

# Contents

<b>From the Editor</b> .....	5
<b>1. Hydraulics of drilling fluids</b> .....	7
1.1. Rheological models of fluids .....	7
1.2. Analysis of rheological properties of fluids .....	12
1.3. The Newtonian fluid flow in wells .....	18
1.4. The Bingham fluid flow in wells .....	36
1.5. Flow of a generalized Newtonian fluid in wells.....	48
References .....	53
<b>2. Cuttings removal in inclined wellbores</b> .....	55
2.1. Issue overview .....	55
2.2. Cuttings transport in the vertical section .....	60
2.3. Cuttings transport in inclined section .....	67
References .....	85
<b>3. Drilling boreholes with air-lift reverse circulation</b> .....	89
3.1. Selection of hydraulic parameters of reverse circulation .....	89
3.2. Calculation of hydraulic parameters for air-lift reverse mud circulation after Allen method .....	93
3.3. Types of drill strings used for air-lift reverse circulation drilling .....	100
3.4. Characteristic of elements of the sleeve drill string with outer air pipes .....	103
3.5. Drill bits used for reverse circulation drilling.....	106
3.5.1. Cutter bits.....	106
3.5.2. Roller cone bits .....	108
References .....	112

<b>4. Selected aspects of casing and cementing works .....</b>	<b>113</b>
4.1. Preparing wellbore for casing and cementing works .....	114
4.1.1. Guidelines of casing .....	115
4.1.2. Cement slurries and accompanying fluids used for cementing works .....	119
4.1.3. Designing cementing works .....	120
4.2. Efficiency of drilling mud removal from the annular space .....	124
4.2.1. Displacement of mud in concentric annulus .....	126
4.2.2. Displacement of drilling mud from eccentric annulus .....	127
4.3. Influence of the character of the displacement fluid on the casing cementing efficiency .....	133
4.4. Buffer fluids .....	151
References .....	157