....	120
Operations Involving the Drill Stem.....	122
Questions.....	125
Lesson 5: Drilling Bits.....	135
Introduction.....	137
Roller Cone Bits.....	139
Diamond Bits.....	153
Drag Bits.....	156
Questions.....	157