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Your ref.: 61275NO01
Application no.: 20170655 (please include in your reply)
Applicant: Statoil Petroleum AS
Due date: 2024.09.26

Office action in patent application no. 20170655

Basis of the opinion

Description received 2017.04.20 dated 2017.04.20.
Claims received 2017.04.20 dated 2017.04.20.
Drawings received 2017.04.20 dated 2017.04.20.

Conclusion

The subject matter of claims 1 to 35 does not meet the criteria for patentability.

Results of the novelty search

Reference is made to the following documents:

- D1: RU 2396416 C1
- D2: RU 2227201 C2
- D3: WO 2014/060949 A2
- D4: US 4144936 A
- D5: RU 2370625 C1

Assessment of patentability

The following is a reasoned statement with regard to novelty and inventive step, ref. Norwegian Patents Act, Section 2, first paragraph.

Novelty

Document D1 is considered to be the closest prior art to the subject matter of the invention according to the independent method claim 1. Document D1 describes a method for removing a portion 1 of the casing 2 from a wellbore comprising a cathode wherein the cathode is connected to the negative pole of a power source 3 and connecting the iron-containing casing to the positive pole. Injecting an electrolyte into the well bore, wherein the electrolyte contacts the casing and the cathode. Applying a current so that the iron in the casing is oxidized to iron cations allowing the iron cations to dissolve in the electrolyte, see page 4 line 1 to page 5 line 1. The invention according to the independent method claim 1 differs from D1 in that the electrolyte is removed from the well bore. The subject matter of claim 1 is new.



The subject matter of the independent apparatus claim 22 differs from D1 in that a means for removing electrolyte from the well bore and a tank for electrolyte wherein is in fluid connection with the first fluid line. Therefore, the claim 22 is new.

Both independent method claims 32 and 33 refers to claim 1, and since claim 1 is new, the subject matter of both claim 32 and 33 is therefore novel.

Inventive step

In view of D1, the objective technical problem to be solved by the method according to claim 1 is how to remove a portion of the casing before plugging the well. The method according to claim 1 solves this by allowing the iron cations dissolves in the electrolyte and removing the electrolyte from the well bore. D1 do not mention anything about what will become of the electrolyte after the casing portion has been dissolved. It is known from D2 to remove a portion of a casing by using electrolytes. D2 also mention that «*The electrolyte was pumped out and the entire assembly was raised to the surface*», see page 4. It is obvious for a person skilled in the art facing the proposed problem to combine the method to remove the electrolytes from the well that is known from D2 with the method for removing a portion off the casing known from D1 to reach the method according to claim 1. Thus, the subject matter according to claim 1 does not involve an inventive step.

The same reasoning as for claim 1 applies, *mutatis mutandis*, to the subject matter of the corresponding independent apparatus claim 22, which therefore is also considered not inventive.

In view of D1, the objective technical problem to be solved by the method according to claim 32 is how to determine how much of the portion of the casing that is oxidized. The method according to claim 32 solves this by determining the amount of hydrogen liberated in the process. It is known from D3 a hydrogen sensor for determining the amount of hydrogen in a fluid medium in a wellbore, and the sensor is used for monitoring the corrosion of metal in a downhole tool, see paragraph 29. It is obvious for a person skilled in the art facing the proposed problem to combine the electrochemical process for dissolving a portion of the casing known from D1 with the hydrogen sensor from D3 to reach the method according to claim 32. Thus, the subject matter according to claim 32 does not involve an inventive step.

In view of D1, the objective technical problem to be solved by the method according to claim 33 is how to plug and abandon a well. The method according to claim 33 solves this by using electrolyte and currents to dissolve a portion of the casing by oxidizing. It is known from D4 a method for electrochemical milling of the upper part of a well (wellhead and casing) by suppling electrolyte and current for dissolving the casing, and then plug and abandon the well, see column 5 lines 5 to 12 and claim 1. It is obvious for a person skilled in the art facing the proposed problem to combine the electrochemical process for dissolving a portion of the casing from D1 with the plugging and abandonment from D4 to reach the method according to claim 33. Thus, the subject matter according to claim 33 does not involve an inventive step.

The distinguishing feature of the dependent claims 2 to 21, 23 to 31 and 34 and 35 are either known from D1 to D4 or merely represent normal design options for the skilled person. The subject matter of claims 2 to 21, 23 to 31, 34 and 35 therefore does not contain any feature that meets the requirements of inventive step.

Certain defects and observations

Independent claims 1, 22, 32 and 33 are not in two-part form which in the present case would be appropriate, ref. Regulations to the Norwegian Patents Act (Patent Regulations), Section 6. See also Examination Guidelines, part C, Chapter III, 2.2.3 (in Norwegian only). Those features known in prior art should be placed in the preamble and the remaining features should be included in the characterising part.

The features of claims should be provided with reference signs in parentheses to increase the intelligibility of the claim. See Examination Guidelines, part C, Chapter III, 4.12 (in Norwegian only).

The unit of measure employed in the description is not additionally expressed terms of the units stipulated in Examination Guidelines part C, chapter II, 3.4.4. Values must be expressed in acknowledged international units (in Norwegian only).

The title does not describe the invention, see Examination Guidelines, part C, Chapter II, 2 (in Norwegian only).

Instructions

It is not at present apparent which part of the application could serve as a basis for new, allowable claims.

Should the applicant nevertheless regard some particular matter as patentable, new independent claims should be filed, together with dependent claims if appropriate.

If you amend the patent claims, you must state where in the application as filed support for the amendment is found, ref. Regulations to the Norwegian Patents Act (Patent Regulations), Section 20.

If you file an amended description, you must specify which parts of the description are not in accordance with the previously filed description and specify in which way the amendments imply anything new with respect to the substantive content, ref. Patent Regulations, Section 21.

Time limit for response

You are invited to submit a written response within the due date above. You may respond via [Altinn](#). If you fail to respond, the application will be shelved. However, the processing of the application may be resumed by paying a fee. Ref. Norwegian Patents Act, Section 15, third paragraph and Regulation Relating to Payments etc. to the Norwegian Industrial Property Office and the Board of Appeal for Industrial Property Rights (Regulation on fees), Section 26. You may request an extension of the due date, see «patentretningslinjene del A, kap. I, punkt 5.1» Examination Guidelines, part A, Chapter I, 5.1 (in Norwegian only). This must be done within the due date.

For general provisions regarding submitting of documents and payments, see Regulation on fees, Sections 1-6 and 8.

Additional information to the applicant

For the application to be approved for grant of patent you must submit a translation into Norwegian of the approved claims, see Norwegian Patents Act, Section 21, third paragraph and Patent Regulations, Section 33a.



For your information

Relevant laws and regulations, as well as Examination Guidelines are available on our webpage, www.nipo.no.

Information to applicants using Altinn: You will find cited publications linked in the enclosed search report or as electronic attachments. They will be forwarded in paper format only if not available in electronic format or if protected by copyright.

Please contact us if you have any questions.

Sincerely,

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Enclosures: search report