

## C l a i m s

1. A probe arrangement (1) for pressure measurement of a water phase inside a hydrocarbon reservoir (12), the probe arrangement (1) comprises a probe (3) comprising a body (5) with a pressure measuring chamber (7) and at least one opening (10) to the pressure measuring chamber (7) for introduction of water from the water phase to the pressure measuring chamber (7), wherein at least a portion of a surface of the body (5) at said at least one opening (10) is arranged with a hydrophilic characteristic,  
c h a r a c t e r i s e d i n t h a t  
the probe arrangement (1) comprises a displacement mechanism (46) adapted to displace the probe (3) from a first position, where said at least one opening (10) of the probe (3) is located outside the reservoir (12), to a second position, where said at least one opening (10) of the probe (3) is located at a position inside the reservoir (12) in which surface active components have a concentration less than 0.1 millimole/litre.
2. The probe arrangement (1) according to claim 1, wherein, in the second position, said at least one opening (10) of the probe (3) is located at a position inside the reservoir (12) in which a change from an initial water saturation in the reservoir (12) is less than 1%.
3. The probe arrangement (1) according to any of claim 1-2, wherein, in the second position, said at least one opening (10) of the probe (3) is located at least 10 cm into the reservoir (12), preferably at least 50 cm into the reservoir (12).
4. The probe arrangement (1) according to any of claim 1-3, wherein the probe arrangement (1) comprises a tapered displacement head (60) comprising an inner room (62) adapted to enclosing the probe (3), a first passage (64) to the inner room (62) and a second passage (66) out of the inner room (62) into the reservoir (12) and a sealing member (68) for sealing an opening of said second passage (66), wherein the displacement head (60) is adapted to be forced into the reservoir (12) and thereby forming an opening in the reservoir (12).
5. The probe arrangement (1) according to any of claim 1-4, wherein the probe arrangement (1) comprises a drilling mechanism (50) for forming a further opening in the reservoir (12).
6. The probe arrangement (1) according to 5, wherein the drilling mechanism (50) comprises means for introducing a fluid into the opening and removing the fluid together with residual material from the opening, which fluid is insoluble or essentially insoluble in water.
7. The probe arrangement (1) according to any of claim 5-6, wherein said inner room of the displacement head is adapted to enclosing a drilling head of the drilling mechanism (50).

8. The probe arrangement (1) according to any of claim 1-7, wherein the probe (3) comprises a further sealing member (72) configured to cover said at least one opening (10) from exposure to surface active components at a concentration equal to or higher than 0.1 millimole/litre.
- 5 9. The probe arrangement (1) according to claim 8, wherein the further sealing member (72) comprises a casing extending over said at least one opening (10) and mainly comprising a glass material.
- 10 10. The probe arrangement (1) according to any of claim 8-9, wherein the probe (3) comprises a spacing between the further sealing member (72) and the surface of the body (5) of the probe (3), and wherein the probe (3) comprises a flowable suspension (74) with hydrophilic properties arranged in said spacing.
11. The probe arrangement (1) according to claim 10, wherein the flowable suspension (74) mainly comprises a granular combination of kaolinite and water.
- 15 12. A method for pressure measurement of a water phase inside a hydrocarbon reservoir (12) by means of a probe arrangement (1) according to any of claim 1-11, wherein the method c h a r a c t e r i s e d i n that the method comprises the step of:
  - forming an opening into the reservoir (12) by forcing the tapered displacement head (60) into the reservoir (12),
  - 20 - removing or penetrating the sealing member (68), and
  - introducing the probe (3) into the reservoir (12).
- 25 13. The method according to claim 12, wherein the method comprises:
  - forming a further opening into the reservoir (12) by means of the drilling mechanism (50), and
  - introducing the probe (3) into the further opening and into the reservoir (12).