

Commissioner's Decision #1502

Décision du commissaire #1502

TOPICS: J00 Meaning of Art
J40 Mental Steps
O00 Obviousness

SUJETS: J00 Signification de la technique
J40 Processus psychologique
O00 Évidence

Application No: 2,809,128

Demande no: 2 809 128

IN THE CANADIAN PATENT OFFICE

DECISION OF THE COMMISSIONER OF PATENTS

Patent application number 2,809,128, having been rejected under subsection 30(3) of the *Patent Rules* as they read immediately before October 30, 2019, has consequently been reviewed in accordance with paragraph 199(3)(c) of the *Patent Rules* (SOR/2019-251). The recommendation of the Board and the decision of the Commissioner are to refuse the application.

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INTRODUCTION

- [1] This recommendation concerns the review of rejected Canadian patent application number 2,809,128 (“the instant application”), which is entitled “METHOD AND APPARATUS FOR MUD PULSE TELEMETRY” and is owned by HALLIBURTON ENERGY SERVICES, INC. (“the Applicant”). A review of the rejected application has been conducted pursuant to paragraph 199(3)(c) of the *Patent Rules*. As explained in more detail below, our recommendation is that the Commissioner of Patents refuse the application.

BACKGROUND

The Application

- [2] The instant application was filed in Canada on June 23, 2004 and was laid open to public inspection on February 3, 2005.
- [3] The instant application relates to a mud pulse telemetry method used in a drilling operation wherein information is transmitted from a subsurface downhole device through a mud column. Information is transmitted through pulses generated in the column of mud and the information is received at the surface. The instant application discloses a method of transmitting such information wherein the time tag for each data sample is derived from the time tag of a most recent sample and the sampling rate. Alternatively, the time tag for each sample may be derived from the time tag of one sample and a corresponding counter value attached to each data sample indicative of the temporal relationship between it and the known time tag. Each of these methods obviates the need for the transmission of the time tags for each sample, freeing transmission bandwidth in the mud column for more sample data.

Prosecution History

- [4] On May 18, 2016, a Final Action (“FA”) was written pursuant to subsection 30(4) of the *Patent Rules* as they read immediately before October 30, 2019. The FA stated that the instant application is defective on the grounds that all of the claims 1-4 on file at the time of the FA (“claims on file”) encompass non-statutory subject-matter and therefore do not comply with section 2 of the *Patent Act* and that the claims on file would have been obvious and therefore do not comply with section 28.3 of the *Patent Act*.
- [5] In a November 14, 2016 response to the FA (“R-FA”), the Applicant did not propose amendments to the claims on file. Arguments in favor of the patentability of the claims on file were submitted.
- [6] As the Examiner considered the application not to comply with the *Patent Act* and *Patent Rules*, the application was forwarded to the Patent Appeal Board (“the Board”) for review on February 14, 2017 along with an explanation outlined in a Summary of Reasons (“SOR”). The SOR set out the position that the claims on file were still considered to be defective due to non-statutory subject-matter and obviousness.
- [7] In a letter dated February 17, 2017, the Board forwarded to the Applicant a copy of the SOR and requested that the Applicant confirm its continued interest in having the application reviewed.
- [8] In a letter dated March 31, 2017, the Applicant confirmed its interest in having the review proceed.
- [9] The present panel (“the Panel”) was formed to review the instant application under paragraph 199(3)(c) of the *Patent Rules*.
- [10] In a preliminary review letter (“PR letter”) dated April 29, 2019, the Panel set out its preliminary analysis of the statutory subject-matter and obviousness issues with respect to

the claims on file. The Panel also provided the Applicant with an opportunity to make oral and/or written submissions.

- [11] The Applicant confirmed on May 22, 2019 that it did not wish to attend an oral hearing. The Applicant provided written submissions in response to the PR letter (“R-PR”) on May 29, 2019, including a proposed set of claims 1-5 (“proposed claims”).

ISSUES

- [12] The issues to be addressed by the present review are whether:

- claims 1-4 on file are directed to statutory subject-matter; and
- claims 1-4 on file would have been obvious.

- [13] If the claims on file are considered to be defective, we may turn to the proposed claims and consider whether they constitute amendments necessary for compliance with the *Patent Act* and *Patent Rules*.

LEGAL PRINCIPLES AND OFFICE PRACTICE

Claim Construction

- [14] In accordance with *Free World Trust v Électro Santé Inc*, 2000 SCC 66, essential elements are identified through a purposive construction of the claims done by considering the whole of the disclosure, including the specification and drawings (see also *Whirlpool Corp v Camco Inc*, 2000 SCC 67 at paras 49(f) and (g) and 52). In accordance with the *Manual of Patent Office Practice* [MOPOP], §12.02 (revised June 2015), the first step of purposive claim construction is to identify the person skilled in the art and their relevant common general knowledge (“CGK”). The next step is to identify the problem addressed by the inventors and the solution put forth in the application. Essential elements can then be identified as those required to achieve the disclosed solution as claimed.

Statutory Subject-Matter

[15] The definition of invention is set out in section 2 of the *Patent Act*:

“invention” means any new and useful art, process, machine, manufacture or composition of matter, or any new and useful improvement in any art, process, machine, manufacture or composition of matter.

[16] The Office examination memo PN2013-03 entitled “*Examination Practice Respecting Computer-Implemented Inventions*” (“PN2013-03”) clarifies examination practice with respect to the Office’s approach to computer implemented inventions.

[17] As stated in *PN 2013-03*, Office practice considers that where a computer is found to be an essential element of a construed claim, the claimed subject-matter will generally be statutory. Where, on the other hand, it is determined that the essential elements of a construed claim are limited to matter excluded from the definition of invention (for example, fine arts, methods of medical treatment, features lacking in physicality, or claims where the subject-matter is a mere idea, scheme, rule or set of rules), the claim will not be compliant with section 2 of the *Patent Act*.

Obviousness

[18] The *Patent Act* requires that the subject-matter of a claim not be obvious to a person skilled in the art. Section 28.3 of the *Patent Act* states:

28.3 The subject-matter defined by a claim in an application for a patent in Canada must be subject matter that would not have been obvious on the claim date to a person skilled in the art or science to which it pertains, having regard to

(a) information disclosed more than one year before the filing date by the applicant, or by a person who obtained knowledge, directly or

indirectly, from the applicant in such a manner that the information became available to the public in Canada or elsewhere; and
 (b) information disclosed before the claim date by a person not mentioned in paragraph (a) in such a manner that the information became available to the public in Canada or elsewhere.

[19] In *Apotex Inc v Sanofi-Synthelabo Canada Inc*, 2008 SCC 61 at paragraph 67 [*Sanofi*], the Supreme Court of Canada stated that it is useful in an obviousness inquiry to use the following four-step approach:

- (1) (a) Identify the notional “person skilled in the art”;
 (b) Identify the relevant common general knowledge of that person;
- (2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;
- (3) Identify what, if any, differences exist between the matter cited as forming part of the “state of the art” and the inventive concept of the claim or the claim as construed;
- (4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

ANALYSIS

Claim Construction

[20] As noted in the PR letter, there are no issues in the present case as to the meaning or scope of any terms in the claims on file. Therefore, the analysis below focusses on the determination of those features that are essential and those that are not.

The person skilled in the art

[21] In the PR letter, as was the case in the FA, the person skilled in the art was characterized as:

a team consisting of an engineer or technician skilled in drilling operations and an engineer skilled in communications.

[22] The above characterization was not disputed by the Applicant in the R-FA or in the R-PR. We apply it in our analysis below.

The relevant common general knowledge

[23] In the PR letter, the relevant CGK was set out as follows:

The person skilled in the art would possess the following common general knowledge. The person skilled in the art is knowledgeable of downhole surveying and telemetry. He or She is skilled in the collection and analysis of data regarding the borehole and surrounding formation during drilling operations. Downhole sensors and tools that were common general knowledge to the skilled person for gathering downhole data include logging-while-drilling and measuring-while-drilling devices. The downhole data is typically transmitted to the surface, either immediately or at a later time, using a telemetry system, such as mud pulse telemetry. The transmission of the data is limited by transmission speeds within the mud column; depending on the rate at which data is acquired, some of the data may not be transmitted.

It was common general knowledge in the art that when analyzing the downhole data at the surface, it is important to know when and where in the borehole the data was acquired. Associating data with the time of measurement, i.e. using a time stamp or a time tag, was common general knowledge in the art, a routine activity for the person skilled in the art. Time tagging is one known means of differentiating between measurement samples, providing a unique identifier for each sample. Another commonly known means of providing a unique identifier for each sample is to assign a unique number to each sample, for example by using a counter, as a means of identifying and sorting data. The use of counter values for performing calculations and analysing data was ubiquitous in mathematics and would have been very well-known to the person skilled in the art.

- [24] We noted in the PR letter that the Applicant did not take issue with the above in the R-FA, except to say that no admission was being made of “any potential implication that use of counter values was common general knowledge in the art of analyzing downhole.”
- [25] In the R-PR, the Applicant for the first time contended that no evidence had been provided for the CGK of the person skilled in the art. However, we note that the points of CGK in the first paragraph above are directly supported by the information presented as “Background” information in the instant application. Such admissions may be taken as binding on the Applicant. Given that the Applicant is describing well-known drilling operations such as measuring-while-drilling and logging-while-drilling operations, we take this information to have been part of the relevant CGK (*Corning Cable Systems LLC v AGC*, 2019 FC 1065 at para. 56). With respect to the points of CGK set out in the second paragraph above, since the typical reason for gathering information regarding the changes to the borehole and surrounding formation is to track the changes over time during the drilling operations, the use of some type of time stamp or time tag associated with the measurements would have been required. With respect to the use of counter values in data gathering and analysis, as noted above, the Applicant has already stated in the R-FA that no issue was taken with this more general point of CGK.

The problem to be solved

- [26] In the PR letter, after considering the Applicant’s submissions in the R-FA, the Panel arrived at the problem to solved based on the description of the instant application [emphasis added]:

The description of the instant application at page 1, lines 22-28 states:

Other information gathered downhole may be needed at the surface as soon as the information is acquired. A limiting factor in sending data from downhole devices to the surface (or for that matter from the surface to downhole devices) is the speed at which the information may be transmitted within the mud column. Where the acquisition rate by the downhole device is greater than the transmission rate, some of the information gathered downhole may

not be sent to the surface. In cases such as this, it may be that only every other or every third reading of the “real time” parameter may be sent to the surface.

Based on the above, the problem to be solved could be characterized as the possibility of unintentional down sampling of real-time downhole data due to an insufficient transmission rate of mud pulse telemetry relative to a data acquisition rate. We note that this relates particularly to the subject-matter of claim 1 on file.

The description of the instant application at page 1, lines 12-21 states:

In measuring-while-drilling (MWD) and logging-while-drilling (LWD) operations, information regarding the borehole and surrounding formation are gathered during the drilling process. Information gathered may not be needed at the surface immediately, but that information may be required before the tool returns to the surface. For information such as this, U.S. Patent No. 5,774,420 may describe a system whereby stored data (also known as historical data) may be sent from downhole devices to the surface at the request of the surface equipment. Retrieval of the historical information may take place during times when drilling is temporarily paused, such as when the borehole is being conditioned (e.g. by the continuous flow of drilling fluid), or when the tool becomes stuck in the borehole. Transmission of historical information from downhole to the surface may take several hours using known techniques.

In contrast to the previously cited passage, the above suggests that the problem to be solved could be alternatively characterized as being that transmission of downhole historical information via mud pulse telemetry can require long periods of time when active drill operation has ceased. This could lead to unwanted downtime for drilling operations, or incomplete transmission of the desired historical data. We note that this relates particularly to the subject-matter of claim 3 of the instant application.

In our preliminary view, these two seemingly alternative problems can be expressed in a generalized form as a need to “speed the effective transmission rate of information in a mud pulse telemetry system”, as expressed at page 1, lines 29-30 of the instant application and set out by the Applicant in the R-FA. It is understood that reference to the 'effective' transmission rate alludes to the rate at which the downhole data (measurements and associated times) can be recreated, at least approximately, at the surface as opposed to an increase in the transmission bitrate of mud pulse telemetry.

- [27] In the R-PR, the Applicant agreed that “the PROBLEM and SOLUTION identified in the Preliminary Review represent a reasonable characterization of the Application.” We therefore apply the problem set out above in our analysis.

The solution

[28] In the PR letter, in response to the Applicant's contention in the R-FA that there were two solutions, we identified the solution as follows [emphasis added] (Note: the reference to *MOPOP* is to the pre-October 30, 2019 version):

The identification of the solution is not based simply on the language of the claims, since the essential elements of the claims must be determined by which element or combination of elements in the claims provide the solution (*MOPOP* §13.0.02c). In our preliminary view, in light of the problem to be solved identified above, the general solution that addresses the problem can be characterized as allocating to the available bandwidth in a mud pulse telemetry system a greater proportion of sample datums relative to time tags (up to the extent of sending only sample datums). This in contradistinction to conventional bandwidth allocation which comprise sample datums in equal proportion to time tags. Sample datums transmitted without associated time tags have estimated time tags generated by calculating/determining them at the surface. Surface-generated time tags are based on a reference time tag and known sampling period increments, wherein the resultant time tags are reasonable estimates of actual data sample times. Reference time tags are either back-calculated from a known sample-to-surface reception time lag (e.g., method of claim 1) or are actual times associated with sample datums (e.g., method of claim 3).

[29] In the R-PR, as noted in relation to the problem, the Applicant agreed with the above identification of the solution. We therefore apply it in our analysis.

Essential Elements

[30] In the PR letter, we set out our preliminary view that independent claims 1 and 3 on file contain the following essential elements, respectively:

Claim 1

- sending a list or lists of parameter samples;
- calculating a time tag for the most recent sample of a plurality of samples; and
- calculating a time tag for the remaining samples based on the time tag for the most recent sample and a period at which the samples were taken.

Claim 3

- sending a list or lists of parameter samples;
- a first list comprising a time tag for a datum of a set of data;
- a second list comprising a plurality of datums from sequential samples, and a counter value relating the plurality of datums to the datum with the time tag of the first list; and
- determining the time tag for each of the plurality of datums in the second list based on the time tag of the first list, the counter value, and a time period between sampling that creates each datum.

[31] We explained that, contrary to the FA:

in light of the problem to be solved and the resulting solution, which relates to allocating a greater proportion of the available bandwidth for telemetry to sample datums rather than corresponding time tags, the essential elements of the independent claims 1 and 3 do include a step of sending a list or lists of parameter samples, since the reallocation of bandwidth occurs as part of the data transmission.

[32] However, we also explained that in our preliminary view, the downhole device, the compressed nature of the parameter samples (in claim 1 on file), and the processor are non-essential elements, stating:

[t]here is no problem associated with the downhole device itself and the solution relates to the reallocation of the available transmission bandwidth rather than with any collection of the parameter data.

With respect to the compressed nature of the data in claim 1 on file, whether or not the parameter sample data is compressed, the advantage of having more bandwidth available for the parameter sample data, as a result of not transmitting time tag data, is still realized.

With respect to the processor, in our preliminary view, the instant application does not set out a computer problem (see *PN2013-03*). The description does not detail a specific problem with the operation of a computer; controlling a chip, a system component or technical architecture element; the description does not emphasize challenges or deficiencies in prior computers; and there is not a significant level of detail describing technical details, such as the algorithm or logic performed by the computer. While there is some detail regarding the

method of data compression to be used, as noted above, the data compression is not an essential element of the claims. The detail regarding the data compression methods is instead relevant to the subject matter of the parent Patent Application no. 2,532,115. The essential elements of the claims of the instant application are focussed on the reallocation of the available transmission bandwidth through the reduction in transmission of time tag data. Further, while the use of the processor to perform the required time tag calculations expedites the mathematical manipulations, it does not have a material effect on the mathematical operations themselves.

With respect to dependent claims 2 and 4, in our preliminary view, based on the problem to be solved and corresponding solution, which relate to the need to “speed the effective transmission rate of information in a mud pulse telemetry system” and the reallocation of the available bandwidth, the elements of these dependent claims do not address the problem or relate to the solution and are therefore non-essential.

- [33] In the PR letter, the Applicant made no submissions in response to the Panel’s preliminary view of the essential elements. As noted above, the Applicant agreed with the preliminary identification of the problem and solution used to delineate the essential elements. We therefore proceed with the list of essential elements set out above.

Statutory Subject-Matter

- [34] The FA indicated that the essential elements of the claims on file were directed to mere calculations and therefore not within the scope of section 2 of the *Patent Act*. In assessing the essential elements set out above, we set out our preliminary view, referring to *Amazon.com Inc v Canada (Attorney General)*, 2011 FCA 328 [*Amazon*], that:

in light of our preliminary view above of the essential elements of independent claims 1 and 3 on file, the essential elements are not directed to mere calculations. While the back calculation of time tag data allows for the preferential transmission of a greater amount of parameter sample data, the combination of essential elements of the claims is focussed on that preferential allocation of the available data transmission bandwidth, which involves the sending or transmission of such reallocated data. The intentional weighting of the amount of parameter sample data over the amount of time tag data, means that contrary to conventional transmission methods, in the claims on file, the loss of parameter sample data due to transmission bandwidth limitations is reduced.

PN2013-03 indicates that a good indicator that a claim is directed to statutory subject-matter is that it provides a technical solution to a technical problem. In our preliminary view, the problem to “speed the effective transmission rate of information in a mud pulse telemetry system” is a technical one. Further, the solution of “allocating to the available bandwidth in a mud pulse telemetry system a greater proportion of sample datums relative to time tags (up to the extent of sending only sample datums)” is also in our preliminary view, a technical one. The result is the more effective transmission of parameter sample data in such a system through the combination of steps set out above as being essential. Further, in the words of *Amazon* at para. [66], the reallocation of transmission bandwidth and the associated step of data transmission “manifests a discernable effect or change.”

[35] We were therefore of the preliminary view that independent claims 1 and 3 on file, as well as claims 2 and 4 that depend from them are directed to statutory subject-matter and are therefore compliant with section 2 of the *Patent Act*.

[36] In the R-PR, as noted above, the Applicant agreed with the problem and solution as identified in the PR letter and submitted that the claims on file are directed to statutory subject-matter.

[37] In light of the above, we conclude that claims 1-4 on file are directed to statutory subject-matter and are therefore compliant with section 2 of the *Patent Act*.

Obviousness

(1)(a) Identify the notional “person skilled in the art”

[38] The person skilled in the art has been set out above under Claim Construction at paragraph [21].

(1)(b) Identify the relevant common general knowledge of that person

[39] The relevant CGK has also been identified above under Claim Construction at paragraph [23].

(2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it

[40] In the PR letter, the Panel considered the combination of essential elements of the claims on file identified under Claim Construction to be representative of the inventive concepts of the claims. We apply this view below.

(3) Identify what if any differences exist between the matter cited as forming part of the “state of the art” and the inventive concept of the claim or the claim as construed

[41] In the PR letter, we expressed our preliminary view that prior art document D1 as cited in the FA was the most relevant piece of prior art. The other document applied in the FA, D2, was not applied by the Panel. D1 is identified below and its content as discussed in the PR letter is set out:

D1: US 5,774,420 Heyse et al. June 30, 1998

D1 discloses a method for determining time tags of a plurality of data in a mud pulse telemetry system comprising: transmitting a downhole time tag of a first sample of a plurality of samples (“date-time stamp”, column 4, line 60-62); then subsequently transmitting the plurality of data samples of down hole parameters (column 4, line 60-62); calculating time tags at the surface for remaining samples based on the time tag of the first sample and a period at which samples are taken (column 4, line 60 to column 5, line 10). Apart from the downhole time tag (“date-time stamp”), the only information subsequently transmitted is the plurality of samples. D1 also teaches a control system arranged to transmit real time or historical data (column 2, lines 6-9), and that the data for transmission may be subjected to compression (column 4, lines 25-28).

[42] We expressed our preliminary view that, contrary to the Applicant’s assertions in the R-FA:

it is our preliminary view that D1 does disclose that time tags other than the one initially transmitted are based on the period at which samples are taken, as indicated at column 4, lines 60 to column 5, line 10. Further, D1 indicates that the transmitted data is processed at the surface, which is where the remaining time-date stamps are assigned (see column 5, lines 6-10).

[43] With respect to the differences between claims 1 and 2 on file and D1, we stated [emphasis added]:

In our preliminary view, D1 fails to disclose the step of calculating a reference time tag (i.e. the one for the “most recent sample of the plurality of samples”). Instead, D1 uses an actual time tag associated with a sample as the reference.

As the additional elements of claim 2 on file are non-essential, they do not represent differences with respect to the state of the art.

[44] In comparing D1 with claims 3 and 4 on file we stated [emphasis added]:

In our preliminary view, what D1 fails to disclose is transmission of a plurality of datums and associated counter values, which counter values are indicative of a relationship between the plurality of datums and a reference datum time tag, and using the counter value to determine the time tag for each of the plurality of datums. Instead, D1 transmits the subsequent data in the sequence it was recorded without time tag data.

As the additional elements of claim 4 on file are non-essential, they do not represent differences with respect to the state of the art.

[45] In the R-PR, the Applicant did not make any direct submissions with respect to the differences at step 3 of *Sanofi*. However, with respect to the proposed claims, the Applicant did contend that claim 1 was distinguishable from D1 in that in claim 1 the time tag for the first sample is calculated by the processor at the surface, and that claim 3 was distinguishable from D1 in that in claim 3 the samples do not need to be maintained in chronological or reverse chronological order, the samples being identified by the counter values associated with them. Since these points equally apply to the claims on file we will address them.

[46] In respect of claim 1, we have acknowledged the difference identified by the Applicant in the PR letter, as set out above, with the exception of the inclusion of the processor, which is non-essential. In respect of the samples being identified by the associated counter values in claim 3, we agree that D1 does not disclose the transmission of a plurality of datum and associated counter values, which counter values are indicative of a relationship between the datums and a reference datum time tag.

[47] In light of the above, we proceed with the differences as identified in the PR letter and reproduced above.

(4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

[48] In the PR letter, we considered the Applicant's submissions in the R-FA and were of the preliminary view that claims 1 and 2 on file would have been obvious, stating:

In the R-FA at pages 15-17, the Applicant warned against the dangers of an *ex post facto* mosaic of prior art documents, citing various authorities in support of the contention that a person skilled in the art would not look to prior art document D2 to modify the teachings of D1 in order to arrive at the subject-matter of the claims and that only a "mere scintilla of invention" is required by the case law. The Applicant cited additional authorities in support of the principle that a combination invention must be examined as a whole, not broken down into its parts with the parts evaluated separately against the prior art. We agree with the above points.

The Applicant further contended that even if a motivation existed to look to D2, neither document discloses the use of a processor at the surface to calculate time tags for samples based on the calculation of a time tag for the most recent sample and the period at which samples were taken.

Regarding the use of a processor at the surface for determining time tags, this point has been addressed above at *Sanofi* step (3). Further, in our preliminary view, it is not necessary for the person skilled in the art to look to a prior art document such as D2 to arrive at the combination of essential elements that make up the subject-matter of claim 1.

A person skilled in the art knows there is a time lag when transmitting information via mud pulse telemetry from the physical wave propagation through mud and associated processing times. Stated otherwise, they would understand that times associated with downhole event data transmitted to the surface are essentially the same as times associated with the receipt of the data, adjusted by a time correction factor associated with the time lag.

In our preliminary view, given the knowledge of D1, and an understanding of the equivalence between a downhole-recorded time and a lag-adjusted surface-recorded time, the skilled person, faced with the known issue of parameter data loss due to insufficient transmission bandwidth and trying to solve the problem of speeding the effective transmission rate of downhole data, would have immediately recognized the opportunity to further increase the available

bandwidth for parameter data by eliminating the first date-time stamp of D1 and instead using the transmission lag to calculate the time tag for the most recent sample. We note again that D1 discloses the use of real-time data transmission, as would be the case in claim 1 by calculation of the time tag of the most recent sample as a reference. As such, in our preliminary view, the person skilled in the art would come “directly and without difficulty” (*Beloit Canada Ltd v Valmet Oy* (1986), 8 CPR (3rd) 289 (FCA)), cited by the Applicant in the R-FA at page 17) to the subject-matter of claim 1 having regard to D1 and the relevant CGK.

Further, in our preliminary view, even if the other non-essential elements of claim 1 were considered in combination with those identified as being essential, claim 1 would still have been obvious, since the other elements, namely a downhole device, a processor and the compressed nature of the data transmitted, are all features disclosed as part of the system in D1.

With respect to the subject-matter of claim 2, in our preliminary view, even if the elements of this claim were essential, the specification that the most recent sample is the last one in the list transmitted would also have been obvious to the person skilled in the art, since whether the data is organized in historical chronological order or the reverse would be obvious options open to the skilled person in implementing the claimed invention, with no apparent advantage offered by one over the other.

[49] In the R-PR, the Applicant did not make submissions in respect of the obviousness of the claims on file, instead focussing on the proposed claims. Nevertheless, some points made in respect of the proposed claims apply equally to the claims on file, namely, the submission that, with respect to claims 1-2, the need to transmit time tags has been eliminated.

[50] However, the obviousness of the above feature was previously assessed in the PR letter and the Applicant has offered no new reasons in the R-PR why the elimination of the time tags in the manner specified in claims 1-2 would have been unobvious.

[51] With respect to claims 3-4, we stated in the PR letter that:

[i]n the R-FA at page 19, the Applicant contends that D1 does not disclose the calculation of time tags and that including the first time tag in a separate list allows for more control over when data is transmitted. Further, in the Applicant’s view D1 provides no motivation to use a counter value associated with a plurality of datums since in D1 a single list is sent.

As already discussed above, it is our preliminary view that prior art document D1 does indeed disclose the calculation of time tags based on the first date-time stamp and the period at which samples are taken.

With regard to the issue of separate lists being transmitted, given the scope of the language of claim 3, the first “list” can include only the known time tag, with the second list containing the other datums and associated counter values. D1 discloses the initial transmission of the known date-time stamp followed by transmission of the other memory parameter records. Whether the other records are labelled as a “list” does not affect the fact that the data is sequentially transmitted to the surface and then must be correlated with a time tag.

In setting out the relevant CGK above, it was noted that it was common to use counter values as unique identifiers for each sample taken and recorded in association with a data collection process. Further, the advantages and flexibility associated with the use of such counter values, such as the ability to not necessarily transmit the data in sequence or to send data later given that it is correlated with a counter value, would also have been part of the skilled person’s CGK. In our preliminary view, the adoption of the use of counter values, with their associated advantages, in association with downhole data collection and transmission, would have been obvious given that this was a well-known option in gathering and sorting collected data.

Further, as was the case with claim 1 on file, even if the other non-essential elements of claim 3 were considered in combination with those identified as being essential, claim [3] would still have been obvious, for the same reasons as noted with respect to claim 1.

With respect to the subject-matter of claim 4, to the person skilled in the art, even if the elements of this claim were essential, whether the first list or second list is sent first does not affect the use of the transmitted data, once a decision is made to assign counter values to the data of the second list. One option does not offer an advantage over the other. This flexibility is inherent in the use of such counter values.

- [52] In the R-PR, the Applicant submitted that with respect to proposed claims 3-4, only one time tag need be transmitted with a reference sample datum due to the use of the counter values to relate the other sample datums to the reference datum, and that as a result of the use of the counter values, the sample datums need not be in chronological or reverse chronological order. Again, this argument would equally apply to claims 3-4 on file. However, as with claims 1-2 above, the patentability of this feature and its advantages have already been considered and assessed in the PR letter and the Applicant has offered no new reasons why claims 3-4 on file would have been unobvious.

- [53] In the R-PR, the Applicant made general submissions suggesting that the Panel had improperly dismissed certain features of the claims as being part of the relevant CGK. The Panel notes that certain features of the claims have been found to be non-essential as part of the claim construction above, though not because they were part of the relevant CGK. In any case, as set out above from the PR letter, even considering all the features of the claims (essential and non-essential) in combination, the Panel would still be of the view that the claims on file would have been obvious.
- [54] The Applicant also made submissions with respect to the need to properly assess a combination invention, the need to avoid hindsight in assessing obviousness and the standard that requires only a scintilla of inventiveness to support non-obviousness. However, the Applicant made no specific reference to any issues with the Panel's assessment in the PR letter in respect of these points, other than the need to assess features regardless of whether they were part of the relevant CGK, which we have addressed above.
- [55] Further, the Applicant contended that there was no motivation to arrive at the claimed invention based on the prior art, and that it would not have been "obvious to try," per the supplemental assessment of *Sanofi*.
- [56] With regard to the motivation issue, the Panel explained in the PR letter its reasons for the view that the person skilled in the art would have come directly and without difficulty to the claimed invention. Further, the Panel has not applied an obvious to try test in the present case, given the nature of the claimed invention in comparison to that at issue in *Sanofi*.

Conclusion on Obviousness of Claims on File

- [57] Having considered the record before us, including the Applicant's submissions in the R-PR, we conclude that claims 1-4 on file would have been obvious and are therefore non-compliant with section 28.3 of the *Patent Act*.

Proposed Claims

[58] In the R-PR, the Applicant submitted proposed claims 1-5 for consideration containing proposed amendments to claims 1-3 on file and an additional claim 5.

[59] Claim 1 is proposed to be amended by clearly specifying that the list to be sent contains no time tags and by explicitly reciting the method by which the time tag for the most recent sample is calculated. Claim 1 on file already specified that samples were sent and that the time tags for all samples were calculated at the surface, the most recent one being calculated and the others determined based on its value. The specific method of calculating the time tag for the most recent sample, namely, taking into account the travel time, or transmission lag as discussed in the PR letter, has already been considered by the Panel with respect to claims 1-2 on file.

[60] Claim 2 is proposed to be amended by specifying that the samples are ordered such that the most recent sample is the last sample. However, claim 2 on file, the patentability of which has already been considered by the Panel, specifies that the calculation of the time tag for the most recent sample comprises calculating the time tag for the last sample of the list.

[61] Claim 3 is proposed to be amended by specifying that the first list does not comprise any of the plurality of historical data, which thereby limits the first list to the reference time tag. As discussed above, in our view, D1 discloses the initial transmission of a reference time tag. The Applicant also proposes to amend claim 3 by specifying that the processor receives the first and second lists at the surface and that the sample number of each sample datum is identified based on the counter values associated with them. Firstly, the reception of the list by the processor was already inherent in the feature of claim 3 on file that the lists were sent to it. Secondly, it is the use of the counter values that allows the sequence of the samples to be identified. Therefore the identification step was already inherent in claim 3 on file. In summary, the additional features of proposed claim 3 have already been considered by the Panel as part of its consideration of the claims on file.

[62] Proposed new claim 5 specifies that the first list of claim 3 is sent a plurality of times to ensure reception by the processor. In our view, duplication/repetition of the sending step would not lead to any new and surprising result. The person skilled in the art would appreciate that if there were a further problem wherein the first list is not received by the processor, then resending the data is a self-evident solution. If, *in arguendo*, the skilled person was not aware of a specific failure to receive the first list, that same person would be aware of both the imperfect nature of mud pulse telemetry data transmission as well as the sensitive dependence of the historical data transmission method on having the time tag data in the first list. Without that information, surface association of the historical data to recording times could not be accurately calculated. This recognition by the skilled person would motivate them to take steps to ensure the success of the method, with repeated transmission of the first list being the most obvious.

[63] In light of the above considerations, we conclude that the subject-matter of proposed claims 1-5 would have been obvious and is are therefore non-compliant with section 28.3 of the *Patent Act*. As such, the proposed claims do not overcome the defect under obviousness for the claims on file and are therefore not “necessary” for compliance with the *Patent Act* and *Patent Rules* as required by subsection 86(11) of the *Patent Rules*.

CONCLUSIONS

[64] We have determined that claims 1-4 on file are directed to statutory subject matter and are therefore compliant with section 2 of the *Patent Act*. However, we have also determined that claims 1-4 on file would have been obvious and are therefore non-compliant with section 28.3 of the *Patent Act*.

RECOMMENDATION OF THE BOARD

[65] In view of the above, the Panel recommends that the application be refused on the ground that the claims on file would have been obvious and are therefore non-compliant with section 28.3 of the *Patent Act*.

Stephen MacNeil
Member

Jason Fisher
Member

Paul Fitzner
Member

DECISION

[66] I concur with the conclusions and recommendation of the Board that the application be refused on the ground that the claims on file would have been obvious and are therefore non-compliant with section 28.3 of the *Patent Act*.

[67] Therefore, in accordance with section 40 of the *Patent Act*, I refuse to grant a patent on this application. Under section 41 of the *Patent Act*, the Applicant has six months within which to appeal my decision to the Federal Court of Canada.

Johanne Bélisle
Commissioner of Patents

Dated at Gatineau, Quebec,
this 26th day of November, 2019.