



*Method improvements polymer mud
to improve data transmission quality
on hydraulic communication channel*

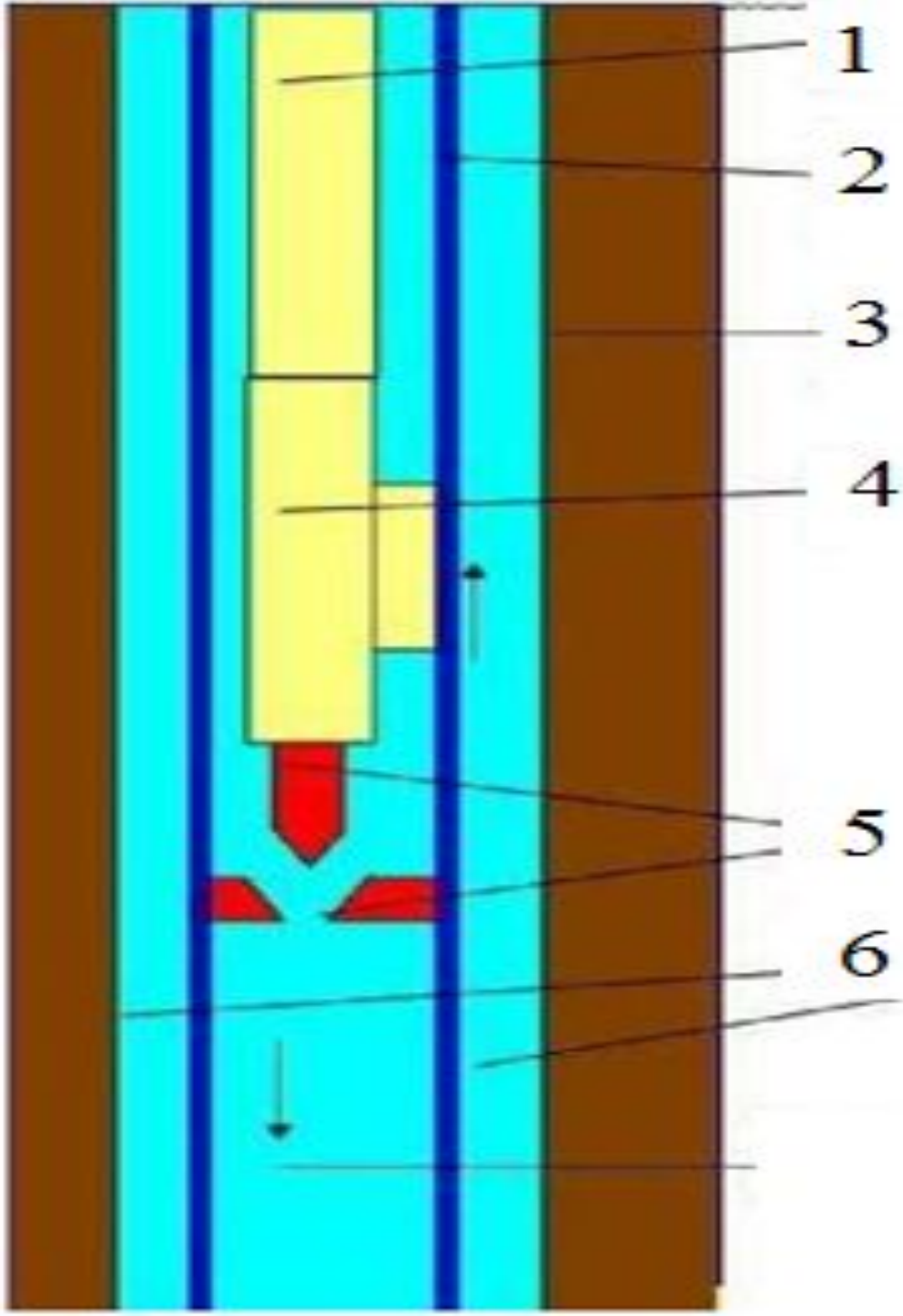


Figure 1

*The principle of operation of the hydraulic communication channel.
1-internal part of the device,
2-external part of the device, 3-wall of the well, 4-electromagnet,
5-locking valve, 6-internal space.*

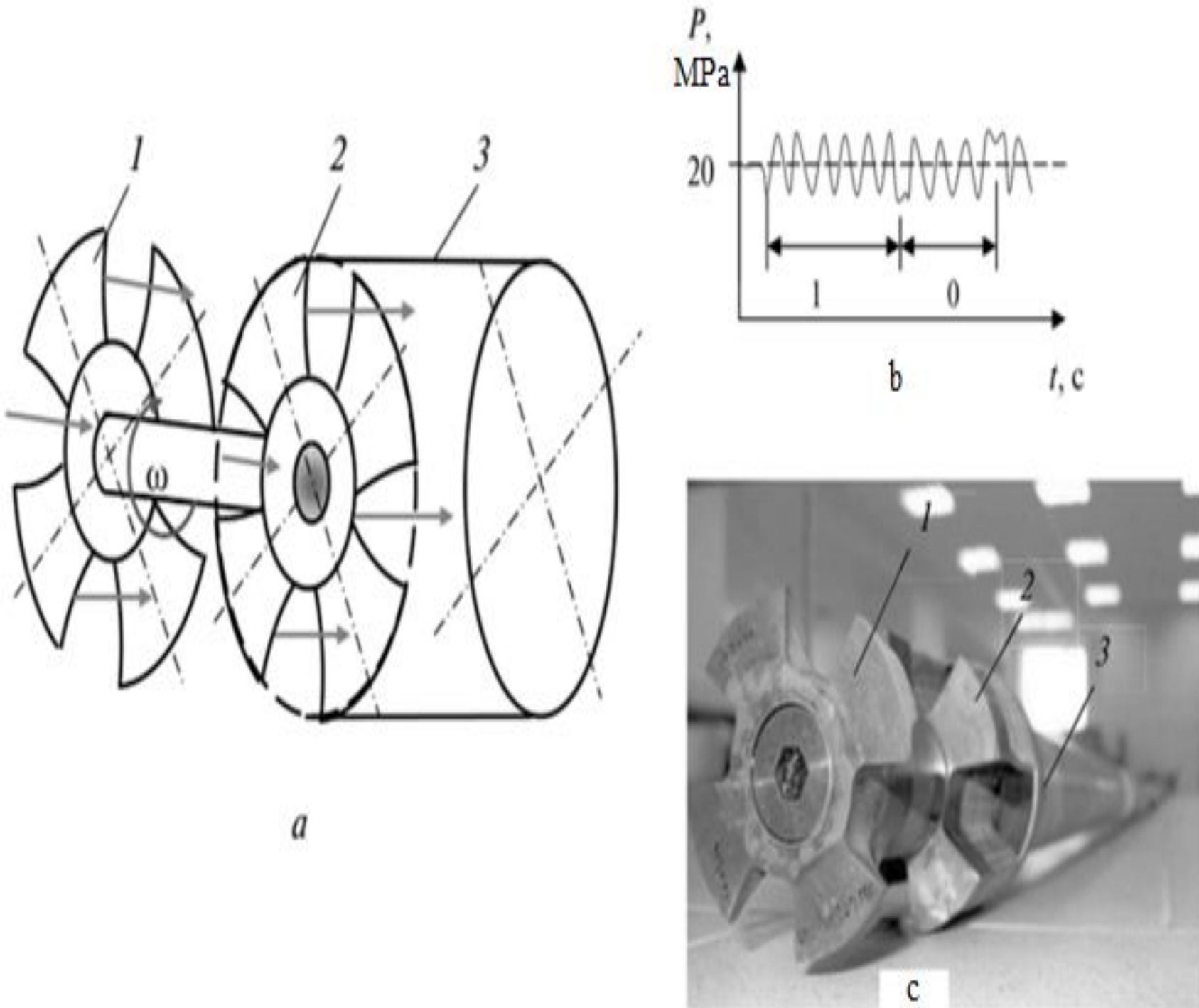


Figure 2

Diagram of a rotary type pulsator: a - work diagram; b - graph of the pulse signal; in - the appearance of the pulsator; 1 - rotating impeller; 2 - impeller phase manipulation, installed with the possibility of rotation around the axis to the left - right; 3 - system housing.

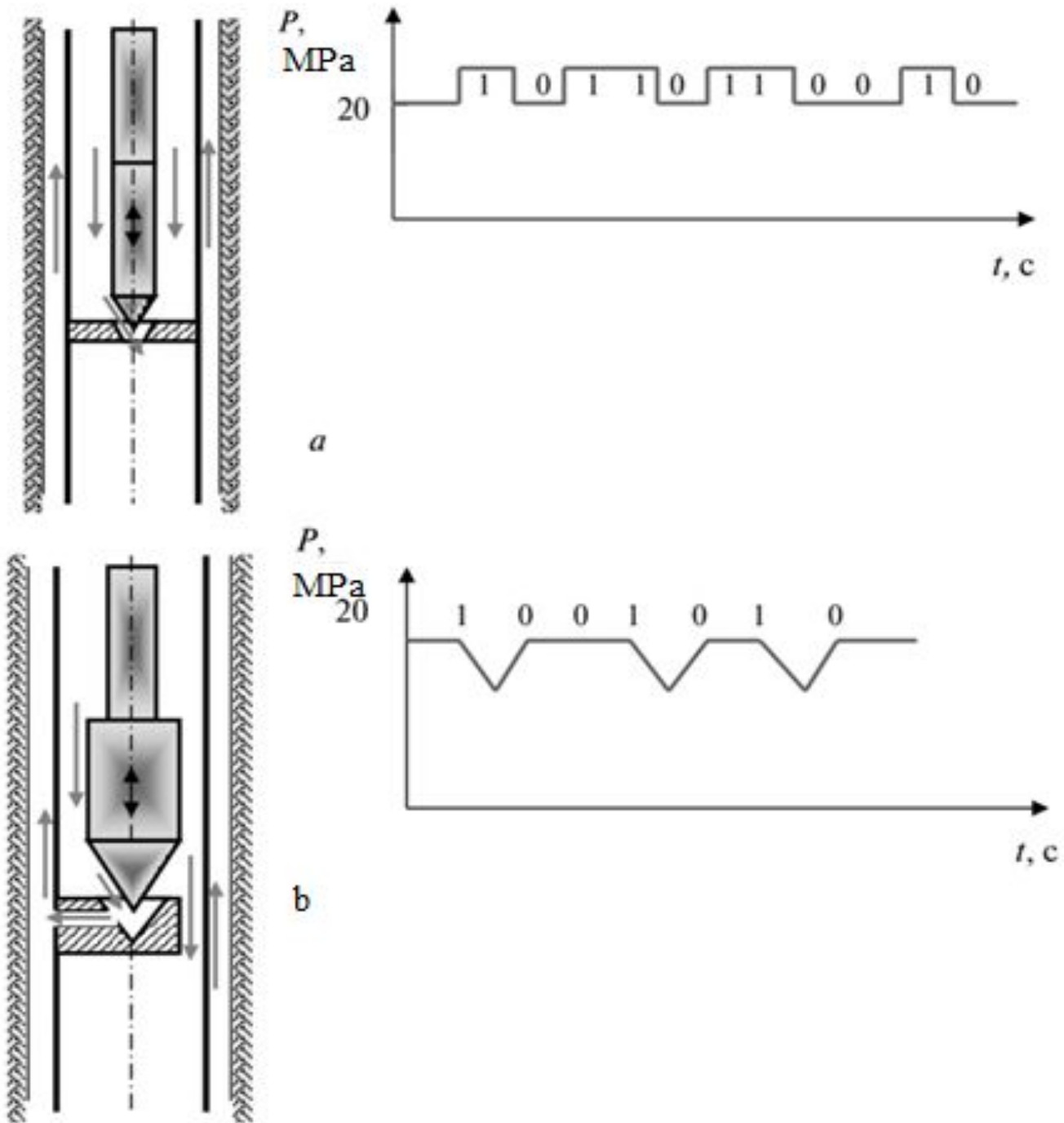


Figure 3
Coding signals in the
hydraulic communication
channel

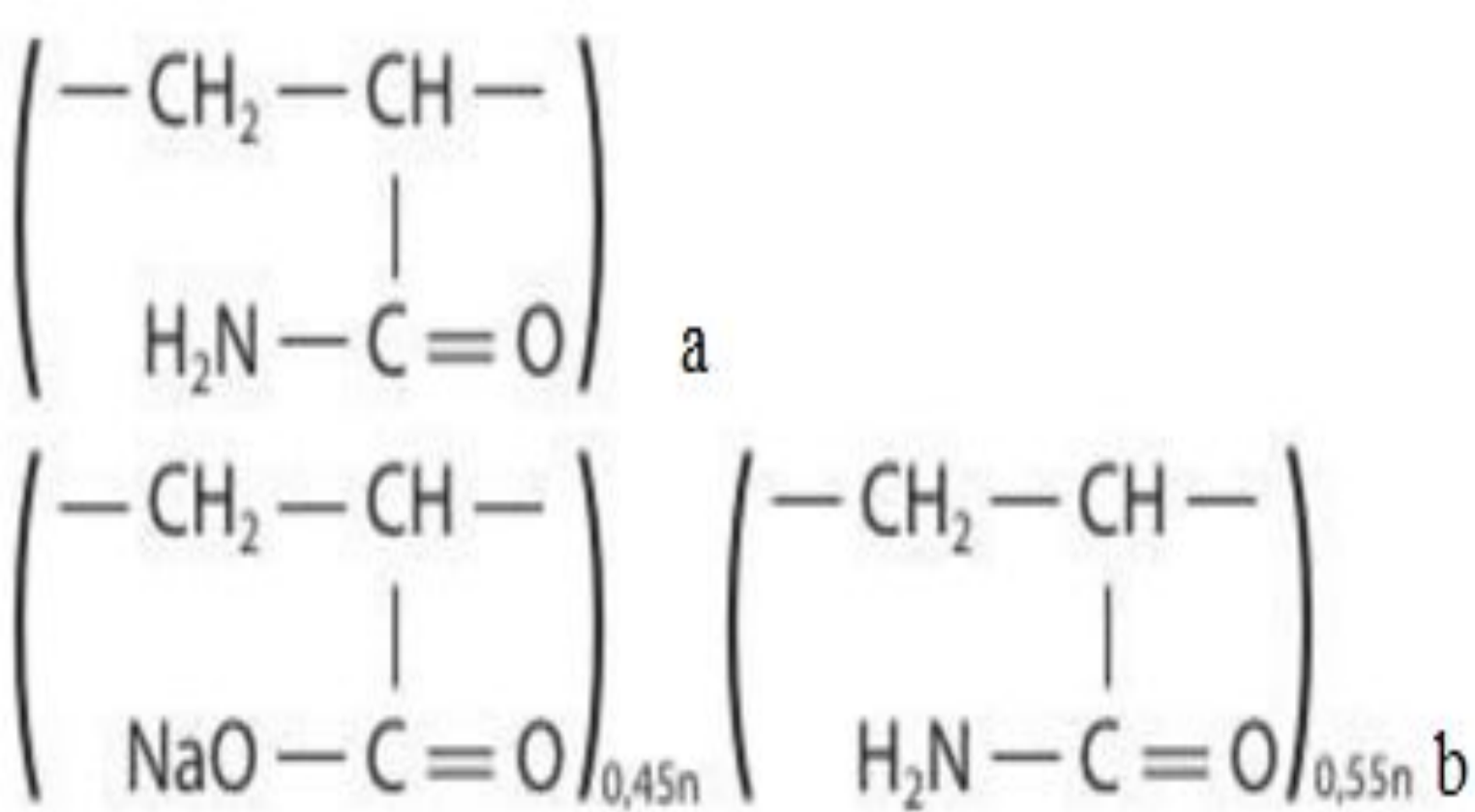


Figure 4. Scheme of the structures of the molecules of PAA (a) and hypan (b)

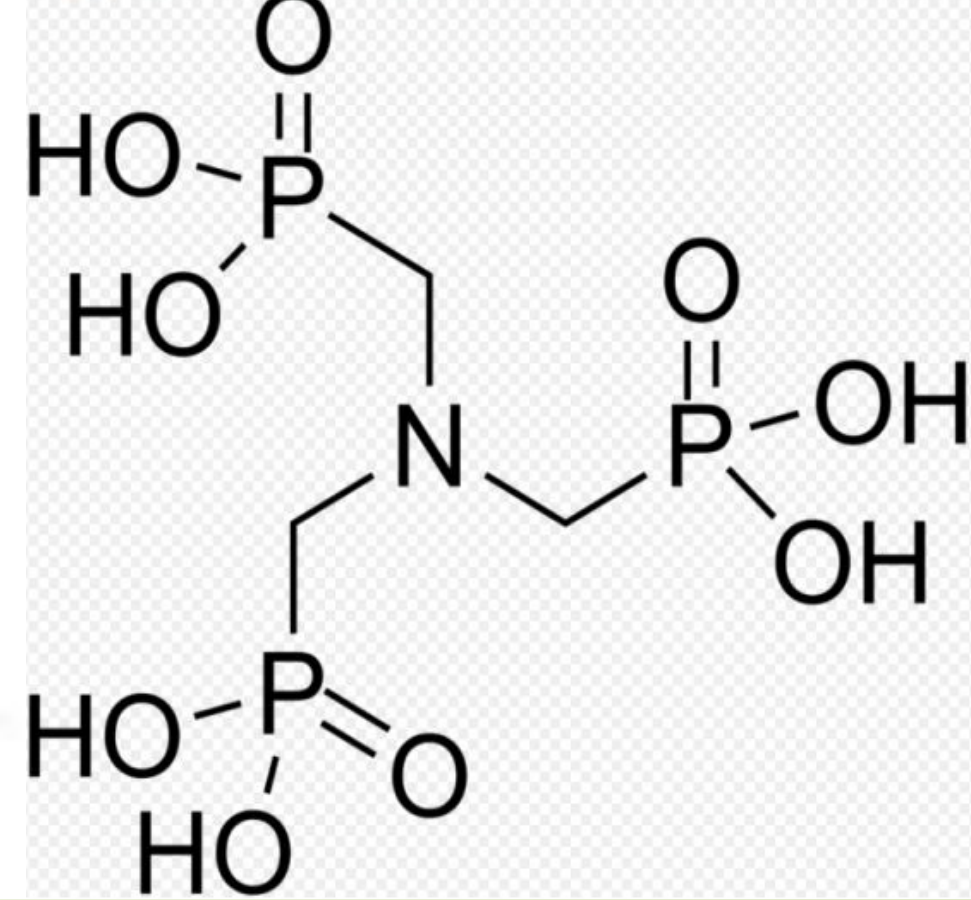


Figure 5. Diagram of the structure of nitrilotrimethylphosphonic acid

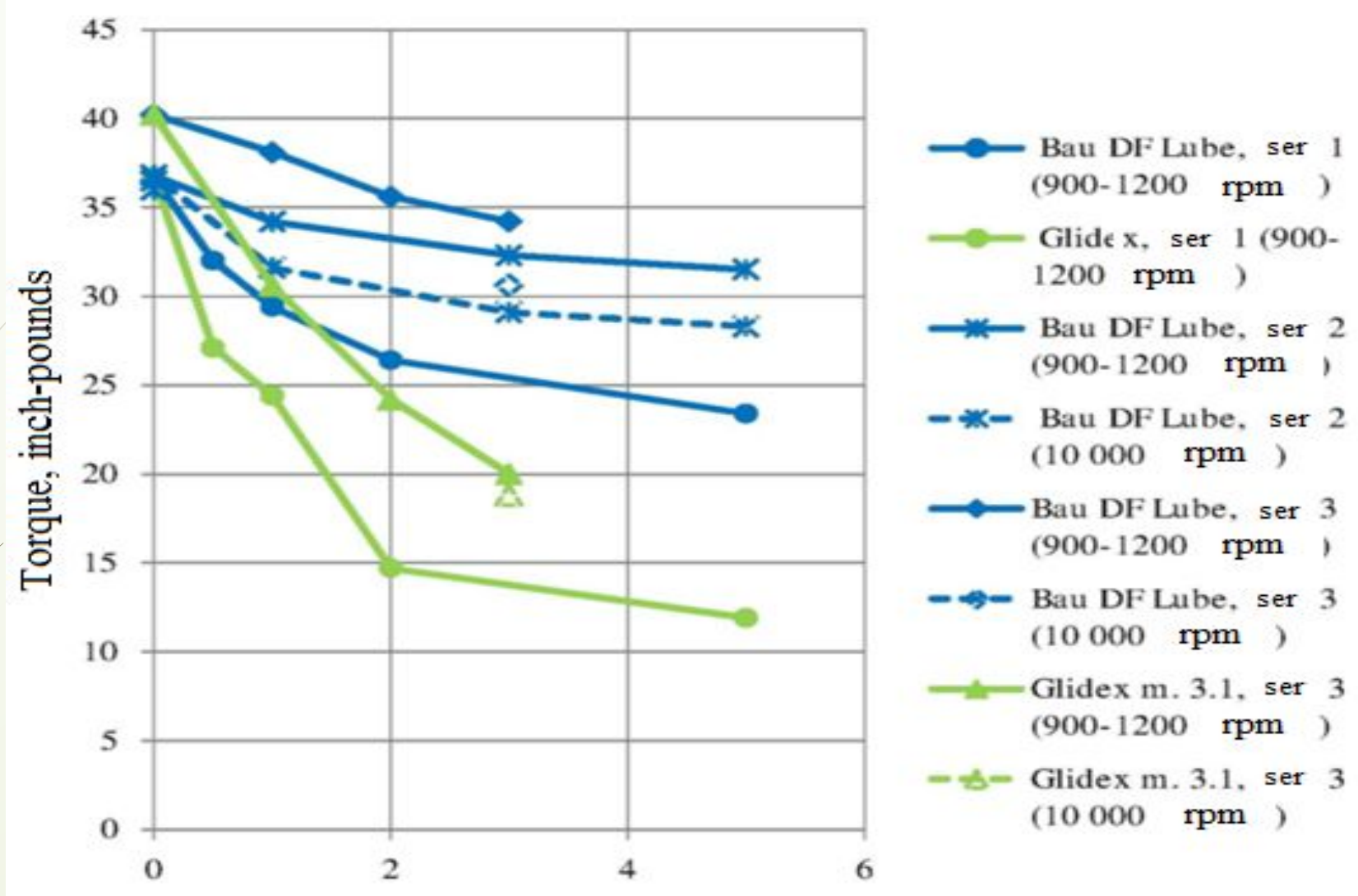
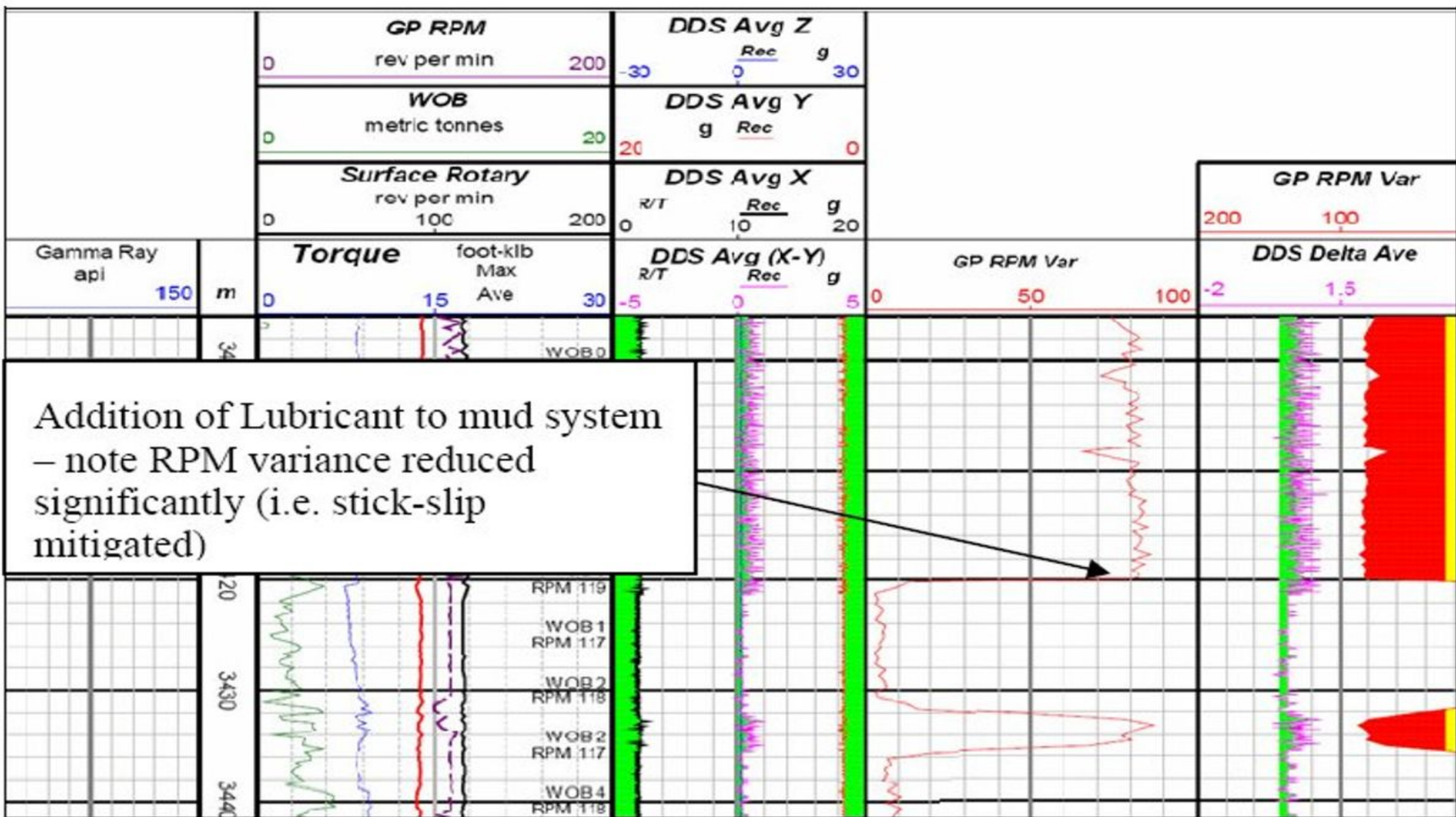


Figure 6. Combined graph of the effect of lubricants on the torque readings in polymer-bentonite solutions

Lubricant additive	Concentration, %	Torque, inch-pounds		Plastic viscosity, centipoise		Yield point, lb/100lb ²		gel strength in 10 second, lb/100lb ²		gel strength in 10 minutes, lb/100lb ²		F in 30 min, ml	Friction factor, grad
Mixing speed, rpm		900—1200	10 ths	900—1200	10 000	900—1200	10 000	900—1200	10 ths	900—1200	10 ths		
Polymer bentonite with a marble crumb													
Without lubrication	0	36,0		25		23		4		21		6,0	2,25
	0	36,5											
	0	36,8											
Bau DF Lube	1	34,2	31,6	29	22	22	29	6	7	22	27		
	3	32,3	29,1	32	14	21	42	4	10	22	30		
	5	31,5	28,3	27	21	30	31	5	10	24	28	4,2	2,75
Polymer bentonite without a marble crumb													
Without lub.	0	40,2		19		17		3		16			
Bau DF Lube	1	38,1		19		17		4		21			
	2	35,6		19		18		4		21			
	3	34,2	30,6	20		19		5		23		5,6	1,50
Glidex m. 3.1	1	30,6		18		19		3		21			
	2	24,2		17		19		2		18			
	3	20,0	18,8	20	21	16	20	2	4	18	22	5,4	2,00



Thanks for attention

