Federal Court Cour fédérale

Date: 20210126

Docket: T-1158-18

Citation: 2021 FC 85

Ottawa, Ontario, January 26, 2021

PRESENT: The Honourable Mr. Justice Manson

BETWEEN:

MAOZ BETSER-ZILEVITCH

Plaintiff

and

PETROCHINA CANADA LTD.

Defendant

JUDGMENT AND REASONS

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I. Introduction

[1] The Plaintiff seeks declarations that claims 1 to 17 of the Canadian Patent No. 2,584,627 [the "627 Patent"] are valid and subsisting and that the Defendant has infringed claims 1 to 8. The Plaintiff further requests damages in the form of royalties resulting from the allegedly infringing activities of the Defendant and seeks an injunction, restraining the Defendant from further infringement.

[2] The Defendant's counterclaim seeks declarations under subsections 60(1) and (2) of the *Patent Act*, RSC, 1985, c P-4 [*Patent Act*], that all claims 1 to 17 of the 627 Patent are, and have always been, invalid or void and that it has otherwise not infringed the 627 Patent. The Defendant further requests a direction under section 62 of the *Patent Act*, voiding the 627 Patent.

I. Background

A. *The Parties*

[3] The Plaintiff, Maoz Betser-Zilevitch, is a professional engineer and is listed as the sole inventor and owner on the face of the 627 Patent.

[4] The Defendant, PetroChina Canada Ltd., is incorporated under the laws of the province of Alberta and is the owner and operator of the allegedly infringing modularized steam-assisted gravity drainage [SAGD] well pads for bitumen recovery at the MacKay River Commercial Project [MRCP].

B. *Technical Background: SAGD and Modularization*

[5] The tar sand deposits in Canada are typically heavy oil reservoirs that cannot be produced by standard recovery methods. SAGD is a method for heavy oil production by *in-situ* underground extraction. It employs two separate horizontal wells, known as a well pair. This includes both a steam injection well and a heavy oil production well. Produced steam is injected at the surface into the steam injection well. The heavy oil is heated, reducing its viscosity and allowing it to drain into a lower production well, where it is transported to the surface. A

collection of well pairs is referred to as a well pad. The well pads are connected to a central processing facility through kilometers of flow lines.

[6] Cyclic steam stimulation [CSS] is another method of heavy oil production, by *in-situ* underground extraction, whereby a single well is subject to alternating periods of steam injection and bitumen recovery.

[7] Modularization refers to a method of well pad construction, where modules for use at the well pad are pre-assembled off-site prior to being transported and connected to each other on-site. A well pad that has been built on-site may be referred to as “stick built”. Both modularized and stick built components may be incorporated within a well pad design. The benefits of modularization principally concern the anticipated cost savings associated with reduced labour requirements and facilitated construction once on-site.

[8] In this respect, the location of equipment and flow lines on the modules, as well as the orientation of the modules, are relevant considerations in this litigation. In assessing the location and orientation of these elements on various modules, this Court was directed to photographs, as well as 3D models and screenshots contained in or originating from Navisworks, a software program that allows for the navigation of such 3D models.

C. *The 627 Patent*

[9] The 627 Patent is entitled “System and Method for Steam-Assisted Gravity Drainage (SAGD)-Based Heavy Oil Well Production”. It was filed on April 4, 2007, and was issued to the Plaintiff on January 26, 2010. The 627 Patent has a claimed priority date of April 21, 2006.

[10] The 627 Patent generally relates to a modularized SAGD well pad for heavy oil production and a method for its installation, describing the structure and orientation of equipment, flow lines and instrumentation used on the modules and at the well pad site. This includes, for example, the placement of cable trays, walkways, stairways, piping and the location of flow lines on various levels of the modules. The 627 Patent teaches a system and method for producing heavy oil or bitumen economically by SAGD.

[11] The “Background of the Invention” section of the 627 Patent discusses an unmet need to reduce both the costs and labour involved in SAGD well site construction, occurring on-site or in the field. Specifically, the non-exhaustive objects of the 627 Patent include a system that: (1) avoids the need to separately construct and connect pipes in the field; (2) can be easily transported to the desired location; (3) can be manufactured off-site; (4) minimizes costs; (5) shortens the construction schedule; (6) minimizes hydro-testing requirements in the field; (7) allows for the relocation of equipment after the well site is depleted; and (8) improves safety for those involved with the assembly, manufacture and production activities at the well pads.

[12] For reasons that will be explained in greater detail below, a key aspect of the 627 invention is the presence of both the steam injection flow line and the heavy oil production flow line on a lower, first level of the modules.

[13] While the Plaintiff only asserts claims 1 to 8, the Defendant challenges the validity of all 17 claims of the 627 Patent, which may be broken down into: (1) claims 1 to 10: system claims for heavy oil production; and (2) claims 11 to 17: method claims for installing the piping systems for heavy oil production.

[14] There are three independent claims, claims 1, 4 and 11, which provide:

> 1. A system for heavy oil production comprising:
>
> a first well having a first well head;
>
> a second well having a second well head;
>
> a first means connected to said first well head of said first well, said first means for injecting steam into said first well; and
>
> a second means connected to said well head of said second well for producing heavy oil from said second well, said first and second means arranged in parallel flow relationship, each of said first and second means comprising:
>
> a first level having a plurality of flow lines extending therealong, said flow lines being exposed on opposite sides thereof; and
>
> a second level located above said first level, said second level having piping connected to said flow lines of said first level, said second level having a valve and controller cooperative with said piping, said second level supporting cable trays receiving electrical and communication cables thereon, said piping having a swivel head connection suitable for joining to the well head or to a swivel head of an adjacent piping.
>
> …
>
> 4. A system for heavy oil production comprising:

a first piping assembly having a first level and a second level, said first level having a plurality of first flow lines extending longitudinally therealong, said second level having a piping thereon in communication with said flow lines of said first level, said second level located above said first level, said first and second levels of said first piping assembly are simultaneously transportable and supported by a single frame; and

a second piping assembly having a first level and a second level, said first level of said second piping assembly having a plurality of second flow lines extending longitudinally therealong, said second level of said second piping assembly having a piping thereon in communication with said flow lines of said first level of said second piping assembly, said first and second levels of said first piping assembly are simultaneously transportable and supported by a single frame, said piping of said second piping assembly selectively connected to said piping of said first piping assembly, said first piping assembly being joined in end-to-end relationship with said second piping assembly and being formed into a string of basic units connected to each other with said flow lines, each unit being parallel to a line of injection or production and having connection pipes perpendicular to said line of injection or production wells.

…

11. A method of installing piping systems for heavy oil production comprising:

forming a first platform having a first level and second level with flow lines extending along said first level and piping communicating with said first flow lines and extending along said second level, said first platform constructed from a single frame, said first and second levels of said first platform being simultaneously transportable;

forming a second platform having a first level and second level with second flow lines extending along said first level and piping communicating with said flow lines and extending along said first level and piping communicating with said flow lines and extending along said second level, said second platform constructed from a single frame, said first and second levels of said second platform being simultaneously transportable;

transporting said first and second platforms to first and second well heads;

> connecting said piping of said second platform to the piping of said first platform;
>
> connecting said piping of said first platform to the first well head; and
>
> connecting said piping of said second platform to the second well head.
>
> …

D. *The Allegedly Infringing MRCP Well Pads*

[15] The MRCP is a bitumen recovery project located within the Regional Municipality of Wood Buffalo, Alberta. The design and construction of the MRCP facility began in 2012. It was operational by no later then December of 2016 or early 2017. Through the operation of the MRCP facility, the Defendant sells synthetic bitumen (known as Synbit, which is a blend of bitumen and a dilutent). The MRCP facility includes 42 operational well pairs on 8 well pads [collectively, the "MRCP Modules" or "MRCP Well Pads"], which have the same design and configuration: (1) there are 6 well pairs on Well Pads AA, AE and AF; (2) there are 5 well pairs on the Well Pads AB, AD, AH and AJ; and (3) there are 4 well pairs on Well Pad AC.

[16] The Defendant contracted Worley Parsons Canada Services Ltd. [Worley Parsons] to design Well Pads AA, AB, AC, AD, AE, AF, AH and AJ at the MRCP well site. These modules were transported over public roadways from an off-site fabrication facility to the MRCP facility for installation.

E. *The Invention Story and the Current Proceeding*

[17] The Plaintiff was a principal of Excrude Inc. [Excrude], a consulting company he established on April 5, 2005 (the name of which was changed to Ex-Tar Technologies Inc. [Ex-Tar] in February of 2006). On May 9, 2005, Excrude and Nexen Inc. [Nexen] entered into the Long Lake Consulting Agreement [the "Consulting Agreement"], where the Plaintiff was engaged to perform a variety of services related to the Nexen Long Lake Project, a SAGD field facility, in the manner set out in Schedule A to the Consulting Agreement.

[18] While engaged under the Consulting Agreement, the Plaintiff conceived of the subject matter of the 627 invention, as described in US Patent Application Serial No. 11/408,117 [US Patent Application]. The Plaintiff filed the US Patent Application in his own name on April 21, 2006. He further requested that the US patent office not publish the patent application.

[19] The Plaintiff described that his motivation for the 627 invention was derived from the harsh on-site conditions faced by workers at well sites in northern Alberta and the productivity issues created by these circumstances.

[20] The Plaintiff disclosed the general concept of the 627 invention to the Construction Management Team at Nexen, which initiated a series of events that led to the commissioning of the Nexen Long Lake Upgrader Project Phase 2 – Well Pad Modularization Report or the "Fluor Report", dated September 18, 2006. This was a study that evaluated the Plaintiff's concept. The Fluor Report claimed cost savings of 30% of the total incurred costs and a reduction of 3 to 4

months in the field construction schedule when comparing Nexen's stick built to the Plaintiff's Well site Basic Block Module [WBBM] design. The 627 design was presented to management at Nexen, including Roy Atkinson, Nexen's modular manager.

[21] When Nexen demonstrated a lack of interest in the design concept, the Plaintiff approached Suncor Energy Services Inc. [Suncor]. On August 14, 2006, the Plaintiff made an offer to present and license the technology to Suncor. Suncor did not engage in further negotiations for a license. Additional offers of a similar nature were made to other third parties. However, they were not pursued.

[22] Nexen terminated the Consulting Agreement with Excrude, effective October 31, 2006, by way of a letter addressed to Ex-Tar, dated September 29, 2006.

[23] The Plaintiff then emailed Gary Nieuwenberg at Nexen, an individual he perceived had authority within Nexen, on October 13, 2006, advising him personally of the 627 invention. The Plaintiff did not receive a response to this email and sent a follow-up email on October 26, 2006, offering a one-time licensing fee of 0.6% of the estimated cost savings for his WBBM design. This would result in a single payment of $150,000 for the right to use all WBBM design information, including the license to use the US Patent Application. It was within this timeframe that Nexen was first made aware of the US Patent Application.

[24] The Plaintiff received a response on October 30, 2006 from Nexen's Senior Legal Counsel, Tim Friesen, reminding him of the provisions of the Consulting Agreement with

Nexen. In a letter dated November 12, 2006, the Plaintiff responded stating that the WBBM design is his personally and requested that Nexen avoid delivery or use of the confidential information related to the WBBM design that had been disclosed by the Plaintiff.

[25] As indicated above, the application for the 627 Patent was filed on April 4, 2007 and claims priority from the US Patent Application. The 627 Patent was published on October 21, 2007.

[26] The Plaintiff's legal counsel sent a letter to the President of the Defendant, Mr. Jilin Fu, on January 19, 2018, informing the Defendant of the 627 Patent. The Defendant had no communication with the Plaintiff seeking a license to use the 627 Patent prior to the construction of any well pads at its MRCP facility, nor prior to the start of this litigation.

F. *Other Heavy Oil Recovery Projects in Alberta*

[27] The larger context of SAGD technology development and modularization in Alberta is relevant to this litigation. The Defendant relies on two heavy oil recovery projects located in Alberta as prior public uses in attacking the validity of the 627 claims on the basis of obviousness. Both were designed by IMV Projects Inc. [IMV Projects] (acquired by Wood Group Mustang [Wood Group] in 2007). They were allegedly available to the public prior to the construction of the allegedly infringing MRCP Well Pads. These include:

A. Cenovus Energy Inc. [Cenovus] (previously part of Encana Corporation [Encana]) Foster Creek Well Pads F, G and the B Pad Expansion [collectively, "Cenovus Foster Creek Modules"]; and

B. Canadian Natural Resources Limited [CNRL] Primrose South Well Pads 29 to 31 and Primrose North Well Pads 51 to 54 [collectively, “CNRL Modules”].

[28] Notably, IMV Projects also created the design for BlackRock’s (later Osum Energy) Orion SAGD heavy oil well pads [Orion Modules]. However, this is not relied on as a prior public use for the reasons outlined below.

II. Issues

[29] The parties agreed in the substance, but not in the framing of the issues. The issues are as follows:

A. Is the Plaintiff the owner of the 627 Patent or is the Defendant otherwise barred from raising ownership of the 627 Patent as an issue?

B. Did the Defendant infringe claims 1 to 8 of the 627 Patent by constructing and operating its MRCP facility for bitumen recovery?

C. Are claims 1 to 17 of the 627 Patent invalid on the basis of obviousness?

D. If there is infringement and the 627 Patent is valid, what remedies is the Plaintiff entitled to?

III. Fact Witnesses

A. *Plaintiff's Fact Witnesses*

(1) The Plaintiff: Maoz Betser-Zilevitch

[30] The Plaintiff is a professional engineer. He graduated as a mechanical engineer in 1989 from Tel Aviv University in Israel, immigrated to Canada in 2003 and established his own consulting company, Excrude, in 2005. As indicated above, he worked as a consultant for Nexen for the duration of the Consulting Agreement.

[31] He testified as to his passion for inventing and the conditions in northern Alberta that led him to conceive of and patent the 627 invention. He further testified as to his experiences in the oil and gas industry, his ownership of the 627 Patent, his work as a consultant for Nexen and how he would approach the negotiations of a licencing agreement. The Plaintiff was credible.

(2) Andrew Herbst

[32] Mr. Herbst currently runs a consulting practice for engineering projects, as President of Neerzweknow Ltd. He was an employee of IMV Projects, and then of Wood Group, from October 2002 to December 2012, in various positions related generally to the management of project engineers. He testified as to the confidentiality obligations of employees hired by IMV Projects. However, it became clear on cross-examination that Mr. Herbst was not aware of the circumstances of the fabrication, transportation or installation of the Cenovus Foster Creek Modules and CNRL Modules, nor did he have direct knowledge of the marketing and business

development practices in relation to the modules. Mr. Herbst was a credible witness, but his evidence failed to undermine evidence led by the Defendant related to the public visibility or availability of the modules.

(3) Graham Baugh

[33] Mr. Baugh is currently a commercial and legal consultant. Between November 2004 to 2009, he worked within the legal team at Encana, holding progressively senior leadership positions. From 2009 to October 2013, he was the Legal Services Lead and then Vice President of Canadian Legal Services at Encana. He testified as to the confidentiality obligations of employees and contractors at Encana and Cenovus (following the split of Cenovus from Encana in 2009). He further described the access requirements to the Cold Lake Air Weapons Range [CLAWR], the controlled region in which the Cenovus Foster Creek Modules were located.

[34] Similar to Mr. Herbst, Mr. Baugh was credible, but failed to refute the evidence led by the Defendant's fact witnesses in relation to the confidentiality of the circumstances surrounding the transportation of and access to the Foster Creek Modules and CNRL Modules. He admitted that not all persons who could potentially view the modules would be subject to confidentiality obligations.

B. *Defendant's Fact Witnesses*

(1) Ashley Leroux

[35] Mr. Leroux is currently the President of his engineering consulting company, XL Engineering Ltd. He has a Bachelor of Science in Chemical Engineering from the University of Alberta. Since 1999, Mr. Leroux has worked in the Alberta oil and gas industry as an operator and an engineer. He was an employee of Encana, from 2002 to 2013. From 2002 to 2005, Mr. Leroux was physically based at the Cenovus Foster Creek site.

[36] Mr. Leroux testified as to his experiences growing up in La Corey, Alberta and to the public visibility of the Cenovus Foster Creek Modules during transportation through and staging at La Corey, and once on-site. He testified that the Cenovus Foster Creek site or its vicinity was accessed by chemical companies, sales personnel and vendors, military personnel, Indigenous hunters and by friends and family during "family barbeques" (2004 and 2005). Mr. Leroux was a credible witness, having an in-depth personal knowledge of the visibility of modules for use at SAGD operations both during transportation and on-site.

(2) Paul Sudlow

[37] Mr. Sudlow graduated with a degree in mechanical engineering from the University of Waterloo in Ontario. He was a mechanical engineer and project engineer with IMV Projects from 2003 to 2012 and was responsible for the coordination of the engineering and design work for the Cenovus Foster Creek Modules, beginning in 2003 to 2005. His testimony related to this

work and the manufacture of the modules at Flint's Construction Yard, as well as the transportation, installation, promotion and marketing of the Cenovus Foster Creek Modules. Mr. Sudlow was a credible witness.

(3) Dean Milner

[38] Mr. Milner was the manager of business development and marketing at IMV Projects from October 2002 to November 2007, and then of Wood Group, after its purchase of IMV Projects, until 2014. His primary role was promoting IMV Projects within the oil and gas community and making sales presentations, beginning in 2004 or 2005, which would incorporate drawings or renderings of the modules, including of CNRL Well Pad 29. Mr. Milner further testified to touring the Cenovus Foster Creek sites with potential clients. Mr. Milner was a credible witness.

(4) Deborah Jaremko

[39] Ms. Jaremko is an industrial journalist. While working for JuneWarren-Nickle's Energy Group in 2005, she developed a series of articles relating to SAGD facilities in Alberta. She was not aware of any confidentiality obligations while attending the Cenovus Foster Creek site in July of 2005 with photographer, Joey Podlubny. Portions of Ms. Jaremko's evidence were based on hearsay and largely irrelevant, although she was otherwise a credible witness.

(5) Derek Wilkinson

[40] Mr. Wilkinson is a professional engineer, providing heavy oil consulting services through his company, Wilkinson Services Inc. He completed a Bachelor of Applied Science in Chemical Engineering from the University of Waterloo. He worked for CNRL from 2003 to 2010, as a project or facilities engineer, overseeing the construction of the well pads for CNRL's Primrose and Wolf Lake sites (2003-2005). His testimony focused largely on CNRL's Well Pad 29, which was constructed near the end of 2003 and into 2004. He spoke to Well Pad 29 becoming the subject of a presentation to the Canadian Heavy Oil Association and of site tours in the summer of 2005. Mr. Wilkinson further operated the Nasvisworks program to identify various elements of Well Pad 29 and testified as to the confidentiality of the configuration. Mr. Wilkinson was a credible witness.

(6) Kevin Ursu

[41] Mr. Ursu possesses a Bachelor of Applied Science in Industrial Systems Engineering from the University of Regina. He is the current President of Pinch Process Engineering Inc., an engineering consulting company. He was employed at IMV Projects from approximately 2000 or 2001 and became a contractor from 2003 onwards. Mr. Ursu principally testified as to this work and his involvement as the lead process engineer in the design and configuration of the Orion Modules, beginning approximately in the spring or summer of 2005, based on the module design concepts at CNRL and Encana/Cenovus.

[42] On cross-examination, Mr. Ursu admitted that the photographs referenced in the schedules to his witness statement, of the CNRL Modules, Cenovus Foster Creek Modules and Orion Modules, were all accessed for the first time in 2019. He did not take the photographs in question and was not present when they were taken. While he testified as to the cost savings associated with moving the steam injection flow line down to the lower level on the Orion Modules, he was unable to testify as to the amount of costs that were saved.

(7) Wasim Huq

[43] Mr. Huq has a Bachelor of Science in Mechanical Engineering from Purdue University and is currently working for Inter Pipeline Ltd. He was a project engineer with Dover OPCO in 2011, which was bought by PetroChina Company Limited in late 2011 or early 2012. It was renamed Brion Energy [Brion] in about 2014, prior to Brion becoming the Defendant. He testified as to the bidding process related to and the design and development of the MRCP Well Pads. Mr. Huq was a credible witness, but much of his testimony was irrelevant with respect to the issues to be decided in this case.

(8) Bob Shepherd

[44] Mr. Shepherd was employed with the Defendant and its predecessors as Senior Vice President, Technical Services and as Executive Vice President and VP Shale Gas. He testified as to the costs and impacts of the MRCP facility on jobs and investments in Alberta and as to the Defendant’s knowledge of the 627 Patent. Mr. Shepherd’s testimony was credible.

IV. Expert Witnesses

A. *Plaintiff's Expert Witnesses*

(1) David Bishop

[45] David Bishop has a Full Mechanical Engineering Certificate from the City and Guilds, London (1978) and certificates in Advanced Level Design and Technology and Advanced Level Technical Drawing from the University of London (1974). He recently retired from his role as a piping design lead, with over 40 years of experience in the oil and gas industry, particularly in the design of pipelines for several oil and gas companies, including Nexen, Suncor, Husky Energy, TransAlta Energy and Imperial Oil. He spent approximately 18 years working for Jacobs Canada Inc., a consulting group in the oil and gas industry, including in SAGD technology in Alberta.

[46] Mr. Bishop was qualified as a piping designer who is an expert in the field of piping design, piping layout and modularization in the oil and gas industry, including piping design, piping layout and modularization as used in the recovery of heavy oil or bitumen using SAGD.

[47] Mr. Bishop was asked to opine on the following in his expert report, dated August 10, 2020: (1) who is the person of ordinary skill in the art [the "POSITA"] to whom the 627 Patent is addressed?; (2) the claim construction of claims 1 to 8 of the 627 Patent as of October 21, 2007; and (3) whether the Defendant's MRCP Modules for their SAGD well pads incorporate elements of claims 1 to 8?

[48] On cross-examination, Mr. Bishop made admissions as to the common general knowledge, as described below.

(2) Prem Lobo

[49] Mr. Lobo, CPA, CA, CBV, CPA (U.S.), CFE, CFF, is a principal at Cohen Hamilton Steger & Co. Inc. [CHS]. He specializes in the quantification of damages, business valuations and forensic accounting, which have been exclusive focuses of his practice since 2001. Mr. Lobo was qualified as a forensic accountant who is an expert in accounting, the quantification of damages and business valuations.

[50] Mr. Lobo was asked to estimate the Plaintiff's damages in the form of a royalty by: (1) estimating the Defendant's revenue from the MRCP Well Pads that allegedly infringed the 627 Patent and multiplying it by royalty rates provided by counsel for the Plaintiff; and (2) estimating the cost savings of the Defendant, incurred by infringing the 627 Patent and multiplying these by a royalty rate provided by counsel for the Plaintiff. His opinion was provided in an August 10, 2020 expert report.

[51] On cross-examination, Mr. Lobo confirmed that he did not ascertain the propriety of the royalty rate assumptions provided by counsel for the Plaintiff. He further acknowledged the development of such royalty rates is outside his expertise, neither is he familiar with the factors involved in the negotiations of licenses for well pad designs. While he was adamant that his use of the royalty rate assumptions is appropriate in this case, his position was contradicted by previous articles he had authored, which were raised during cross-examination. Further, while

his analysis was based on the contents of the Fluor Report, he demonstrated a lack of understanding of those contents and the purpose of this document. For these reasons, among other fundamental concerns with his approach, no weight can be given to his expert report.

(3) Richard Beale

[52] Mr. Beale studied Process Piping Design at the Southern Alberta Institute of Technology. He is a senior piping designer with more than 40 years of experience designing piping systems in the oil and gas industry. The majority of his career was focused in heavy oil recovery using SAGD technology and CSS. He spent 5 years working at Encana and 9 years working at Cenovus, exclusively working on the SAGD-related projects at the Foster Creek and Christina Lake facilities.

[53] Mr. Beale was qualified as a piping designer who is an expert in the field of piping design, piping layout and modularization in the oil and gas industry, including as used in the recovery of heavy oil or bitumen using SAGD and CSS.

[54] Mr. Beale was asked to provide opinions on the following, in his November 5, 2020 responding expert report: (1) who is the POSITA to whom the 627 Patent applies?; (2) the claim construction of claims 1 to 17 of the 627 Patent as of October 21, 2007; and (3) Mr. Brindle's expert opinion, including on the issues of anticipation, obviousness, overbreadth and insufficiency.

[55] Some credibility issues were raised with respect to Mr. Beale's testimony. He lacked personal knowledge in certain aspects of his opinion, for example, as it relates to condensate build up in the steam injection flow lines. He further overstated his position in certain respects, including in relation to the role of a piping designer in determining the overall configuration of a well pad module design. At paragraph 58 of his expert report, dated November 5, 2020, he indicated he had experience working on the CNRL Primrose site, which was contradicted during cross-examination. His opinion was weighted as discussed further below.

B. *Defendant's Expert Witnesses*

(1) George Brindle

[56] Mr. Brindle is a professional engineer, having obtained a Bachelor of Applied Science in Mechanical Engineering from Queen's University and an executive MBA from the University of Calgary. He worked with MacDonald Engineering Group Ltd, which was purchased by Worley Parsons, from 1999 to 2007. Mr. Brindle described an over 32 year career, claiming continuous involvement in substantially all aspects of heavy oil facilities development. He currently provides professional consulting services to heavy oil companies through his company, Snowdog Professional Services Ltd, based in Alberta.

[57] Mr. Brindle was qualified as an expert in relation to: (1) the design, fabrication, transportation, assembly and operation of modules used in heavy oil extraction, including SAGD and CSS modules and techniques; and (2) piping configurations and modularization in the oil and gas industry.

[58] In an August 10, 2020 invalidity expert report, Mr. Brindle was asked by the Defendant to provide his opinion as to: (1) the POSITA to which the 627 Patent relates on October 21, 2007; (2) the common general knowledge possessed by the POSITA as of that date; (3) the construction of claims 1 to 17 of the 627 Patent; and (4) the validity of claims 1 to 17 of the 627 Patent.

[59] Mr. Brindle further provided a rebuttal expert report on the issue of infringement, dated November 5, 2020. In this report, Mr. Brindle was asked to provide his opinion and expert evidence on the issues of: (1) whether there is any infringement of any of the claims 1 through 8 of the 627 Patent; and (2) the availability and economic feasibility of a non-infringing alternative for use in the preparation of a differential costs analysis. Mr. Brindle was further asked to review and provide comments on the expert report of Mr. Bishop, dated August 10, 2020.

[60] On cross-examination, it was revealed that Mr. Brindle's assessment of the common general knowledge of the POSITA was based in part on references provided to him by counsel for the Defendant. Mr. Brindle further adopted several alternative claim constructions in his expert report of August 10, 2020, which were not maintained at trial, and raised questions about the weight his opinion on claim construction should be given. The cross-examination revealed points of inconsistency relating to various terms used in the 627 Patent, which also served to undermine Mr. Brindle's rationale for his opinion on claim construction in some instances. Consequently, less weight was assigned to Mr. Brindle's expert report and testimony, as discussed below.

(2) Paul Goolcharan

[61] Mr. Goolcharan is a professional engineer, holding a Bachelor of Applied Science in Mechanical Engineering from the University of Alberta. He is currently a consultant to oil and gas companies through his company, Vertikol Solutions Ltd. Mr. Goolcharan described that he possesses extensive experience estimating costs associated with various sized industrial projects and has been involved in a project estimating role in respect of at least 20 SAGD projects, largely of a similar nature to the MRCP. He provides specialized estimating information for clients involved in SAGD projects, including collecting, analyzing and normalizing cost data to benchmark, estimate, forecast and advise clients.

[62] Mr. Goolcharan was qualified as an expert in these proceedings in relation to the costing of well pads, including SAGD well pads, and evaluating the relative costs and methods of determining the costs of well pads.

[63] Counsel for the Defendant asked for Mr. Goolcharan's opinion on the following in his November 5, 2020 expert report: (1) the applicability of the cost savings set out in the Fluor Report (and applied by the Plaintiff's expert, Mr. Lobo) to this litigation; (2) Mr. Lobo's calculation of the Defendant's cost savings; and (3) if the Fluor Report is not applicable, the cost estimates for and a differential cost analysis of the Patent Disputed Areas [PDA] of the Defendant's well pads and the Cenovus Foster Creek Well Pads [respectively, the "Defendant's Configuration" and the "Cenovus Configuration"]. Mr. Goolcharan was a credible witness.

(3) Paul Matthews

[64] Mr. Matthews is a professional engineer and a lawyer. Since 2017, he is a partner at Lawson Lundell LLP in Kelowna, British Columbia. Mr. Matthews indicates that he has extensive experience in the areas of licensing and technology commercialization of energy-related technologies in the oil and gas sector, dating back to 2003. He was also a former Principal, Intellectual Property with Cenovus from 2011 to 2016, where he dealt with the inbound and outbound licensing of heavy oil technologies.

[65] Mr. Matthews was qualified as an expert in relation to the licensing of patents, including the basis and appropriate terms for the licensing of patents in relation to Alberta-developed technologies in the oil and gas sector, and the applicable royalties for the licensing of technologies in the oil and gas sector and appropriate factors to consider in determining such royalties.

[66] Mr. Matthews was asked to opine on the following in his November 5, 2020 expert report: (1) the royalty basis and the appropriate royalty rate applicable to the licensing of the invention of the 627 Patent, as between the Plaintiff and the Defendant; and (2) whether the royalty bases and royalty rates applied in Mr. Lobo's expert report were correct and reasonable.

[67] Mr. Matthews was a credible witness. However, it became apparent in cross-examination that his conclusion in respect of his mandate was significantly influenced by a single factor,

being the Defendant's knowledge of the Plaintiff's offer to Nexen in relation to licensing the technology and the specific terms disclosed therein.

V. Preliminary Issues

A. *The Relevant Date*

[68] The parties have agreed that the issues at trial do not turn on the relevant date being either the priority date (April 21, 2006) or the publication date (October 21, 2007) of the 627 Patent. As such, reference to a particular date reflects the submissions of the parties, but is ultimately not determinative.

B. *Ownership and Standing*

[69] It is the Defendant's position that the Plaintiff does not have standing to bring this action. This is because Nexen is allegedly the appropriate owner of the 627 Patent, with the requisite standing to bring this claim. While on the face of the 627 Patent, the Plaintiff is listed as both the sole inventor and owner, the 627 invention was conceived while the Plaintiff's consulting company, Excrude, was engaged by Nexen under the terms of the Consulting Agreement. Pursuant to these obligations, it is the Defendant's position that the Plaintiff has either assigned title to the 627 invention to, or has held title in trust for, Nexen.

[70] The Plaintiff asserts that the 627 Patent was appropriately filed in his own name and he is the owner, as decided in and evidenced by prior case law (*Betser-Zilevitch v Nexen Inc*, 2018 FC 735 at paras 3, 70 [*Betser FC*], aff'd 2019 FCA 230 [*Betser FCA*]) [the "Nexen Action" or

"Nexen Decision"]. Additionally, the Defendant is allegedly barred from challenging the ownership of the 627 Patent because of: (1) privity of contract as it relates to the Consulting Agreement between Excrude and Nexen; (2) the expiry of the regular 2-year and "ultimate" 10-year limitation periods under the *Limitations Act*, RSA 2000, c L-12 [*Limitations Act*]; and (3) a lack of evidence supporting an interpretation of the Consulting Agreement that demonstrates an intention of the contracting parties to transfer ownership of the invention to Nexen Inc.

[71] The Defendant was not a party to the Consulting Agreement between Excrude and Nexen and is not seeking to sue on or enforce rights under the Consulting Agreement, except to the extent of raising lack of ownership as a defence to the Plaintiff's infringement claim. While this position is appropriate, it nonetheless asks this Court to undertake an interpretation exercise in relation to the Consulting Agreement and define the rights assigned between the Plaintiff and Nexen. While the Defendant has raised sufficient evidence to demonstrate that the question of ownership of the 627 Patent may be uncertain, the evidentiary basis is not conclusive and therefore remains insufficient to determine ownership in this case, particularly with respect to an entity other than the Plaintiff, as the indicated owner and inventor on the face of the 627 Patent. Before considering the interpretation of the Consulting Agreement, I will first consider the Plaintiff's positions regarding the Nexen Action, privity of contract and the expiry of the alleged limitation periods.

(1) The Nexen Action

[72] The Plaintiff asserts that its ownership of the 627 Patent was affirmed by this Court and the Federal Court of Appeal in the Nexen Decision (*Betser FC*, above at paras 3, 70). Therefore,

the Defendant's ownership allegation amounts to asking this Court to undermine previous Court decisions and constitutes an abuse of process.

[73] I disagree with the Plaintiff that the Nexen Action has resolved the issue of ownership. The circumstances leading up to the Nexen Action are that the Plaintiff commenced an infringement action against Nexen and CNOOC Canada Inc. [CNOOC] in 2013 in relation to the 627 Patent (*Betser FC* at para 6). The Nexen Action was initiated when Nexen and CNOOC brought a motion for an order declaring that a settlement was in fact reached between the parties. This Court concluded that a binding settlement agreement had occurred and the Nexen Action was deemed to be discontinued, a decision upheld by the Federal Court of Appeal.

[74] The Nexen Decision references at paragraph 3 that "Betser-Zilevitch is a professional engineer and the owner of Canadian Patent No. 2,584,627". This does not amount to a resolution of the ownership matter, particularly where this statement was provided for background context. The issue in dispute in the Nexen Action was whether a settlement agreement had been reached between the parties. There is no indication in the Nexen Decision as to whether ownership rights were decided as a term of the settlement agreement. The Nexen Action was discontinued and therefore the Nexen Decision is not a judicial determination that resolves the ownership matter. A discontinuance leaves the issue open and is not a bar to future proceedings on the same issue (Purcell Systems, Inc v Argus Technologies Ltd, 2008 FC 1210 at para 31). Moreover, the Plaintiff acknowledged during discovery that Nexen did not assign any legal or equitable right in the subject matter of the 627 Patent to him.

[75] In this respect, it is not necessary for me to decide the issue of abuse of process or issue estoppel, as the Defendant is not re-litigating a previously decided matter between the parties.

(2) Privity of Contract

[76] I also disagree with the Plaintiff that the doctrine of privity of contract bars the Defendant from raising the ownership of the 627 Patent as a live issue in this proceeding. The Plaintiff asserts that under the doctrine of privity of contract, the Defendant has no standing to enforce its interpretation of the Consulting Agreement. Only a party to the Consulting Agreement has standing to enforce or sue on the contract, unless the contracting parties had intended to extend the benefits of the contract to a third party.

[77] Privity of contract principles do not apply to the Defendant's ownership allegations in this proceeding. This is because the Defendant is not seeking to enforce or sue under the Consulting Agreement. The Defendant may defend this infringement action on the basis that the Plaintiff is not entitled to the benefit of the 627 Patent.

(3) Expiry of Limitations Periods

[78] I disagree with the Plaintiff's position that the Defendant is seeking to assert Nexen's claim for ownership under the Consulting Agreement. As such, the argument in relation to the expiry of both the regular 2-year limitation period and the 10-year "ultimate" limitation period for bringing this claim under the *Limitations Act* does not apply.

(4) The Consulting Agreement

[79] The Plaintiff and Defendant each put forward distinct interpretations of the Consulting Agreement, as it relates to the rights and obligations of Nexen and the Plaintiff concerning the 627 invention. Their respective positions reveal the ambiguity in the Consulting Agreement. For the reasons that follow, there is insufficient evidence before me to resolve this ambiguity. Specifically, the Defendant has failed to lead evidence that demonstrates, on a balance of probabilities, that the Plaintiff is not the owner of the 627 Patent: as such, I am not in a position to consider the requested re-assignment of the patent monopoly as between the Plaintiff and Nexen, nor find that the Plaintiff is not in fact the owner of the 627 Patent.

[80] The Plaintiff argues that the ownership of intellectual property in the Consulting Agreement is limited to "improvements to Company's [Nexen] Confidential Information" and the 627 invention falls outside the scope of this provision, where "Confidential Information" covers financial, supply and service, marketing, personnel and customer information. Nexen's Policy 154 refers to Exhibit A of Nexen's Policy 161, which contains an "Employee Secrecy and Invention Agreement". This is expressly applicable only to employees. Nexen Policy 161 further contains a separate "Consultant's Confidentiality Undertaking" in Exhibit B, which does not contain any provision regarding the ownership of patent rights.

[81] The Defendant posits that the Plaintiff's "invention" arose directly out of his contractual obligations to solve problems encountered with module integration at Nexen's Long Lake facility. The Plaintiff was to perform the services specified in Schedule A of the Consulting

Agreement, which indicates that the Plaintiff was hired to identify problems and provide solutions with module integration and construction, as a professional engineer. As such, Nexen would arguably own the subject matter of the 627 Patent, either under the Consulting Agreement or at common law. A contract, where it addresses ownership of a patent, is determinative:

> Freelancers are treated less favourably in patent law than in copyright law... the *Patent Act* starts with no presumption favouring the commissioned freelance inventor. It leaves his rights to be worked out entirely by provincial law. The firm that calls in a consultant to help with a problem will usually own the benefit of any invention he develops as a solution. This is especially likely where the consultant is given access to the firm's trade secrets or confidential information, or is employed to put into practice an idea that the firm partly developed. The firm will then be entitled to patent the invention. This *prima facie* position may, however, be modified by express or implied agreement.
>
> (David Vaver, *Intellectual Property Law: Copyright, Patents, Trademarks* (Concord, Ont: Irwin Law, 1997) at 148, as cited in *Techform Products Ltd v Wolda*, 5 CPR (4th) 25 (Ont Sup Ct J) at para 16 [*Wolda*], rev'd on other grounds 15 CPR (4th) 44 (Ont CA) [*Wolda CA*], leave to appeal to SCC refused, 28949 (11 June 2002))

[82] The Defendant's ownership argument is therefore a question of the contractual interpretation of the Consulting Agreement and the application of the common law. At common law, the general principle is that "[a]n independent contractor who makes an invention owns the invention unless there is an agreement, express or implied to the contrary. Whether a term transferring ownership of an invention to the client is to be implied depends upon whether such a term is necessary having regard to the circumstances of the case" (*Wolda*, above at para 20; *Wolda CA*, above at paras 15, 37). The Ontario Superior Court of Justice reaches this conclusion after weighing David Vaver's comments above with other authorities. This legal finding was upheld by the Ontario Court of Appeal, although the decision in *Wolda* was reversed on other

grounds (*Wolda CA* at paras 15, 37). As such, a finding of ownership for Nexen depends on a determination that there was either (*Wolda* at para 20):

A. A valid and binding express agreement, the terms of which provide that Nexen would own the Plaintiff's inventions; or

B. The circumstances surrounding the contractual relationship between the Plaintiff and Nexen make it necessary to imply that a term of the relationship was that Nexen would own the Plaintiff's inventions.

[83] I begin with the presumption that the Plaintiff, as a consultant to Nexen at the relevant time, owns the 627 invention and must turn to an examination of the Consulting Agreement and the surrounding circumstances. The parties have pointed this Court to three clauses within the Consulting Agreement and accompanying policies: (1) Article 3.1 of the "Employee Secrecy and Invention Agreement" (Exhibit A of Policy 161); (2) The "Consultant's Confidentiality Undertaking" (Exhibit B of Policy 161); and (3) Paragraph 6 of the Confidentiality Agreement (Exhibit A to Schedule B of the Consulting Agreement).

[84] Schedule A of the Consulting Agreement specifies, as a description of service (i.e. the tasks to be performed and the limits of each deliverable), that the Plaintiff "[a]ssists in to providing solutions for any technical problems with the module integration to construction and monitoring and documenting those problems". Article 2.11 of the Consulting Agreement, under "Consultant Policies" requires the Plaintiff's compliance with Nexen's "Corporate Policies and Procedures", including the policies referred to in Schedule B to the Consulting Agreement. This incorporates Policy 154 ("Employee Inventions") and Exhibit A of Policy 161 ("Employee

Secrecy and Invention Agreement") (also referenced as Policy A154 and Policy A161, respectively). Policy 154 specifies:

> All matters concerning *employee* inventions will be handled in accordance with the terms and conditions set out in the Employee Secrecy and Invention Agreement (See Policy 161 – Exhibit "A"). Coordination of all such matters will be handled by the Legal Department.
>
> All such matters will be handled on a case-by-case basis.
>
> (Emphasis added)

[85] Under Article 3.1, the Employee Secrecy and Invention Agreement states (Exhibit A of Policy 161):

> 3.1 Any and all Confidential Information and any Inventions and Discoveries shall be the sole and exclusive property of the Company and will be held in trust for the benefit of the Company only.

[86] The Consultant's Confidentiality Undertaking does not address invention ownership (Exhibit B of Policy 161).

[87] The Consulting Agreement expressly sets out, in paragraph 6 of Exhibit A to Schedule B, that:

> …All research data, discoveries, developments and improvements to Company's Confidential Information which the Recipient may devise, make, produce or conceive, alone or with others, during the term of this Assignment shall be the sole exclusive property of the Company and the Recipient hereby assigns all of its right, title and interest to the Company.

[88] The above clauses do not reveal an express term defining Nexen's ownership rights in relation to a consultant/contractor, nor do they address the circumstances specific to the Plaintiff's conception of the 627 invention, and whether any Confidential Information was in fact involved in such conception and invention.

[89] Further, as stated above, I have not been provided with sufficient evidence regarding the circumstances surrounding the contractual relationship between the Plaintiff and Nexen to imply such a term. The object of contractual interpretation is to give effect to the objective intention of the contracting parties, as expressed in the contract as a whole at the time the contract was made, and in a manner consistent with the surrounding circumstances known to the parties at the time of contract formation. This is because words on their own do not possess an immutable or absolute meaning (*Sattva Capital Corp v Creston Moly Corp*, 2014 SCC 53 at para 47). The evidentiary basis here does not support this exercise in interpretation.

[90] I agree with the Plaintiff that there is also a question as to whether the 627 invention fits into the definition of "Confidential Information", as defined in Schedule B of the Consulting Agreement, which does not expressly include product or technical information, such as well pad designs, rendering the application of paragraph 6 of Exhibit A to Schedule B of the Consulting Agreement unclear in these circumstances.

[91] I also note that the behaviour of the Plaintiff in relation to the 627 Patent was less than forthcoming, having refrained from notifying Nexen in a timely way about his filing of the US Patent Application corresponding to the 627 Patent invention, and having made offers of the

invention to Nexen's competitors during his consultancy agreement with Nexen. However, this behaviour is not sufficient to prove or disprove the Plaintiff's ownership of the 627 Patent.

[92] Overall, the evidence before me falls well short of the threshold of proving on a balance of probabilities that the Plaintiff is not the owner, or that Nexen should be the valid owner.

VI. Claim Construction

[93] The first step of this Court is to purposively construe the claims of the 627 Patent, thus defining the scope of the patent holder's monopoly (*Whirlpool Corp v Camco Inc*, 2000 SCC 67 at para 43 [*Whirlpool*]). The same claim construction applies to both infringement and validity issues (*Whirlpool*, above at para 49(b)). This is a question of law, determined with reference to the following principles, as set out in prior case law and consolidated in *Tearlab Corporation v I-MED Pharma Inc*, 2019 FCA 179 at paras 30-34 (*Whirlpool* at paras 49-55; *Free World Trust v Électro Santé Inc*, 2000 SCC 66 at paras 44-54 [*Free World Trust*]; *Consolboard Inc v MacMillan Bloedel (Sask) Ltd*, [1981] 1 SCR 504 at 520):

A. Claims are to be read in an informed and purposive way with a mind willing to understand, viewed through the eyes of the POSITA as of the relevant date, having regard to the common general knowledge;
B. Adherence to the language of the claims allows them to be read in the manner the inventor is presumed to have intended, and in a way that is sympathetic to accomplishing the inventor's purpose, promoting fairness and predictability;

C. The whole of the specification should be considered to ascertain the nature of the invention, and the construction of the claims must be neither benevolent nor harsh, but should instead be reasonable and fair to both the patentee and the public; and

D. On a purposive construction, the claim language will show that some elements are essential while others are non-essential. The identification of claim elements as essential or non-essential is made on the basis of the common general knowledge of the POSITA to whom the patent relates as of the relevant date.

[94] As stated above, the Plaintiff is no longer pursuing the priority date of April 21, 2006. As such, the relevant date is the date of publication, October 21, 2007. However, reference to either date (the priority or publication date) may be made below to appropriately reflect the evidence led and submissions made by the parties. The issues to be decided do not turn on the applicability of one of these dates (*Free World Trust*, above at paras 53-54).

A. *Person of Ordinary Skill in the Art*

[95] The POSITA is the notional person to whom the 627 Patent is addressed and the person through the eyes of which the 627 Patent is to be construed (*Whirlpool* at para 53; *Free World Trust* at para 44). This person has an ordinary level of competence and knowledge incidental to the field to which the patent relates and a mind willing to understand the specification addressed to them, but is otherwise unimaginative and uninventive. Nonetheless, the POSITA is reasonably diligent at keeping up with advances. The POSITA may be a team of persons with different skills (*Teva Canada Limited v Janssen Inc*, 2018 FC 754 at paras 64-66, aff'd 2019 FCA 273, leave to appeal to SCC refused 39007 (7 May 2020)).

[96] Mr. Bishop opined that the POSITA in relation to the 627 Patent would be a senior piping designer (i.e. an engineer or piping technician) with several years of experience working on piping designs in the oil and gas industry, including SAGD facilities. The background of this person would include some modular experience and experience using 3D design software in order to evaluate and advance the design. The POSITA would also have some familiarity with the use of modules and transportation costs as well as an awareness of the conditions and limitations under which SAGD facilities are constructed.

[97] It was Mr. Brindle's opinion, as stated at paragraph 5.18 of his August 10, 2020 expert report, that the POSITA to whom the 627 Patent is addressed "is a professional engineer having a university engineering degree in one of such engineering disciplines as mechanical engineering, petroleum engineering, chemical engineering, or civil engineering, employed with an engineering firm having interdisciplinary persons, such as piping designers and process engineers with whom such person could consult if needed, and at least 10 years specific experience with an engineering firm engaged in interdisciplinary design of modular facilities for use by heavy oil production companies who are involved in CSS or SAGD bitumen recovery at well pad sites in northern Alberta". It was Mr. Brindle's opinion that the POSITA to whom the 627 Patent is addressed is a person who would be creating Front End Engineering [FEED] and Detailed Design drawings and other similar engineering drawings.

[98] Mr. Beale also opined as to the POSITA, namely being an experienced intermediate piping designer (i.e. having obtained a diploma or certificate in piping design from a post-secondary institute) with, at a minimum, 5 years of oil and gas industry experience practicing

under the guidance or mentorship of more senior personnel. This person would be familiar with the principles of designing piping systems and would be proficient in creating and reading piping and structural drawings. This person would also be familiar with modularized designs and have worked on projects related to SAGD.

[99] I find that the 627 Patent is directed towards a professional engineer, or piping designer, having a diploma or certificate in piping design, in conjunction with other professional engineers. The POSITA has at least 5 years of experience working on piping designs in the oil and gas industry, including SAGD facilities. The skilled person would also be aware of the general conditions and limitations under which SAGD facilities are constructed.

B. *Essential Nature of the Claim Elements*

[100] A presumption exists as to the essential nature of the elements of the claims. A non-essential element is one where the evidence establishes that a POSITA would understand that the omission or substitution of that specific element would have no effect on the way the invention works (*Free World Trust* at para 55; *Corlac Inc v Weatherford Canada Inc*, 2011 FCA 228 at paras 26-27, leave to appeal to SCC refused 34459 (29 March 2012)).

[101] Mr. Brindle was the only expert in this proceeding to opine on the essential nature of the claim elements in claims 1 to 8 of the 627 Patent. He identified only one possible exception, being an element in claim 1, whereby "…said piping having a swivel head connection suitable for joining to the well head or to a swivel head of an adjacent piping". Considering the

presumption of essentiality, and based on the fact that no evidence or reference to the 627 Patent specification suggests otherwise, I find all elements of claims 1 to 8 to be essential.

C. *Common General Knowledge*

[102] Common general knowledge is that knowledge generally known by the POSITA at the relevant date of October 21, 2007, including what the POSITA would reasonably be expected to know in keeping up with advances in the field to which the patent relates, but it does not include all information in the public domain (*Apotex Inc v Sanofi-Synthelabo Canada Inc*, 2008 SCC 61 at para 37 [*Sanofi-Synthelabo*]; *Whirlpool* at para 74). The principles have been expressed as follows:

A. Common general knowledge is distinct from public knowledge. Public knowledge is theoretical and includes all published patent specifications. Common general knowledge is derived from a common sense approach to the question of what would be known to an appropriately skilled person that could be found in real life, who is good at their job;
B. Common general knowledge will include patent specifications that are well known amongst those versed in the art;
C. Common general knowledge does not necessarily include scientific papers, no matter how wide the circulation or readership. A disclosure in a scientific paper only becomes common general knowledge when it is generally known and accepted without question by the bulk of those engaged in the particular art; and

D. Common general knowledge does not include what has only been written about and never, in fact, been used in a particular art.

(*Eli Lilly & Co v Apotex Inc*, 2009 FC 991 at para 97, aff'd 2010 FCA 240, leave to appeal to SCC refused 33946 (5 May 2011), citing *General Tire & Rubber Co v Firestone Tyre & Rubber Co Ltd*, [1972] RPC 457 (UK HL) at 482-483, [1971] FSR 417 (UK CA))

[103] Paragraphs [5] and [8] of the 627 Patent set out admitted elements of the common general knowledge, specifically the practice of modularization and that SAGD technology incorporates valves, control equipment, electrical equipment and instrumentation.

> [5] In the past, SAGD oil field were built using the traditional approach of field construction. The flow lines connecting the well heads were connected to the equipment in the field. It is also a common practice to install most of the equipment on skids or modules and to install and connect those units between the wellheads and the flow lines.
>
> …
>
> [8] The current SAGD technology typically constructs pads with field constructed flow lines, electrical cables trays and piping. The piping are connected to the well heads using modules that contain valves, control equipment, electrical equipment and instrumentation. All the connection between the equipment modules to the flow lines is done in the field…

[104] The above is consistent with Mr. Brindle's evidence and was admitted by Mr. Bishop on cross-examination, in relation to paragraph [5]. Mr. Beale admitted on cross-examination, in reference to paragraph [8], that the only difference between the 627 Patent and the common general knowledge is the location of the steam injection flow line on the first, lower level.

[105] More specifically, the common general knowledge further includes the use of scaffolding to connect flow lines on modules at higher elevations, module width restrictions and Alberta Transport transportation requirements, and the necessity of swivel connections when connecting well heads to piping on the modules.

D. *Construction of the Asserted Claims*

[106] The following elements of the claims of the 627 Patent are at issue.

(1) Claims 1 and 4: A system for heavy oil production

[107] I agree with Mr. Bishop and Mr. Beale that a POSITA would understand "a system for heavy oil production" to refer to a SAGD system. I disagree with Mr. Brindle that this element, particularly in claim1, would be understood as having a potentially larger application of comprising both CSS and SAGD systems. This position is not supported by an informed and purposive reading of the 627 Patent by a POSITA.

(2) Claims 1, 4 and 11: First level having a plurality of flow lines

[108] The experts ultimately agree that a "plurality of flow lines" in claims 1 and 4 refers to at least a steam injection flow line and a heavy oil production flow line being contained on the first, lower level of the piping arrangement. Mr. Brindle had initially provided an alternative claim construction in addition to the above, but this position was not maintained at trial. Mr. Brindle

finds support for this current construction in paragraph [53] of the 627 Patent disclosure, whereby the location of the flow lines is relevant to the elimination of scaffolding:

> [53] It is important to note that, in the present invention, the pipe between the units is located at the lowest point possible. Typically, the welding of the pipe that was already hydro-tested using connection welds is a work intensive field task. The location of the pipe at the lowest possible point eliminates the need for scaffolding, reduces the safety issues, increases the productivity, and reduces the cost.

[109] I accept Mr. Brindle's position that this feature is also found in independent claim 11, although the wording is analogous and does not mirror the exact wording in claims 1 and 4. Instead, claim 11 contains the element "…with flow lines extending along said first level…" This evidence was not disputed by Mr. Bishop or Mr. Beale.

(3) Claims 1, 4 and 11: A "first level" and "second level"

[110] Claims 1, 4 and 11 recite the feature of a "first level" and a "second level". The experts disagree on the POSITA's understanding of the term "level", being either a single, horizontal elevation or plane, as defined by the placement of a transverse steel member or crossbeam, or an amorphous functional volume above the ground. There were internal consistency issues with the evidence led by each expert, which I have taken into consideration, as follows.

[111] Mr. Bishop stated in his expert report, dated August 10, 2020 at paragraph 69 that:

> 69. A skilled person would understand this to mean there is a second level in the piping arrangement and that the second level is at a higher [position above the ground than the first level, and that there is piping connected to and in fluid communication with the at least two flow lines on the first level.

[112] However, on cross-examination, Mr. Bishop expanded upon this construction to opine that a level would be understood as a volume of space, specifically the first level was the volume of space that is "fulfilling a function". This altered claim construction is questionable and concerning, in that it mirrored a position advanced by Mr. Beale. Mr. Beale's claim construction was provided in his November 5, 2020 expert report, subsequent to the claim constructions offered by Mr. Bishop and Mr. Brindle in relation to the infringement issue on August 10, 2020.

[113] Mr. Beale opined at paragraph 79 of his expert report that a first level and a second level refer to regions. During his cross-examination, Mr. Beale specifically referenced the second level containing the walkway as the delineation between those first and second volumes of space.

[114] It is the Plaintiff's position that this evidence was led in response to Mr. Brindle's claim construction and validity evidence. However, the effect was to introduce an alternative claim construction for the issue of validity in relation to claims 1 to 8, which is improper and impacts the weight of Mr. Beale's evidence in this proceeding.

[115] Mr. Brindle at paragraph 6.76 of his November 5, 2020 expert report agrees with Mr. Bishop's construction, as provided at paragraph 69 of Mr. Bishop's August 10, 2020 expert report, meaning that a level is an elevation above the ground. Mr. Brindle testified that a POSITA would construe a level to mean the "top of steel" of a module. During cross-examination, he further expanded that a level includes the transverse steel member and the items resting on it. This said, at paragraph 8.102 of Mr. Brindle's August 10, 2020 expert report, he labels the levels of a piping assembly in a manner that contradicts his offered construction.

[116] In consideration of the above, I find that the POSITA would not understand a level to be limited by the placement of a single transverse steel member, neither would the volume of space associated with a level be so broad that it circumvents the benefits of the 627 Patent. In fact, in light of the ambiguity in claims 1, 4 and 11, a level and its associated volume would be understood with reference to its functions and objects, as provided in 627 Patent specification. The POSITA would understand the first level is constrained by the flow lines being connected on a lower level, without the need for or use of scaffolding. The second level is delineated by a walkway that provides access to valves, controllers and instrumentation.

[117] Specifically, the relative position of a “first level”, when taken in context of the 627 Patent specification as a whole, would be understood by a POSITA to refer to a horizontal plane, of a measured height above ground, that allows operators to access the flow lines from the ground level, without the need for or use of scaffolding, thereby reducing safety issues, costs and allowing easier access to flow lines by operators. The terms “first” and “second” are understood relative to each other, whereby the first level is at a lower elevation above ground when compared to the second level.

[118] Construing the first level to be an amorphous volume below the second level means that the flow lines could conceivably be located at a height requiring scaffolding, undermining the advantage of the invention, as indicated in paragraph [53] of the 627 Patent specification (reproduced above).

[119] Further, the figures accompanying the 627 Patent consistently reference the flows lines as being on a single horizontal plane, not multiple elevations, including particularly in figures 1 to7 and 12. I find this illustrative that a POSITA would understand there are limitations to a first level, as defined above.

(4) Claims 1 and 8: Cable trays

[120] Claims 1 and 8 indicate the following element: "…said second level support[ing] cable trays [thereon] receiving electrical and communication[s] cables thereon…" Mr. Brindle, in his evidence, distinguished between types of cable trays, including primary "transmission" and secondary "distribution" cable trays. It is his opinion that the cable trays referred to in claims 1 and 8 are primary transmission cable trays, running end-to-end on the piping system. He finds support for this opinion in various figures of the 627 Patent. Mr. Brindle acknowledged that the claims of the 627 Patent do not distinguish between the types of cable trays, but there is ambiguity in his view, which he has sought to resolve by reference to the figures.

[121] I find Mr. Brindle's opinion in his November 5, 2020 expert report and at trial to conflict directly with the evidence led in his August 10, 2020 expert report, whereby at paragraph 7.053, "[t]he term "cable trays"… are a term of art, whose design and function is well known to a POSITA". In my view, Mr. Brindle has not clarified the meaning of the term cable tray in later iterations of his construction, but has rather complicated the meaning of the term and altered his construction in his subsequent expert report and at trial.

[122] In consideration of the evidence, a POSITA would understand a cable tray to mean trays or conduits on the second level in which the cabling, for example, for the controller, can be placed and supported. In this respect, I agree with Mr. Bishop's interpretation of this element of claims 1 and 8, as well as the construction provided by Mr. Brindle in his August 10, 2020 expert report.

(5) Claims 2 and 9: Having a walkway

[123] Claims 2 and 9 contain the element of "having a walkway". Mr. Brindle construes the term walkway in reference to the definition of walkway in the English Oxford Dictionary as "[a] passage or path for walking along, especially a raised passageway *connecting different sections* of a building or a wide path in a park or garden" (Emphasis added). Mr. Brindle further faults Mr. Bishop for conflating the term "platform" and "walkway" in his claim construction of the term. However, during the cross-examination of Mr. Brindle, inconsistencies throughout the 627 Patent were noted in relation to the use of the terms walkway and platform.

[124] I do not find Mr. Brindle's reference to the English Oxford Dictionary helpful or appropriate, neither do I find his basis for undermining Mr. Bishop's proposed construction valid due to the inconsistencies within the 627 Patent itself.

[125] As it relates to claim 2, the POSITA would understand a walkway to mean an area through which the valves and instrumentation can be accessed. In this respect, I agree with Mr. Bishop's and Mr. Beale's interpretation that this element refers to a supported area on the second

level to allow an operator to easily enable and allow access to the equipment and instrumentation on that second level.

[126] Claim 9 includes the additional limitation of the walkways being "aligned and continuous with each other".

(6) Claims 3 and 10: A stairway

[127] Claims 3 and 10 include the element of "a stairway extending from said first level … to said walkway of [said] second level". The area of disagreement between the experts in this respect is whether the stairway can begin at grade level or whether the stairway begins at top of steel of the first level. The construction of the terms "first level" and "second level" resolve this matter, whereby the definition of first level effectively means the stairway may begin at grade.

(7) Claim 4: Joined in end-to-end relationship

[128] Claim 4 includes the claim element of "…said first piping assembly being joined in end-to-end relationship with said second piping assembly..." As it relates to this element of claim 4, the experts diverge in their opinions as to whether the piping assemblies must be physically joined in some fashion or are merely aligned end-to-end. The evidence led centered on the meaning of the term "joined" and whether a POSITA would understand it to have a different meaning than the term "connected", which is a word used in the claims in reference to the flow lines.

[129] Mr. Bishop opines that this claim element would be understood by a POSITA to mean that the flow line piping of the first two assemblies is connected such that the ends of the steam injection flow lines on one module are connected to the ends of the steam injection flow lines on an adjacent module, and similarly for the heavy oil production flow lines.

[130] In Mr. Brindle's opinion, these phrases would be understood to mean that the two piping assemblies (modules) are not only connected together by their respective flow lines, but they are physically joined together in end-to-end relation. Mr. Brindle understands it is correct to give different meanings to joined (for modules) and connected (for flow lines) in the context of this claim. While he did state on cross-examination that in ordinary parlance, joined and connected may have similar meanings, he was instructed to give different meanings to different terms by counsel.

[131] Mr. Beale provides that a POSITA would understand that the first piping assembly and the second piping assembly are placed end-to-end so that the appropriate pipes running longitudinally along each assembly may be joined. Mr. Beale disagrees with Mr. Brindle's interpretation, which seeks to distinguish the terms joined and connected. Claim 4 does not state that the second levels of each piping assemblies are joined together, merely that the modules or units are placed in end-to-end relationship, or are collinear to each other, allowing the flow lines to be connected. The POSITA would understand that there are some redundancies with respect to the flow lines being connected and the modules being organized end-to-end.

[132] Having considered the entirety of the evidence, including the 627 Patent specification, I find that a POSITA with a mind willing to understand would agree with Mr. Bishop and Mr. Beale that the words joined and connected are interchangeable in this respect, and the modules need not be physically joined, but rather aligned in end-to-end relation, to allow for connection of the flow lines. I find Mr. Brindle's evidence to be improperly strained, particularly when he acknowledged that the terms are interchangeable in ordinary parlance. When returning to the overarching principles of claim construction, where claims are to be read by the POSITA in an informed and purposive way with a mind willing to understand, all three experts, including Mr. Brindle, agree that the terms joined and connected need not be distinguished conceptually.

VII. Infringement

[133] Infringement occurs where there is interference with the Plaintiff's full enjoyment of the patent monopoly, as defined by the claims. Only if all essential elements of claims 1 to 8 are included in the MRCP Modules, can those claims be said to be infringed (*Free World Trust* at para 31).

[134] The Plaintiff acknowledges that a determination of infringement relies on the accepted claim construction in this case for claims 1 to 8. Claims 1 to 8 of the 627 Patent are infringed if this Court agrees with the Plaintiff's proposed claim construction, as led by its experts.

[135] It is the Defendant's position on infringement that all claims of the 627 Patent contain the concept of having at least the steam injection flow line and the heavy oil production flow line on the lowest, first level of the modules, to allow workers in the field to connect such flow lines

together between the modules without having to use scaffolding. In all of the Defendant's MRCP Modules, the heavy oil production flow lines for the production wells are not located on the lowest, first level of the modules. They are rather located on a higher, second level, which requires scaffolding for workers in the field to access and connect the same. The Defendant posits that the MRCP Modules contain 5 levels in total.

[136] Upon my review of the evidence, including the Navisworks program, I agree with the Defendant that the MRCP Modules do not infringe claims 1 to 8 of the 627 Patent because they fail to include the element of having a plurality of flow lines on the first, lower level.

[137] Key to this determination is that the MRCP Modules have several levels, particularly:

A. A first, lower level, containing a steam injection flow line and an annulus gas line (utility line);
B. There is one or more intermediate levels, requiring scaffolding, that supports the emulsion group lines and test lines, including a heavy oil production flow line and a residue gas line (utility line). The intermediate level(s) further contain additional utility lines, piping and expansion loops; and
C. A top, upper level, which supports pipping, controls and instrumentation for controlling flow to the wells, and secondary (distribution) cable trays. Further, this uppermost level contains steel bar grating that serves as a platform for workers to move about and operate the manual controls or view instrumentation.

[138] The MRCP Modules further have stairways that extend from the ground level to the top, upper level. The MRCP Modules are connected physically via the flow lines. Bridging beams are, in some instances, also situated between modules.

[139] Independent claims 1 and 4 are not infringed because the heavy oil production flow line is not located on a first, lower level on the MRCP Modules, allowing the connection of said flow lines to occur without scaffolding. I accept Mr. Brindle's evidence that scaffolding is required to connect the heavy oil production flow line on the Defendant's MRCP Modules, which is located substantially higher and vertically above the first level of the Defendant's MRCP Modules.

[140] For this same reason, none of the dependent claims 2 to 3 and 5 to 8 are infringed. Dependent claim 2 incorporates independent claim 1. Dependent claim 3 incorporates dependent claim 2. Dependent claims 5 to 8 incorporate independent claim 4. Therefore, all claims 1 to 8 incorporate this element of having a "plurality of flow lines" on a first, lower level.

[141] The above is determinative on the issue of infringement and it is unnecessary to address the other allegedly distinguishing features raised by the Defendant, as they relate to the MRCP Modules and the claims.

VIII. Validity

A. *Unsubstantiated Claims*

[142] The Defendant further counterclaims for a declaration that all claims 1 to 17 of the 627 Patent are invalid on the basis of obviousness. The Defendant had previously claimed invalidity on the basis of the Gillette Defence, anticipation, overbreadth, ambiguity and indefiniteness, insufficiency of specification, lack of utility and inoperability, and mere aggregation. The application of the doctrine of laches was also initially raised by the Defendant.

[143] The Defendant has failed to adduce evidence for these claims. Some of the claims appear to have been maintained by the Defendant, owing to Mr. Brindle's alternative claim constructions. For example, as it relates to anticipation, the claim was initially sustained by Mr. Brindle's alternative construction of merely requiring some, but not all flow lines, to be located on the first level. This construction has not been advanced or maintained by the Defendant and is not accepted by this Court.

[144] Regardless, these counterclaims were maintained up to and during trial, until closing submissions. Further, the Defendant initially alleged 68 pieces of prior art, which were only limited at an advanced stage of the trial. Overall, the Defendant's conduct in this regard has unnecessarily expended both this Court's and the Plaintiff's time and resources. The only relevant validity issue left to be decided is whether the claims in dispute are obvious in view of the prior art, as outlined below.

B. *Obviousness*

(1) The Legal Framework

[145] Obviousness is an attack on the inventiveness of a patent, as codified in section 28.3 of the *Patent Act*:

> **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 before the one-year period immediately preceding the filing date or, if the claim date is before that period, before the claim 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.
>
> **28.3** L'objet que définit la revendication d'une demande de brevet ne doit pas, à la date de la revendication, être évident pour une personne versée dans l'art ou la science dont relève l'objet, eu égard à toute communication :
>
> > **a)** qui a été faite, soit plus d'un an avant la date de dépôt de la demande, soit, si la date de la revendication est antérieure au début de cet an, avant la date de la revendication, par le demandeur ou un tiers ayant obtenu de lui l'information à cet égard de façon directe ou autrement, de manière telle qu'elle est devenue accessible au public au Canada ou ailleurs;
> >
> > **b)** qui a été faite par toute autre personne avant la date de la revendication de manière telle qu'elle est devenue accessible au public au Canada ou ailleurs.

[146] The obviousness test is difficult to meet and should be scrutinized carefully because "hindsight is 20-20". Furthermore, it is not sufficient to allege, in the case of a combination invention, that because the constituent parts are well known, the combination is obvious *(Bridgeview Manufacturing Inc v 931409 Alberta Ltd (Central Alberta Hay Centre)*, 2010 FCA 188 at paras 50-51, leave to appeal to SCC refused 33885 (14 April 2011)). The four-part *Windsurfing/Pozzoli* framework for obviousness is stated as follows:

> [67] It will be useful in an obviousness inquiry to follow the four-step approach first outlined by Oliver L.J. in *Windsurfing International Inc. v. Tabur Marine (Great Britain) Ltd.*, [1985] R.P.C. 59 (C.A.). This approach should bring better structure to the obviousness inquiry and more objectivity and clarity to the analysis. The *Windsurfing* approach was recently updated by Jacob L.J. in *Pozzoli SPA v. BDMO SA*, [2007] F.S.R. 37 (p. 872), [2007] EWCA Civ 588, at para. 23:
>
> > In the result I would restate the Windsurfing questions thus:
> >
> > (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 items which would have been obvious to the person skilled in the art or do they require any degree of invention?
>
> (*Sanofi-Synthelabo*, above at para 67)

[147] Under the fourth prong, consideration of whether it would have been "obvious to try" may be appropriate in circumstances where advances are often found through experimentation. In such cases, the following list of non-exhaustive factors will apply in accordance with the evidence of each case (*Sanofi-Synthelabo* at paras 67-69):

> (1) It is more or less self-evident that what is being tried ought to work? Are there a finite number of identified predictable solutions known to persons skilled in the art?
>
> (2) What is the extent, nature and amount of effort required to achieve the invention? Are routine trials carried out or is the experimentation prolonged and arduous, such that the trials would not be considered routine?
>
> (3) Is there a motive provided in the prior art to find the solution the patent addresses?

[148] The assessment of obviousness must be focused on the "inventive concept of the claim in question" and not some larger "invention" that might be described in the specification of the patent (*Sanofi-Aventis Canada v Apotex Inc*, 2009 FC 676 at para 267, aff'd 2011 FCA 300, leave to appeal to SCC refused 34600 (12 July 2012)).

(2) The Parties' Positions

[149] The Defendant counterclaims for a declaration that all claims 1 to 17 of the 627 Patent are invalid on the basis of obviousness to a POSITA in view of the common general knowledge available to the skilled person and the state of the art, being alleged public disclosures of the Cenovus Foster Creek Modules and the CNRL Modules.

[150] The Defendant alleges these prior art uses were “made available to the public” prior to the priority date of April 21, 2006. The identified prior art has a high pressure steam line on a top, upper level of the modules, which the Defendant states would be obvious to a POSITA to move to the bottom, first level of the modules, alongside the heavy oil production flow lines.

[151] It is the Plaintiff’s position that prior public use has not been established for the Cenovus Foster Creek Modules and the CNRL Modules. The Plaintiff argues that the confidentiality of well pad designs were protected through employment contracts, confidentiality policies and standard practices. Even if prior public use is established, it would not be obvious to move the steam line to a bottom, first level of the modules, because it could exacerbate condensation problems, resulting in damage to the piping systems.

(3) Obviousness Analysis

(a) *Inventive Concept and the State of the Art*

[152] As the qualities of the POSITA and the common general knowledge have been established above, I will begin the obviousness analysis at the second stage of the *Windsurfing/Pozzoli* framework, as described in *Sanofi-Synthelabo*, namely identifying the inventive concept of the claims.

[153] Mr. Brindle and Mr. Beale are in agreement that an aspect of the inventive concept is that all flows lines (the steam injection and heavy oil production flow lines) are located on a first, lower level. Mr. Beale’s conception of the inventive concept is slightly broader, whereby the

equipment is located on a second, upper level, and the modules have a single frame, transportable design.

[154] However, there is further agreement in relation to the third prong of the *Windsurfing/Pozzoli* framework, assuming the state of the art can be established. Specifically, the parties agree that if the state of the art can be established in the form of the public disclosures or prior public uses of the Cenovus Foster Creek and CNRL Modules, the only differences between the inventive concept and this prior art is the presence of the steam injection flow line, together with the heavy oil production flow line, on the lowest level of the module. Mr. Beale confirmed his agreement with Mr. Brindle in this respect, both at paragraph 167 of his November 5, 2020 expert report and in admissions during cross-examination.

[155] The Federal Court of Appeal has recently reaffirmed that step 3 of the *Windsurfing/Pozzoli* framework in principle requires that the inventive concept is not to be compared to the common general knowledge, but to the prior art (*Ciba Specialty Chemicals Water Treatments Limited's v SNF Inc*, 2017 FCA 225 at paras 47-51 [*Ciba Specialty Chemicals*], leave to appeal to SCC refused 37915 (14 June 2018)). As described above, the evidence in this proceeding has also established that the only difference between the common general knowledge and the 627 invention is also the location of both flow lines on the first, lower level. Nevertheless, I will proceed to more fully examine the alleged prior public uses or public disclosures of the Cenovus Foster Creek and CNRL Modules to determine whether they constitute part of the state of the art, to which the inventive concept is to be compared (*Patent Act*, s 28.3; *Ciba Specialty Chemicals*, above at para 56).

(i) Cenovus Foster Creek Modules

[156] The Cenovus Foster Creek Well Pad B Expansion was constructed in 2004 and Well Pads F and G were constructed in early 2005 at Flint's Construction Yard. They were transported via public highways to site. The Cenovus Foster Creek Modules have the heavy oil production flow line on a first, lower level and the steam injection flow line on a top, upper level. The expansion loops are contained on-module and swivel heads connect piping on the modules to the respective well pairs. The modules are joined in a manner that allows for a continuous walkway.

(ii) CNRL Modules

[157] The CNRL Primrose Modules were operational beginning in 2005 and 2006. They have a steam injection flow line on a top, upper level and a heavy oil production flow line on a lower, first level. Expansion loops extend outside the confines of the module and swivel heads connect piping on the modules to the respective well heads. The modules are joined in a manner permitting a continuous, elevated walkway.

(iii) Alleged Public Disclosures

[158] The Defendant alleges the following public disclosures, as it relates to the Cenovus Foster Creek Modules, listed at paragraph 88 of their memorandum of fact and law:

A. Permitting journalist, Deborah Jaremko and photographer, Joey Podlubny, access to the Foster Creek site and in particular to Well Pad F in July of 2005 under no obligation of

confidentiality and on the understanding that the photographs taken thereof would be used in a publication distributed to professionals in the oil sands industry;

B. Staging two Foster Creek Modules uncovered in a public parking lot at La Corey, Alberta in the spring of 2005 for approximately 2 to 3 days, that parking lot being located at the intersection of public highways 55 and 41. Therefore, workers going to any of the CNRL Wolf Creek, Primrose South, Primrose North and Cenovus Foster Creek facilities would have passed by;

C. IMV Projects having presented to Suncor, in early 2004, renderings showing the locations of pipes and the structural steel configuration of the Foster Creek Modules;

D. Arranging and providing tours of the Foster Creek facility, including of Well Pads F and G, for family members in 2004 and 2005, under no obligation of confidentiality;

E. Permitting members of the military to inspect the well pads at the Cenovus Foster Creek facility over the period from at least 2002 to 2005, as well as aboriginal hunters having the right to hunt near the well pads, all under no obligation of confidentiality;

F. Providing tours to 5 chemical companies in early 2005, when developing a new treatment program;

G. Permitting representatives of Tundra Process Solutions, a valving vendor, to attend on Well Pads F and G during the fall of 2005 to assist with control valve sizing issues, initially under no obligation of confidentiality until they were later contracted to provide retrofit solutions; and

H. Transporting of the modules uncovered on public roadways between Flint's Construction Yard and the Foster Creek site, including staging of the modules at the parking lot at the intersection of highways 55 and 41 in La Corey, Alberta, during rush hour periods.

[159] As it relates to the CNRL Modules, the Defendant alleges the following public disclosures, as discussed at paragraph 108 of their memorandum of fact and law:

A. Fabricating the CNRL Primrose Modules in an open air facility at Flint's Construction Yard in 2003 and 2004. The modules were uncovered and no more than 200 feet from the fence line. Employees from Imperial Oil or Cenovus were not prevented from inspecting those modules;
B. Transporting the CNRL Primrose Modules uncovered on public roadways at least in the fall of 2003 between Flint's Construction Yard and the CNRL Primrose site;
C. A presentation by IMV Projects in 2003 to Cenovus employees associated with Cenovus' Foster Creek facility, disclosing the CNRL Primrose Module design, including renderings showing the locations of pipes and the essence for the structural steel, and further presentations showing similar information before April of 2006 at least to Nexen, Petro-Canada, Conoco, Osum and Lacrina;
D. Regularly permitting members of the military to inspect the well pads including well pads having the CNRL Primrose Module design without any obligation of confidentiality; and
E. Tours of the CNRL Pad 29 in the summer of 2005 to employees of both Imperial Oil and Cenovus in order to share knowledge with a view to improving designs.

(iv) Prior Public Use/Public Disclosure Analysis

[160] The issue is therefore whether the essential elements of the 627 Patent would have been publicly available and obvious to a POSITA, in the circumstances described above (*Easton Sports Canada Inc v Bauer Hockey Corp*, 2011 FCA 83 at para 65 [*Bauer Hockey FCA*]). This Court has previously adopted the test for disclosure by prior use or sale of a machine, as follows:

> In the case of a written description, what is made available to the public is the description and it is irrelevant whether it is read. In the case of a machine it is that machine which is made available and it is irrelevant whether it is operated in public. A machine like a book can be examined and the information gleaned can be written down. Thus what is made available to the public by a machine, such as a light control system, is that which the skilled man would, if asked to describe its construction and operation, write down having carried out an appropriate test or examination. To invalidate the patent, the description that such a man would write down must be a clear and unambiguous description of the invention claimed.
>
> (*Bauer Hockey Corp v Easton Sports Canada Inc*, 2010 FC 361 at para 220 [*Bauer Hockey FC*], aff'd *Bauer Hockey FCA*, above, citing *Lux Traffic Controls Limited v Pike Signals Limited*, [1993] RPC 107 (Pat Ct) at 134 [*Lux Traffic*])

[161] Availability to the public is about having access to the information at the relevant time (*Wenzel Downhole Tools Ltd v National-Oilwell Canada Ltd*, 2011 FC 1323 [*Wenzel FC*], aff'd 2012 FCA 333 [*Wenzel FCA*] at paras 70, 74]. The "public" means "a person who is free at law and in equity to use the information" (*Wenzel FC*, above at para 89, citing *Lux Traffic*, above at para 132):

> [89] The "public" has been defined as "a person who [is] free in law and equity to use the information" (*Lux*, above at 132). Whether a purchaser decides to keep the analysis confidential is not a relevant consideration; the unconditional sale of the product by itself makes the product available to the public (*Baker*, above at para 97). Accordingly, a disclosure will not make an invention "available to the public" if it occurs in circumstances giving rise to a duty of confidentiality (*Weatherford FCA*, above at para 52). This is because "[t]he receipt of confidential information in circumstances of confidence establishes a duty not to use that information for any purpose other than that for which it was conveyed" (*Lac Minerals Ltd v International Corona Resources Ltd*, [1989] 2 SCR 574 at para 135, [1989] SCJ No 83 (QL) [*Lac Minerals*]; *Weatherford FCA*, above at para 52).

[162] It is unnecessary to discuss each of the Defendant's alleged public disclosures in detail. The evidence establishes that the physical display of the modules during site visitations and during transportation, as well as the marketing presentations are sufficient to make "available the necessary information" to the public. The essential elements of the claims would be available to a POSITA upon visual inspection (*Baker Petrolite Corp v Canwell Enviro-Industries Ltd*, 2002 FCA 158 at para 42(1.)).

[163] The disclosures did not occur in circumstances giving rise to a duty of confidentiality. While the evidence across fact and expert witnesses was consistent that well pad designs, in terms of technical specifications, were considered to be confidential, these same obligations were not imposed on images of the modules or access to the modules at the Cenovus Foster Creek and CNRL Primrose sites or during transportation. Mr. Herbst and Mr. Baugh testified as to the confidentiality obligations contained in employment contracts and codes of conduct at IMV Projects and Encana/Cenovus. However, their evidence demonstrated a lack of knowledge of the actual practices related to well pad tours and presentations and other public disclosures that were undertaken in relation to the modules and well pads, which clearly exposed the them to the public. I further do not find that any access restrictions associated with CLAWR region impeded these public disclosures in relation to the Cenovus Foster Creek Modules. This has not been established by the evidence. The Defendant, on the basis of the evidence led, has established that the listed prior art, namely the Cenovus Foster Creek Modules and CNRL Modules, were in fact available to the public.

[164] I disagree with the Plaintiff that "[m]erely viewing, without more" is not enough and that the evidence must establish that the POSITA could reproduce the well pads "without undue burden" (*Bombardier Recreational Products Inc v Arctic Cat Inc*, 2017 FC 207 at para 490, rev'd in part on other grounds 2018 FCA 172 [*Bombardier Recreational Products*]). At paragraph 490, this Court in *Bombardier Recreational Products*, above specified that:

> [490] The degree of scrutiny and examination required will, of course, vary from product to product for the disclosure to be enabling. However, merely viewing, without more, may not satisfy the "enabling" condition. The disclosure itself must convey enough information for the skilled person to make the invention or, as in the case of a skate boot, to discover the internal structure and then reproduce the invention without undue burden.

[165] The degree of scrutiny required upon visual inspection is context specific. The level of scrutiny required to discern the external elements of a skate in a public arena, as in *Bauer Hockey FC*, above is evidently higher than the scrutiny required to view the components of a large SAGD module. The relevant elements of these large modules were consistently identifiable by expert and fact witnesses in reference to photographs. This is particularly evident in relation to the position of all the flow lines – a feature that appears readily to be seen on the modules both during construction, in transit to the well sites and once installed at the well sites.

[166] As the prior public uses of the Cenovus Foster Creek and CNRL Modules have been established, as mentioned above, the parties agree that the difference between this prior art and the inventive concept is the location of the steam injection line on a first, lower level.

[167] The question is whether it would have been obvious to a POSITA to put both the steam injection and heavy oil production flow lines on a first, lower level.

[168] It is the Defendant's position that a skilled person would realize that both the steam injection and production flow lines can be co-located on the lowest level, the result being cost savings in fabrication and installation, where reservoir production performances are lower and smaller pipes are used. The Defendant refers to BlackRock's Orion SAGD project as a "secondary indicia of obviousness" in demonstrating "the motivation that existed at the claim date to move flow lines to the first level where process parameters permitted". The fabrication of the BlackRock Orion Modules began in 2006. In the design of the module, the steam injection and heavy oil production flow lines were both located on a first, lower level.

[169] The Defendant relies on a decision of this Court and the appeal decision for the concept of "secondary indicia of obviousness" (*Janssen-Ortho Inc v Novopharm Ltd*, 2006 FC 1234 at para 113 [*Janssen-Ortho*], aff'd 2007 FCA 217, leave to appeal to SCC refused 32200 (6 December 2007)). In *Janssen-Ortho*, a list of factors were enumerated that a Court may take into consideration in a determination of obviousness, on a principled and objective basis (*Janssen-Ortho*, above at para 113). Several factors of "secondary importance" are listed, "arising after the time that the alleged invention is made since, after all, the Court is to be concerned with "inventive ingenuity" exercised at the time of making the invention". This case does not stand for the proposition cited by the Defendant.

[170] It is the Plaintiff's position that moving the steam injection flow line to a lower, first level would not have been obvious due to an exacerbation of issues related to the build up of steam condensate, which is more pronounced at lower levels and may cause serious damage to the flow lines.

[171] Having regard to the prior public uses and the totality of the evidence before the Court, I find that it would not have been obvious to place the steam injection flow line on the same first level as the heavy oil production flow line. Both parties raise a myriad of factors which are considered during module design, including piping sizes, the location of expansion loops, condensate build up, reservoir capacity, etc. When balancing these factors in the design process, I conclude that it would not have been obvious to a POSITA at the relevant time to move the steam injection flow line to a lower, first level. Further, the evidence shows that no one in the industry had done so prior to the 627 patented invention being made public. The evidence relied on by the Defendant is typical of the "hindsight is 20-20" problem in relation to this obviousness attack.

[172] To clarify, my determination is not made on the basis of the Plaintiff's theory regarding condensate build up. This evidence was led by Mr. Beale who acknowledged both that there were a variety of ways in which condensate build up could be managed and that he does not possess expertise in these methods. I did not find this evidence persuasive.

IX. Remedies

[173] Due to the findings above in relation to non-infringement of the 627 Patent, it is not necessary to consider the issue of remedies. That said, as decided above, I find that the opinion of the Plaintiff's expert, Mr. Lobo, would be given no weight and the evidence of the Defendant's experts would have been preferred in considering a royalty basis for the damages calculation.

X. Conclusion

[174] In conclusion, there is insufficient evidence to find that Nexen is the owner of the 627 Patent and that the Plaintiff lacks standing to bring this claim. The Defendant's MRCP Well Pads do not infringe claims 1 to 8 of the 627 Patent, notwithstanding that I find that claims 1 to 17 are valid.

XI. Costs

[175] Costs are awarded to the Defendant in this action. The parties will have ten (10) days from the date of this decision to make written representations on costs, not exceeding five (5) pages in length.

JUDGMENT IN T-1158-18

THIS COURT'S JUDGMENT is that

1. Claims 1 to 17 of the 627 Patent are valid;
2. The Defendant's construction and operation of the SAGD MRCP facility does not infringe claims 1 to 8 of the 627 Patent;
3. No damages are awarded; and
4. The parties will have ten (10) days from the date of this decision to make written representations on costs, not exceeding five (5) pages in length.

"Michael D. Manson"
Judge

FEDERAL COURT

SOLICITORS OF RECORD

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